

**TDMS No.** 20515 - 03

**Test Type:** CHRONIC

**Route:** RESPIRATORY EXPOSURE WHOLE BODY

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

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Metal working fluids (CIMSTAR 3800)

**CAS Number:** CIMSTAR3800

**Date Report Requested:** 01/21/2011

**Time Report Requested:** 07:49:51

**First Dose M/F:** 04/14/08 / 04/14/08

**Lab:** BNW

D\_RE

**C Number:** C20515  
**Lock Date:** 01/12/2011  
**Cage Range:** ALL  
**Date Range:** ALL  
**Reasons For Removal:** ALL  
**Removal Date Range:** ALL  
**Treatment Groups:** Include ALL  
**Study Gender:** Both  
**TDMSE Version:** 2.3.0  
**PWG Approval Date:** NONE

TDMS No. 20515 - 03

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Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 1

TRT#: 1

SEX: Male

DAY ON TEST: 718

DOSE: Control

DISP: Moribund Sacrifice

HISTO: 56820

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                             |                          |                            |                           |
|-----------------------------|--------------------------|----------------------------|---------------------------|
| * Adrenal Medulla           | * Bone                   | * Bone Marrow              | * Brain                   |
| * Epididymis                | * Esophagus              | * Eye                      | * Harderian Gland         |
| * Heart                     | * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum |
| * Intestine Small, Duodenum | * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      |
| * Larynx                    | * Lung                   | * Lymph Node, Bronchial    | * Lymph Node, Mandibular  |
| * Lymph Node, Mediastinal   | * Lymph Node, Mesenteric | * Nose                     | * Pancreas                |
| * Parathyroid Gland         | * Pituitary Gland        | * Preputial Gland          | * Prostate                |
| * Salivary Glands           | * Seminal Vesicle        | * Spleen                   | * Stomach, Forestomach    |
| * Stomach, Glandular        | * Thymus                 | * Trachea                  | * Urinary Bladder         |

MISSING

- \* Mammary Gland

OBSERVATIONS

- |                  |                                       |                       |                        |
|------------------|---------------------------------------|-----------------------|------------------------|
| * Adrenal Cortex |                                       | Hypertrophy           | Mild                   |
| * Kidney         |                                       | Nephropathy           | Moderate               |
| * Liver          |                                       | Clear Cell Focus      |                        |
| Lymph Node       | Lumbar                                | Infiltration Cellular | Plasma Cell, Moderate  |
|                  | [ Infiltration Cellular TGLs = 5-15 ] |                       |                        |
| Mesentery        | Fat                                   | Necrosis              | Mild                   |
|                  | [ Necrosis TGLs = 4-15 ]              |                       |                        |
| * Skin           |                                       | Inflammation          | Chronic Active, Marked |
|                  | [ Inflammation TGLs = 1-16 ]          |                       |                        |
| * Testes         |                                       | Edema                 | Mild                   |
|                  | [ Edema TGLs = 2,3-9 ]                |                       |                        |
| * Thyroid Gland  | C Cell                                | Hyperplasia           | Mild                   |

PRIMARY CAUSE OF DEATH - Skin Inflammation

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 2

TRT#: 1

SEX: Male

DAY ON TEST: 715

DOSE: Control

DISP: Moribund Sacrifice

HISTO: 56821

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Cortex
- \* Adrenal Medulla
- \* Bone
- \* Bone Marrow
- \* Epididymis
- \* Esophagus
- \* Eye
- \* Harderian Gland
- \* Intestine Large, Cecum
- \* Intestine Large, Colon
- \* Intestine Large, Rectum
- \* Intestine Small, Duodenum
- \* Intestine Small, Ileum
- \* Intestine Small, Jejunum
- \* Islets, Pancreatic
- \* Larynx
- \* Lung
- \* Lymph Node, Bronchial
- \* Lymph Node, Mandibular
- \* Lymph Node, Mediastinal
- \* Lymph Node, Mesenteric
- \* Nose
- \* Pancreas
- \* Preputial Gland
- \* Prostate
- \* Salivary Glands
- \* Seminal Vesicle
- \* Stomach, Forestomach
- \* Stomach, Glandular
- \* Testes
- \* Thymus
- \* Trachea
- \* Urinary Bladder

MISSING

- \* Mammary Gland
- \* Parathyroid Gland

OBSERVATIONS

- \* Brain
- Astrocytoma Malignant
- \* Heart
- Cardiomyopathy
- \* Kidney
- Nephropathy
- \* Liver
- Basophilic Focus
- Clear Cell Focus
- Infiltration Cellular
- Lymph Node
- Lumbar
- [ Infiltration Cellular TGLs = 5-18 ]
- \* Pituitary Gland
- Pars Distalis
- \* Skin
- Subcut Tiss
- [ Inflammation TGLs = 1-16 ]
- [ Sarcoma TGLs = 3-17 ]
- \* Spleen
- Hematopoietic Cell Proliferation
- [ Hematopoietic Cell Proliferation TGLs = 4-15 ]
- \* Thyroid Gland
- Follicular Cel
- C Cell
- [ Adenoma TGLs = 2-3 ]
- Hyperplasia

PRIMARY CAUSE OF DEATH - Brain Astrocytoma Malignant

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

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Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 3

TRT#: 1

SEX: Male

DAY ON TEST: 704

DOSE: Control

DISP: Moribund Sacrifice

HISTO: 56822

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Cortex
- \* Brain
- \* Harderian Gland
- \* Intestine Small, Duodenum
- \* Larynx
- \* Mammary Gland
- Peripheral Nerve
- \* Seminal Vesicle
- \* Stomach, Glandular
- \* Adrenal Medulla
- \* Epididymis
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Lung
- \* Nose
- \* Pituitary Gland
- Spinal Cord
- \* Thymus
- \* Bone
- \* Esophagus
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Lymph Node, Mediastinal
- \* Pancreas
- \* Preputial Gland
- \* Spleen
- \* Trachea
- \* Bone Marrow
- \* Eye
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Lymph Node, Mesenteric
- \* Parathyroid Gland
- \* Salivary Glands
- \* Stomach, Forestomach
- \* Urinary Bladder

MISSING

- \* Lymph Node, Bronchial
- \* Lymph Node, Mandibular

OBSERVATIONS

- \* Heart
- \* Kidney
- \* Liver
- [ Angiectasis TGLs = 2-6 ]
- Lymph Node
- [ Ectasia TGLs = 4-16 ]
- \* Prostate
- \* Skin
- [ Inflammation TGLs = 5,6-17 ]
- \* Testes
- [ Edema TGLs = 3-9 ]
- \* Thyroid Gland
- Zymbal's Gland
- [ Carcinoma TGLs = 1-16 ]
- Cardiomyopathy
- Nephropathy
- Angiectasis
- Clear Cell Focus
- Ectasia
- Hyperplasia
- Inflammation
- Edema
- Adenoma
- Carcinoma
- Mild
- Mild
- Moderate
- Mild
- Minimal
- Chronic Active, Marked
- Moderate

PRIMARY CAUSE OF DEATH - Skin Inflammation

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

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Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

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Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 4

TRT#: 1

SEX: Male

DAY ON TEST: 730

DOSE: Control

DISP: Terminal Sacrifice

HISTO: 56823

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                          |                            |                           |                             |
|--------------------------|----------------------------|---------------------------|-----------------------------|
| * Adrenal Medulla        | * Bone                     | * Bone Marrow             | * Brain                     |
| * Esophagus              | * Eye                      | * Harderian Gland         | * Heart                     |
| * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum | * Intestine Small, Duodenum |
| * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      | * Larynx                    |
| * Lymph Node, Bronchial  | * Nose                     | * Pancreas                | * Parathyroid Gland         |
| * Preputial Gland        | * Prostate                 | * Salivary Glands         | * Seminal Vesicle           |
| * Spleen                 | * Stomach, Forestomach     | * Stomach, Glandular      | * Thymus                    |
| * Trachea                | * Urinary Bladder          |                           |                             |

MISSING

- \* Mammary Gland

OBSERVATIONS

- |                           |                                |                  |                          |
|---------------------------|--------------------------------|------------------|--------------------------|
| * Adrenal Cortex          |                                | Hypertrophy      | Mild                     |
| * Epididymis              |                                | Granuloma Sperm  | Moderate                 |
|                           | [ Granuloma Sperm TGLs = 4-9 ] |                  |                          |
| * Kidney                  |                                | Nephropathy      | Minimal                  |
| * Liver                   |                                | Basophilic Focus |                          |
|                           |                                | Clear Cell Focus |                          |
| * Lung                    |                                | Inflammation     | Chronic Active, Mild     |
|                           | [ Inflammation TGLs = 8-4+5 ]  |                  |                          |
| Lymph Node                | Iliac                          | Ectasia          | Moderate                 |
|                           | [ Ectasia TGLs = 6-18 ]        |                  |                          |
| * Lymph Node, Mandibular  |                                | Ectasia          | Moderate                 |
|                           | [ Ectasia TGLs = 1-15 ]        |                  |                          |
| * Lymph Node, Mediastinal |                                | Ectasia          | Moderate                 |
|                           | [ Ectasia TGLs = 2-3 ]         |                  |                          |
| * Lymph Node, Mesenteric  |                                | Ectasia          | Mild                     |
|                           | [ Ectasia TGLs = 7-8 ]         |                  |                          |
| * Pituitary Gland         | Pars Distalis                  | Adenoma          |                          |
| * Skin                    |                                | Inflammation     | Chronic Active, Moderate |
|                           | [ Inflammation TGLs = 3-16 ]   |                  |                          |

\* PROTOCOL REQUIRED TISSUE

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CAS Number: CIMSTAR3800

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First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

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**ANIMAL ID:** 4

**TRT#:** 1

**SEX:** Male

**DAY ON TEST:** 730

**DOSE:** Control

**DISP:** Terminal Sacrifice

**HISTO:** 56823

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**ORGAN AND ACCOUNTABLE SITE STATUS**

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\* Testes

Interstit Cell

Adenoma

Atrophy

Moderate

Edema

Moderate

\* Thyroid Gland

C Cell

Adenoma

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Species/Strain: RATS/Wistar Han

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First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 5

TRT#: 1

SEX: Male

DAY ON TEST: 597

DOSE: Control

DISP: Moribund Sacrifice

HISTO: 56824

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                           |                            |                          |                             |
|---------------------------|----------------------------|--------------------------|-----------------------------|
| * Adrenal Cortex          | * Adrenal Medulla          | * Bone                   | * Bone Marrow               |
| * Brain                   | * Epididymis               | * Esophagus              | * Eye                       |
| * Harderian Gland         | * Intestine Large, Cecum   | * Intestine Large, Colon | * Intestine Small, Duodenum |
| * Intestine Small, Ileum  | * Intestine Small, Jejunum | * Islets, Pancreatic     | * Kidney                    |
| * Larynx                  | * Liver                    | * Lymph Node, Bronchial  | * Lymph Node, Mandibular    |
| * Lymph Node, Mediastinal | * Lymph Node, Mesenteric   | * Parathyroid Gland      | Peripheral Nerve            |
| * Pituitary Gland         | * Preputial Gland          | * Prostate               | * Salivary Glands           |
| * Seminal Vesicle         | * Skin                     | Spinal Cord              | * Spleen                    |
| * Stomach, Forestomach    | * Stomach, Glandular       | * Testes                 | * Thymus                    |
| * Trachea                 | * Urinary Bladder          |                          |                             |

MISSING

- \* Mammary Gland

INSUFFICIENT TISSUE

- \* Intestine Large, Rectum

OBSERVATIONS

- |                 |                               |                               |                         |
|-----------------|-------------------------------|-------------------------------|-------------------------|
| * Heart         |                               | Cardiomyopathy                | Minimal                 |
| * Lung          |                               | Inflammation                  | Chronic Active, Minimal |
|                 | [ Inflammation TGLs = 2-4+5 ] |                               |                         |
| * Nose          |                               | Accumulation, Hyaline Droplet | Mild                    |
| * Pancreas      |                               | Basophilic Focus              |                         |
| * Thyroid Gland | C Cell                        | Hyperplasia                   | Minimal                 |
| Zymbal's Gland  |                               | Carcinoma                     |                         |
|                 | [ Carcinoma TGLs = 1-15 ]     |                               |                         |

PRIMARY CAUSE OF DEATH

- Zymbal's Gland Carcinoma

\* PROTOCOL REQUIRED TISSUE

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Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 6

TRT#: 1

SEX: Male

DAY ON TEST: 730

DOSE: Control

DISP: Terminal Sacrifice

HISTO: 56825

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                             |                          |                            |                           |
|-----------------------------|--------------------------|----------------------------|---------------------------|
| * Adrenal Cortex            | * Adrenal Medulla        | * Bone                     | * Bone Marrow             |
| * Brain                     | * Epididymis             | * Esophagus                | * Eye                     |
| * Harderian Gland           | * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum |
| * Intestine Small, Duodenum | * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      |
| * Larynx                    | * Lung                   | Lymph Node                 | * Lymph Node, Mandibular  |
| * Lymph Node, Mediastinal   | * Lymph Node, Mesenteric | * Pancreas                 | * Parathyroid Gland       |
| * Pituitary Gland           | * Preputial Gland        | * Prostate                 | * Salivary Glands         |
| * Seminal Vesicle           | * Skin                   | * Spleen                   | * Stomach, Forestomach    |
| * Stomach, Glandular        | * Thymus                 | * Trachea                  | * Urinary Bladder         |

MISSING

- |                         |                 |
|-------------------------|-----------------|
| * Lymph Node, Bronchial | * Mammary Gland |
|-------------------------|-----------------|

OBSERVATIONS

- |                      |                               |             |
|----------------------|-------------------------------|-------------|
| * Heart              | Cardiomyopathy                | Mild        |
| * Kidney             | Nephropathy                   | Mild        |
| * Liver              | Clear Cell Focus              |             |
| * Nose               | Accumulation, Hyaline Droplet | Minimal     |
| * Testes             | Edema                         | Mild        |
| [ Edema TGLs = 1-9 ] |                               |             |
| * Thyroid Gland      | Follicular Cel                | Hyperplasia |
|                      |                               | Moderate    |



TDMS No. 20515 - 03

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Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

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First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 7

TRT#: 1

SEX: Male

DAY ON TEST: 729

DOSE: Control

DISP: Terminal Sacrifice

HISTO: 56826

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                           |                             |                          |                            |
|---------------------------|-----------------------------|--------------------------|----------------------------|
| * Adrenal Cortex          | * Adrenal Medulla           | * Bone                   | * Bone Marrow              |
| * Brain                   | * Epididymis                | * Esophagus              | * Eye                      |
| * Harderian Gland         | * Heart                     | * Intestine Large, Cecum | * Intestine Large, Colon   |
| * Intestine Large, Rectum | * Intestine Small, Duodenum | * Intestine Small, Ileum | * Intestine Small, Jejunum |
| * Islets, Pancreatic      | * Larynx                    | * Lung                   | * Lymph Node, Bronchial    |
| * Lymph Node, Mandibular  | * Lymph Node, Mediastinal   | * Lymph Node, Mesenteric | * Nose                     |
| * Pancreas                | * Preputial Gland           | * Spleen                 | * Stomach, Forestomach     |
| * Stomach, Glandular      | * Testes                    | * Thymus                 | * Thyroid Gland            |
| * Trachea                 | * Urinary Bladder           |                          |                            |

MISSING

- |                 |                     |
|-----------------|---------------------|
| * Mammary Gland | * Parathyroid Gland |
|-----------------|---------------------|

OBSERVATIONS

- |   |               |                           |                        |
|---|---------------|---------------------------|------------------------|
| * Kidney                                  |               | Cyst                      | Mild                   |
| [ Cyst TGLs = 3-15 ]                      |               |                           |                        |
| * Liver                                   |               | Clear Cell Focus          |                        |
| * Pituitary Gland                         | Pars Intermed | Hyperplasia               | Mild                   |
| * Prostate                                |               | Adenoma                   | Multiple               |
| * Salivary Glands                         |               | Neural Crest Tumor        |                        |
| * Seminal Vesicle                         |               | Adenoma                   |                        |
| * Skin                                    |               | Cyst Epithelial Inclusion |                        |
|   |               | Inflammation              | Chronic Active, Marked |
| [ Cyst Epithelial Inclusion TGLs = 2-17 ] |               |                           |                        |
| [ Inflammation TGLs = 1,2-16+17 ]         |               |                           |                        |

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Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

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CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

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First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 8

TRT#: 1

SEX: Male

DAY ON TEST: 535

DOSE: Control

DISP: Moribund Sacrifice

HISTO: 56827

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                             |                          |                            |                           |
|-----------------------------|--------------------------|----------------------------|---------------------------|
| * Adrenal Cortex            | * Adrenal Medulla        | * Bone                     | * Bone Marrow             |
| * Brain                     | * Epididymis             | * Esophagus                | * Eye                     |
| * Harderian Gland           | * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum |
| * Intestine Small, Duodenum | * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      |
| * Larynx                    | * Liver                  | * Lung                     | * Lymph Node, Bronchial   |
| * Lymph Node, Mandibular    | * Lymph Node, Mesenteric | * Mammary Gland            | * Nose                    |
| * Pancreas                  | * Parathyroid Gland      | * Preputial Gland          | * Prostate                |
| * Salivary Glands           | * Seminal Vesicle        | * Skin                     | * Spleen                  |
| * Stomach, Glandular        | * Thymus                 | * Thyroid Gland            | * Trachea                 |
| * Urinary Bladder           |                          |                            |                           |

MISSING

- \* Lymph Node, Mediastinal

OBSERVATIONS

- |                        |                         |                |                    |
|------------------------|-------------------------|----------------|--------------------|
| * Heart                |                         | Cardiomyopathy | Minimal            |
| * Kidney               |                         | Nephropathy    | Mild               |
| * Pituitary Gland      | Pars Distalis           | Adenoma        |                    |
|                        | [ Adenoma TGLs = 1-10 ] |                |                    |
| * Stomach, Forestomach |                         | Hyperplasia    | Squamous, Moderate |
| * Testes               |                         | Atrophy        | Moderate           |
|                        | [ Atrophy TGLs = 2-9 ]  |                |                    |

PRIMARY CAUSE OF DEATH - Pituitary Gland Pars Distalis Adenoma

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

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Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 9

TRT#: 1

SEX: Male

DAY ON TEST: 710

DOSE: Control

DISP: Moribund Sacrifice

HISTO: 56828

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Cortex
- \* Epididymis
- \* Heart
- \* Intestine Small, Duodenum
- \* Larynx
- \* Lymph Node, Mesenteric
- \* Preputial Gland
- \* Skin
- \* Trachea
- \* Bone
- \* Esophagus
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Lung
- \* Nose
- \* Prostate
- \* Spleen
- \* Urinary Bladder
- \* Bone Marrow
- \* Eye
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Lymph Node, Bronchial
- \* Pancreas
- \* Salivary Glands
- \* Stomach, Forestomach
- \* Brain
- \* Harderian Gland
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Lymph Node, Mandibular
- \* Parathyroid Gland
- \* Seminal Vesicle
- \* Stomach, Glandular

MISSING

- \* Lymph Node, Mediastinal
- \* Mammary Gland

INSUFFICIENT TISSUE

- \* Thymus

OBSERVATIONS

- \* Adrenal Medulla
- \* Kidney
- \* Liver
- [ Dilatation TGLs = 3-16 ]
- Mesentery
- [ Necrosis TGLs = 2-15 ]
- \* Pituitary Gland
- [ Carcinoma TGLs = 1-10 ]
- \* Testes
- \* Thyroid Gland
- Bile Duct
- Fat
- Pars Distalis
- Follicular Cel
- C Cell
- Pheochromocytoma Benign
- Nephropathy
- Basophilic Focus
- Clear Cell Focus
- Dilatation
- Necrosis
- Carcinoma
- Edema
- Hyperplasia
- Hyperplasia
- Minimal
- Marked
- Mild
- Mild
- Minimal
- Mild

PRIMARY CAUSE OF DEATH - Pituitary Gland Pars Distalis Carcinoma

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

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Date Report Requested: 01/21/2011

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First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 10

TRT#: 1

SEX: Male

DAY ON TEST: 730

DOSE: Control

DISP: Terminal Sacrifice

HISTO: 56829

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Medulla
- \* Esophagus
- \* Intestine Large, Colon
- \* Islets, Pancreatic
- \* Lymph Node, Mediastinal
- \* Preputial Gland
- \* Skin
- \* Testes
- \* Bone Marrow
- \* Eye
- \* Intestine Small, Duodenum
- \* Larynx
- \* Lymph Node, Mesenteric
- \* Prostate
- \* Spleen
- \* Trachea
- \* Brain
- \* Harderian Gland
- \* Intestine Small, Ileum
- \* Lung
- \* Pancreas
- \* Salivary Glands
- \* Stomach, Forestomach
- \* Urinary Bladder
- \* Epididymis
- \* Intestine Large, Cecum
- \* Intestine Small, Jejunum
- \* Lymph Node, Mandibular
- \* Parathyroid Gland
- \* Seminal Vesicle
- \* Stomach, Glandular

MISSING

- \* Lymph Node, Bronchial
- \* Mammary Gland
- \* Thymus

INSUFFICIENT TISSUE

- \* Intestine Large, Rectum

OBSERVATIONS

- \* Adrenal Cortex Hyperplasia Mild
- \* Bone Hypertrophy Mild  
  - [ Osteosarcoma TGLs = 1-15 ] Osteosarcoma
- \* Heart Cardiomyopathy Mild
- \* Kidney Nephropathy Mild
- \* Liver Clear Cell Focus
- \* Nose Accumulation, Hyaline Droplet Mild
- \* Pituitary Gland Adenoma  
  - [ Adenoma TGLs = 2-10 ] Pars Distalis
- \* Thyroid Gland Hyperplasia Minimal  
  - C Cell

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 11

TRT#: 1

SEX: Male

DAY ON TEST: 345

DOSE: Control

DISP: Moribund Sacrifice

HISTO: 56830

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                             |                          |                            |                           |
|-----------------------------|--------------------------|----------------------------|---------------------------|
| * Adrenal Cortex            | * Adrenal Medulla        | * Bone                     | * Brain                   |
| * Epididymis                | * Esophagus              | * Eye                      | * Harderian Gland         |
| * Heart                     | * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum |
| * Intestine Small, Duodenum | * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      |
| * Kidney                    | * Larynx                 | * Lymph Node, Bronchial    | * Lymph Node, Mandibular  |
| * Lymph Node, Mediastinal   | * Nose                   | * Pancreas                 | * Parathyroid Gland       |
| * Pituitary Gland           | * Preputial Gland        | * Prostate                 | * Salivary Glands         |
| * Seminal Vesicle           | * Skin                   | * Spleen                   | * Stomach, Forestomach    |
| * Stomach, Glandular        | * Thyroid Gland          | * Trachea                  | * Urinary Bladder         |

MISSING

- \* Mammary Gland

OBSERVATIONS

- |                          |                    |          |
|--------------------------|--------------------|----------|
| * Bone Marrow            | Hemangiosarcoma    |          |
| * Liver                  | Necrosis           | Mild     |
| [ Necrosis TGLs = 4-6 ]  |                    |          |
| * Lung                   | Hemorrhage         | Mild     |
| * Lymph Node, Mesenteric | Hemangiosarcoma    |          |
| * Testes                 | Necrosis           | Moderate |
| [ Necrosis TGLs = 3-9 ]  |                    |          |
| * Thymus                 | Depletion Cellular | Marked   |

PRIMARY CAUSE OF DEATH - Lymph Node, Mesenteric Hemangiosarcoma

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 12

TRT#: 1

SEX: Male

DAY ON TEST: 730

DOSE: Control

DISP: Terminal Sacrifice

HISTO: 56831

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Medulla
- \* Epididymis
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Liver
- \* Nose
- \* Prostate
- \* Stomach, Forestomach
- \* Urinary Bladder
- \* Bone
- \* Esophagus
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Lymph Node, Mandibular
- \* Pancreas
- \* Salivary Glands
- \* Stomach, Glandular
- \* Bone Marrow
- \* Eye
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Lymph Node, Mediastinal
- \* Parathyroid Gland
- \* Seminal Vesicle
- \* Thymus
- \* Brain
- \* Heart
- \* Intestine Small, Duodenum
- \* Larynx
- \* Lymph Node, Mesenteric
- \* Preputial Gland
- \* Spleen
- \* Trachea

MISSING

- \* Lymph Node, Bronchial
- \* Mammary Gland

OBSERVATIONS

- \* Adrenal Cortex
- \* Harderian Gland
- \* Kidney
- \* Lung
- Lymph Node
- [ Infiltration Cellular TGLs = 3-15 ]
- \* Pituitary Gland
- \* Skin
- [ Inflammation TGLs = 1-16 ]
- \* Testes
- [ Atrophy TGLs = 2-9 ]
- \* Thyroid Gland
- Alveolar Epith
- Lumbar
- Pars Distalis
- C Cell
- Hyperplasia
- Hyperplasia
- Nephropathy
- Hyperplasia
- Infiltration Cellular
- Hyperplasia
- Inflammation
- Atrophy
- Adenoma
- Moderate
- Minimal
- Mild
- Mild
- Plasma Cell, Marked
- Mild
- Chronic Active, Marked
- Mild

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 13

TRT#: 1

SEX: Male

DAY ON TEST: 612

DOSE: Control

DISP: Moribund Sacrifice

HISTO: 56832

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Bone
- \* Bone Marrow
- \* Epididymis
- \* Esophagus
- \* Eye
- \* Harderian Gland
- \* Intestine Large, Cecum
- \* Intestine Large, Colon
- \* Intestine Large, Rectum
- \* Intestine Small, Duodenum
- \* Intestine Small, Ileum
- \* Intestine Small, Jejunum
- \* Islets, Pancreatic
- \* Larynx
- \* Lung
- \* Lymph Node, Bronchial
- \* Lymph Node, Mandibular
- \* Lymph Node, Mediastinal
- \* Lymph Node, Mesenteric
- \* Nose
- \* Pancreas
- \* Parathyroid Gland
- \* Pituitary Gland
- \* Preputial Gland
- \* Prostate
- \* Salivary Glands
- \* Seminal Vesicle
- \* Spleen
- \* Stomach, Forestomach
- \* Stomach, Glandular
- \* Testes
- \* Thymus
- \* Trachea
- \* Urinary Bladder

MISSING

- \* Mammary Gland

OBSERVATIONS

- \* Adrenal Cortex Hyperplasia Mild
- \* Adrenal Medulla Pheochromocytoma Benign
- \* Brain Meningioma Malignant
- [ Meningioma Malignant TGLs = 5-16 ]
- \* Heart Cardiomyopathy Minimal
- \* Kidney Nephropathy Minimal
- \* Liver Bile Duct Hyperplasia Mild
- Bile Duct Inflammation Chronic Active, Mild
- Necrosis Moderate
- [ Hyperplasia TGLs = 3-17 ]
- [ Necrosis TGLs = 4-6 ]
- \* Skin Trichoepithelioma
- [ Trichoepithelioma TGLs = 1-15 ]
- \* Thyroid Gland C Cell Hyperplasia Mild

PRIMARY CAUSE OF DEATH - Brain Meningioma Malignant

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 14

TRT#: 1

SEX: Male

DAY ON TEST: 729

DOSE: Control

DISP: Terminal Sacrifice

HISTO: 56833

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                          |                            |                           |                             |
|--------------------------|----------------------------|---------------------------|-----------------------------|
| * Adrenal Medulla        | * Bone                     | * Bone Marrow             | * Brain                     |
| * Epididymis             | * Esophagus                | * Eye                     | * Heart                     |
| * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum | * Intestine Small, Duodenum |
| * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      | * Larynx                    |
| * Lung                   | * Lymph Node, Bronchial    | * Lymph Node, Mandibular  | * Lymph Node, Mediastinal   |
| * Lymph Node, Mesenteric | * Nose                     | * Pancreas                | * Preputial Gland           |
| * Prostate               | * Salivary Glands          | * Seminal Vesicle         | * Skin                      |
| * Spleen                 | * Stomach, Forestomach     | * Stomach, Glandular      | * Testes                    |
| * Thymus                 | * Trachea                  | * Urinary Bladder         |                             |

MISSING

- \* Mammary Gland

OBSERVATIONS

- |                     |               |                  |         |
|---------------------|---------------|------------------|---------|
| * Adrenal Cortex    |               | Hypertrophy      | Minimal |
| * Harderian Gland   |               | Hyperplasia      | Mild    |
| * Kidney            |               | Nephropathy      | Mild    |
| * Liver             |               | Basophilic Focus |         |
|                     |               | Clear Cell Focus |         |
| * Parathyroid Gland |               | Hyperplasia      | Minimal |
| * Pituitary Gland   | Pars Distalis | Hyperplasia      | Mild    |
| * Thyroid Gland     | C Cell        | Hyperplasia      | Mild    |

\* PROTOCOL REQUIRED TISSUE



TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 15

TRT#: 1

SEX: Male

DAY ON TEST: 730

DOSE: Control

DISP: Terminal Sacrifice

HISTO: 56834

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Medulla
- \* Epididymis
- \* Heart
- \* Intestine Small, Duodenum
- \* Larynx
- \* Lymph Node, Mediastinal
- \* Preputial Gland
- \* Spleen
- \* Trachea
- \* Bone
- \* Esophagus
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Lung
- \* Lymph Node, Mesenteric
- \* Prostate
- \* Stomach, Forestomach
- \* Urinary Bladder
- \* Bone Marrow
- \* Eye
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Lymph Node, Bronchial
- \* Pancreas
- \* Salivary Glands
- \* Stomach, Glandular
- \* Brain
- \* Harderian Gland
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Lymph Node, Mandibular
- \* Parathyroid Gland
- \* Seminal Vesicle
- \* Thymus

MISSING

- \* Mammary Gland

OBSERVATIONS

- \* Adrenal Cortex Hyperplasia Mild
- \* Kidney Hypertrophy Mild
- \* Liver Nephropathy Mild
- Mesentery Clear Cell Focus  
  - [ Necrosis TGLs = 1,2-16+17 ] Fat Necrosis Mild
- \* Nose Accumulation, Hyaline Droplet Minimal
- \* Pituitary Gland Hyperplasia Mild
- \* Skin Inflammation Chronic Active, Marked  
  - [ Inflammation TGLs = 3-15 ]
- \* Testes Atrophy Marked
- \* Thyroid Gland C Cell Adenoma Multiple

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 16

TRT#: 1

SEX: Male

DAY ON TEST: 730

DOSE: Control

DISP: Terminal Sacrifice

HISTO: 56835

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                            |                           |                             |                          |
|----------------------------|---------------------------|-----------------------------|--------------------------|
| * Adrenal Medulla          | * Bone                    | * Bone Marrow               | * Brain                  |
| * Epididymis               | * Esophagus               | * Eye                       | * Intestine Large, Cecum |
| * Intestine Large, Colon   | * Intestine Large, Rectum | * Intestine Small, Duodenum | * Intestine Small, Ileum |
| * Intestine Small, Jejunum | * Islets, Pancreatic      | * Larynx                    | * Lung                   |
| * Lymph Node, Bronchial    | * Lymph Node, Mandibular  | * Lymph Node, Mediastinal   | * Lymph Node, Mesenteric |
| * Mammary Gland            | * Nose                    | * Parathyroid Gland         | * Pituitary Gland        |
| * Preputial Gland          | * Prostate                | * Salivary Glands           | * Seminal Vesicle        |
| * Spleen                   | * Stomach, Forestomach    | * Stomach, Glandular        | * Testes                 |
| * Thymus                   | * Trachea                 | * Urinary Bladder           |                          |

OBSERVATIONS

- |                   |                              |                  |                        |
|-------------------|------------------------------|------------------|------------------------|
| * Adrenal Cortex  |                              | Hyperplasia      | Mild                   |
|                   |                              | Hypertrophy      | Mild                   |
| * Harderian Gland |                              | Hyperplasia      | Mild                   |
| * Heart           |                              | Cardiomyopathy   | Minimal                |
| * Kidney          |                              | Nephropathy      | Marked                 |
|                   | [ Nephropathy TGLs = 2-7 ]   |                  |                        |
| * Liver           |                              | Clear Cell Focus |                        |
| * Pancreas        |                              | Basophilic Focus |                        |
| * Skin            |                              | Inflammation     | Chronic Active, Marked |
|                   | [ Inflammation TGLs = 1-15 ] |                  |                        |
| * Thyroid Gland   | C Cell                       | Adenoma          |                        |
|                   | C Cell                       | Hyperplasia      | Mild                   |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 17

TRT#: 1

SEX: Male

DAY ON TEST: 729

DOSE: Control

DISP: Terminal Sacrifice

HISTO: 56836

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                           |                             |                          |                            |
|---------------------------|-----------------------------|--------------------------|----------------------------|
| * Adrenal Medulla         | * Bone                      | * Bone Marrow            | * Brain                    |
| * Epididymis              | * Esophagus                 | * Intestine Large, Cecum | * Intestine Large, Colon   |
| * Intestine Large, Rectum | * Intestine Small, Duodenum | * Intestine Small, Ileum | * Intestine Small, Jejunum |
| * Islets, Pancreatic      | * Larynx                    | * Lung                   | * Lymph Node, Bronchial    |
| * Lymph Node, Mandibular  | * Lymph Node, Mediastinal   | * Lymph Node, Mesenteric | * Pancreas                 |
| * Preputial Gland         | * Prostate                  | * Salivary Glands        | * Seminal Vesicle          |
| * Skin                    | * Spleen                    | * Stomach, Forestomach   | * Stomach, Glandular       |
| * Testes                  | * Thymus                    | * Trachea                | * Urinary Bladder          |

MISSING

- |                 |                     |
|-----------------|---------------------|
| * Mammary Gland | * Parathyroid Gland |
|-----------------|---------------------|

OBSERVATIONS

- |                   |                                   |                               |         |
|-------------------|-----------------------------------|-------------------------------|---------|
| * Adrenal Cortex  |                                   | Hypertrophy                   | Mild    |
| * Eye             |                                   | Cataract                      | Mild    |
| * Harderian Gland |                                   | Hyperplasia                   | Mild    |
| * Heart           |                                   | Schwannoma Benign             |         |
|                   | [ Schwannoma Benign TGLs = 1-15 ] |                               |         |
| * Kidney          |                                   | Nephropathy                   | Mild    |
| * Liver           |                                   | Basophilic Focus              |         |
|                   |                                   | Clear Cell Focus              |         |
| * Nose            |                                   | Accumulation, Hyaline Droplet | Mild    |
| * Pituitary Gland | Pars Distalis                     | Adenoma                       |         |
| * Thyroid Gland   | C Cell                            | Adenoma                       |         |
|                   | Follicular Cel                    | Hyperplasia                   | Minimal |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 18

TRT#: 1

SEX: Male

DAY ON TEST: 729

DOSE: Control

DISP: Terminal Sacrifice

HISTO: 56837

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Bone
- \* Esophagus
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Lymph Node, Bronchial
- \* Nose
- \* Salivary Glands
- \* Thymus
- \* Bone Marrow
- \* Eye
- \* Intestine Small, Duodenum
- \* Kidney
- \* Lymph Node, Mandibular
- \* Pancreas
- \* Seminal Vesicle
- \* Trachea
- \* Brain
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Larynx
- \* Lymph Node, Mediastinal
- \* Parathyroid Gland
- \* Spleen
- \* Urinary Bladder
- \* Epididymis
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Lung
- \* Lymph Node, Mesenteric
- \* Preputial Gland
- \* Stomach, Glandular

MISSING

- \* Mammary Gland

OBSERVATIONS

- |                              |               |                         |                        |
|------------------------------|---------------|-------------------------|------------------------|
| * Adrenal Cortex             |               | Hyperplasia             | Mild                   |
| * Adrenal Medulla            |               | Pheochromocytoma Benign |                        |
| * Harderian Gland            |               | Hyperplasia             | Minimal                |
| * Heart                      |               | Cardiomyopathy          | Minimal                |
| * Liver                      |               | Clear Cell Focus        |                        |
| * Pituitary Gland            | Pars Distalis | Adenoma                 |                        |
| [ Adenoma TGLs = 2-10 ]      |               |                         |                        |
| * Prostate                   |               | Hyperplasia             | Minimal                |
| * Skin                       |               | Inflammation            | Chronic Active, Marked |
| [ Inflammation TGLs = 1-15 ] |               |                         |                        |
| * Stomach, Forestomach       |               | Leiomyoma               |                        |
| [ Leiomyoma TGLs = 3-10. ]   |               |                         |                        |
| * Testes                     |               | Edema                   | Mild                   |
| * Thyroid Gland              | C Cell        | Hyperplasia             | Minimal                |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 19

TRT#: 1

SEX: Male

DAY ON TEST: 704

DOSE: Control

DISP: Moribund Sacrifice

HISTO: 56838

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Medulla
- \* Epididymis
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Lymph Node, Mediastinal
- \* Parathyroid Gland
- \* Seminal Vesicle
- \* Stomach, Glandular
- \* Trachea
- \* Bone
- \* Esophagus
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Lymph Node, Mesenteric
- Peripheral Nerve
- Spinal Cord
- \* Testes
- \* Urinary Bladder
- \* Bone Marrow
- \* Eye
- \* Intestine Small, Duodenum
- \* Larynx
- \* Nose
- \* Prostate
- \* Spleen
- \* Thymus
- \* Brain
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Lymph Node, Bronchial
- \* Pancreas
- \* Salivary Glands
- \* Stomach, Forestomach
- \* Thyroid Gland

MISSING

- \* Lymph Node, Mandibular
- \* Mammary Gland

OBSERVATIONS

- \* Adrenal Cortex
- \* Harderian Gland
- \* Heart
- \* Kidney
- \* Liver
- \* Lung
- Mesentery
- [ Necrosis TGLs = 2-15 ]
- \* Pituitary Gland
- \* Preputial Gland
- \* Skin
- [ Inflammation TGLs = 1-17 ]
- Alveolar Epith
- Fat
- Degeneration
- Hyperplasia
- Cardiomyopathy
- Nephropathy
- Clear Cell Focus
- Hyperplasia
- Necrosis
- Cyst
- Inflammation
- Inflammation
- Cystic, Minimal
- Mild
- Minimal
- Minimal
- Minimal
- Mild
- Mild
- Chronic Active, Mild
- Chronic Active, Marked

PRIMARY CAUSE OF DEATH - Skin Inflammation

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 20

TRT#: 1

SEX: Male

DAY ON TEST: 729

DOSE: Control

DISP: Terminal Sacrifice

HISTO: 56839

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Medulla
- \* Epididymis
- \* Heart
- \* Intestine Small, Duodenum
- \* Larynx
- \* Lymph Node, Mesenteric
- \* Prostate
- \* Stomach, Forestomach
- \* Urinary Bladder
- \* Bone
- \* Esophagus
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Lung
- \* Pancreas
- \* Salivary Glands
- \* Stomach, Glandular
- \* Bone Marrow
- \* Eye
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Lymph Node, Mandibular
- \* Pituitary Gland
- \* Seminal Vesicle
- \* Thymus
- \* Brain
- \* Harderian Gland
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Lymph Node, Mediastinal
- \* Preputial Gland
- \* Spleen
- \* Trachea

MISSING

- \* Lymph Node, Bronchial
- \* Mammary Gland
- \* Parathyroid Gland

OBSERVATIONS

- \* Adrenal Cortex
- \* Kidney
- \* Liver
- [ Angiectasis TGLs = 3,4-6+15 ]
- Lymph Node
- [ Hemorrhage TGLs = 7-16 ]
- \* Nose
- \* Skin
- [ Inflammation TGLs = 1-16 ]
- \* Testes
- [ Edema TGLs = 5-9 ]
- \* Thyroid Gland
- Lumbar
- C Cell
- Hyperplasia
- Nephropathy
- Angiectasis
- Clear Cell Focus
- Hemorrhage
- Accumulation, Hyaline Droplet
- Inflammation
- Edema
- Hyperplasia
- Mild
- Mild
- Mild
- Mild
- Mild
- Minimal
- Chronic Active, Marked
- Moderate
- Minimal

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 21

TRT#: 1

SEX: Male

DAY ON TEST: 730

DOSE: Control

DISP: Terminal Sacrifice

HISTO: 56840

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                          |                            |                           |                             |
|--------------------------|----------------------------|---------------------------|-----------------------------|
| * Adrenal Medulla        | * Bone                     | * Bone Marrow             | * Brain                     |
| * Epididymis             | * Esophagus                | * Eye                     | * Heart                     |
| * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum | * Intestine Small, Duodenum |
| * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      | * Larynx                    |
| * Lung                   | * Lymph Node, Bronchial    | * Lymph Node, Mandibular  | * Lymph Node, Mediastinal   |
| * Lymph Node, Mesenteric | * Nose                     | * Pancreas                | * Parathyroid Gland         |
| * Preputial Gland        | * Prostate                 | * Salivary Glands         | * Seminal Vesicle           |
| * Spleen                 | * Stomach, Forestomach     | * Stomach, Glandular      | * Testes                    |
| * Thymus                 | * Trachea                  | * Urinary Bladder         |                             |

MISSING

- \* Mammary Gland

OBSERVATIONS

- |                   |                              |              |                        |
|-------------------|------------------------------|--------------|------------------------|
| * Adrenal Cortex  |                              | Hyperplasia  | Mild                   |
|                   |                              | Hypertrophy  | Mild                   |
| * Harderian Gland |                              | Hyperplasia  | Mild                   |
| * Kidney          |                              | Nephropathy  | Mild                   |
| * Liver           | Bile Duct                    | Dilatation   | Moderate               |
|                   | [ Dilatation TGLs = 2-15 ]   |              |                        |
| * Pituitary Gland | Pars Distalis                | Hyperplasia  | Minimal                |
| * Skin            |                              | Inflammation | Chronic Active, Marked |
|                   | [ Inflammation TGLs = 1-16 ] |              |                        |
| * Thyroid Gland   | C Cell                       | Hyperplasia  | Minimal                |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 22

TRT#: 1

SEX: Male

DAY ON TEST: 729

DOSE: Control

DISP: Terminal Sacrifice

HISTO: 56841

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                           |                            |                           |                             |
|---------------------------|----------------------------|---------------------------|-----------------------------|
| * Adrenal Medulla         | * Bone                     | * Bone Marrow             | * Brain                     |
| * Epididymis              | * Esophagus                | * Eye                     | * Harderian Gland           |
| * Intestine Large, Cecum  | * Intestine Large, Colon   | * Intestine Large, Rectum | * Intestine Small, Duodenum |
| * Intestine Small, Ileum  | * Intestine Small, Jejunum | * Islets, Pancreatic      | * Larynx                    |
| * Liver                   | * Lung                     | * Lymph Node, Bronchial   | * Lymph Node, Mandibular    |
| * Lymph Node, Mediastinal | * Nose                     | * Pancreas                | * Parathyroid Gland         |
| * Preputial Gland         | * Prostate                 | * Salivary Glands         | * Seminal Vesicle           |
| * Spleen                  | * Stomach, Forestomach     | * Stomach, Glandular      | * Testes                    |
| * Thymus                  | * Trachea                  | * Urinary Bladder         |                             |

MISSING

- \* Mammary Gland

OBSERVATIONS

- |                                       |               |                       |                        |
|---------------------------------------|---------------|-----------------------|------------------------|
| * Adrenal Cortex                      |               | Hyperplasia           | Mild                   |
| * Heart                               |               | Cardiomyopathy        | Minimal                |
| * Kidney                              |               | Nephropathy           | Mild                   |
| Lymph Node                            | Lumbar        | Ectasia               | Mild                   |
|                                       | Axillary      | Infiltration Cellular | Plasma Cell, Minimal   |
| [ Ectasia TGLs = 4-17 ]               |               |                       |                        |
| [ Infiltration Cellular TGLs = 5-18 ] |               |                       |                        |
| * Lymph Node, Mesenteric              |               | Ectasia               | Minimal                |
| [ Ectasia TGLs = 6-19 ]               |               |                       |                        |
| Mesentery                             | Fat           | Necrosis              | Mild                   |
| [ Necrosis TGLs = 3-16 ]              |               |                       |                        |
| * Pituitary Gland                     | Pars Distalis | Adenoma               |                        |
| * Skin                                |               | Inflammation          | Chronic Active, Marked |
| [ Inflammation TGLs = 1,2-15 ]        |               |                       |                        |
| * Thyroid Gland                       | C Cell        | Hyperplasia           | Minimal                |

\* PROTOCOL REQUIRED TISSUE



TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 23

TRT#: 1

SEX: Male

DAY ON TEST: 729

DOSE: Control

DISP: Terminal Sacrifice

HISTO: 56842

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                            |                           |                             |                           |
|----------------------------|---------------------------|-----------------------------|---------------------------|
| * Adrenal Medulla          | * Bone                    | * Bone Marrow               | * Brain                   |
| * Epididymis               | * Esophagus               | * Eye                       | * Intestine Large, Cecum  |
| * Intestine Large, Colon   | * Intestine Large, Rectum | * Intestine Small, Duodenum | * Intestine Small, Ileum  |
| * Intestine Small, Jejunum | * Islets, Pancreatic      | * Larynx                    | * Liver                   |
| * Lung                     | * Lymph Node, Bronchial   | * Lymph Node, Mandibular    | * Lymph Node, Mediastinal |
| * Lymph Node, Mesenteric   | * Pancreas                | * Preputial Gland           | * Prostate                |
| * Salivary Glands          | * Seminal Vesicle         | * Skin                      | * Spleen                  |
| * Testes                   | * Trachea                 | * Urinary Bladder           |                           |

MISSING

- |                 |                     |          |
|-----------------|---------------------|----------|
| * Mammary Gland | * Parathyroid Gland | * Thymus |
|-----------------|---------------------|----------|

OBSERVATIONS

- |                         |               |                               |         |
|-------------------------|---------------|-------------------------------|---------|
| * Adrenal Cortex        |               | Hyperplasia                   | Mild    |
|                         |               | Hypertrophy                   | Mild    |
| * Harderian Gland       |               | Hyperplasia                   | Mild    |
| * Heart                 |               | Cardiomyopathy                | Minimal |
| * Kidney                |               | Nephropathy                   | Mild    |
| * Nose                  |               | Accumulation, Hyaline Droplet | Minimal |
| * Pituitary Gland       | Pars Distalis | Hyperplasia                   | Mild    |
| * Stomach, Forestomach  |               | Sarcoma                       |         |
| [ Sarcoma TGLs = 1-15 ] |               |                               |         |
| * Stomach, Glandular    |               | Sarcoma                       |         |
| [ Sarcoma TGLs = 1-15 ] |               |                               |         |
| * Thyroid Gland         | C Cell        | Hyperplasia                   | Minimal |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 24

TRT#: 1

SEX: Male

DAY ON TEST: 729

DOSE: Control

DISP: Terminal Sacrifice

HISTO: 56843

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                          |                            |                           |                             |
|--------------------------|----------------------------|---------------------------|-----------------------------|
| * Adrenal Medulla        | * Bone                     | * Bone Marrow             | * Brain                     |
| * Epididymis             | * Esophagus                | * Eye                     | * Harderian Gland           |
| * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum | * Intestine Small, Duodenum |
| * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      | * Larynx                    |
| * Lymph Node, Bronchial  | * Lymph Node, Mandibular   | * Lymph Node, Mediastinal | * Nose                      |
| * Pancreas               | * Preputial Gland          | * Prostate                | * Salivary Glands           |
| * Seminal Vesicle        | * Spleen                   | * Stomach, Forestomach    | * Stomach, Glandular        |
| * Testes                 | * Thymus                   | * Trachea                 | * Urinary Bladder           |

MISSING

- |                 |                     |
|-----------------|---------------------|
| * Mammary Gland | * Parathyroid Gland |
|-----------------|---------------------|

OBSERVATIONS

- |                          |                              |                  |                        |
|--------------------------|------------------------------|------------------|------------------------|
| * Adrenal Cortex         |                              | Hyperplasia      | Mild                   |
|                          |                              | Hypertrophy      | Mild                   |
| * Heart                  |                              | Cardiomyopathy   | Mild                   |
| * Kidney                 |                              | Nephropathy      | Minimal                |
| * Liver                  |                              | Basophilic Focus |                        |
|                          |                              | Clear Cell Focus |                        |
| * Lung                   | Alveolar Epith               | Hyperplasia      | Mild                   |
| * Lymph Node, Mesenteric |                              | Sarcoma          |                        |
| * Pituitary Gland        | Pars Distalis                | Hyperplasia      | Moderate               |
| * Skin                   |                              | Inflammation     | Chronic Active, Marked |
|                          | [ Inflammation TGLs = 1-15 ] |                  |                        |
| * Thyroid Gland          | C Cell                       | Hyperplasia      | Minimal                |

\* PROTOCOL REQUIRED TISSUE



TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 26

TRT#: 1

SEX: Male

DAY ON TEST: 627

DOSE: Control

DISP: Moribund Sacrifice

HISTO: 56845

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                             |                          |                            |                           |
|-----------------------------|--------------------------|----------------------------|---------------------------|
| * Adrenal Medulla           | * Bone                   | * Bone Marrow              | * Brain                   |
| * Epididymis                | * Esophagus              | * Eye                      | * Harderian Gland         |
| * Heart                     | * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum |
| * Intestine Small, Duodenum | * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      |
| * Larynx                    | * Lymph Node, Bronchial  | * Lymph Node, Mandibular   | * Lymph Node, Mediastinal |
| * Lymph Node, Mesenteric    | * Pancreas               | * Parathyroid Gland        | * Prostate                |
| * Salivary Glands           | * Seminal Vesicle        | * Skin                     | * Spleen                  |
| * Stomach, Forestomach      | * Stomach, Glandular     | * Testes                   | * Thymus                  |
| * Thyroid Gland             | * Trachea                | * Urinary Bladder          |                           |

OBSERVATIONS

- |                   |                              |                               |                         |
|-------------------|------------------------------|-------------------------------|-------------------------|
| * Adrenal Cortex  |                              | Hypertrophy                   | Mild                    |
| * Kidney          |                              | Nephropathy                   | Minimal                 |
| * Liver           |                              | Basophilic Focus              |                         |
|                   |                              | Clear Cell Focus              |                         |
| * Lung            |                              | Foreign Body                  |                         |
| * Mammary Gland   |                              | Galactoceles                  | Minimal                 |
|                   | [ Galactoceles TGLs = 1-15 ] |                               |                         |
| * Nose            |                              | Accumulation, Hyaline Droplet | Mild                    |
| * Pituitary Gland | Pars Distalis                | Adenoma                       |                         |
|                   | [ Adenoma TGLs = 2-10 ]      |                               |                         |
| * Preputial Gland |                              | Inflammation                  | Chronic Active, Minimal |

PRIMARY CAUSE OF DEATH - Pituitary Gland Pars Distalis Adenoma

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 27

TRT#: 1

SEX: Male

DAY ON TEST: 599

DOSE: Control

DISP: Moribund Sacrifice

HISTO: 56846

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Medulla
- \* Epididymis
- \* Heart
- \* Intestine Small, Duodenum
- \* Larynx
- \* Nose
- \* Preputial Gland
- Spinal Cord
- \* Testes
- \* Bone
- \* Esophagus
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Lymph Node, Bronchial
- \* Pancreas
- \* Prostate
- \* Spleen
- \* Thymus
- \* Bone Marrow
- \* Eye
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Lymph Node, Mediastinal
- \* Parathyroid Gland
- \* Salivary Glands
- \* Stomach, Forestomach
- \* Trachea
- \* Brain
- \* Harderian Gland
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Lymph Node, Mesenteric
- Peripheral Nerve
- \* Seminal Vesicle
- \* Stomach, Glandular
- \* Urinary Bladder

MISSING

- \* Lymph Node, Mandibular
- \* Mammary Gland

OBSERVATIONS

- \* Adrenal Cortex
  - Adenoma
  - Hyperplasia
- \* Kidney
  - Nephropathy
  - Clear Cell Focus
- \* Liver
  - Hyperplasia
  - Inflammation
- \* Lung
  - Alveolar Epith
  - [ Inflammation TGLs = 4-4+5 ]
  - Lymph Node
    - Lumbar
    - [ Infiltration Cellular TGLs = 3-16 ]
  - Infiltration Cellular
- \* Pituitary Gland
  - Pars Distalis
  - Hyperplasia
- \* Skin
  - [ Inflammation TGLs = 2-15 ]
  - Inflammation
- \* Thyroid Gland
  - C Cell
  - Hyperplasia

PRIMARY CAUSE OF DEATH - Skin Inflammation

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 28

TRT#: 1

SEX: Male

DAY ON TEST: 597

DOSE: Control

DISP: Moribund Sacrifice

HISTO: 56847

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                             |                          |                            |                           |
|-----------------------------|--------------------------|----------------------------|---------------------------|
| * Adrenal Cortex            | * Adrenal Medulla        | * Bone                     | * Bone Marrow             |
| * Brain                     | * Epididymis             | * Esophagus                | * Eye                     |
| * Harderian Gland           | * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum |
| * Intestine Small, Duodenum | * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      |
| * Larynx                    | * Lung                   | * Lymph Node, Bronchial    | * Lymph Node, Mandibular  |
| * Mammary Gland             | * Nose                   | * Pancreas                 | * Parathyroid Gland       |
| Peripheral Nerve            | * Preputial Gland        | * Salivary Glands          | * Seminal Vesicle         |
| Spinal Cord                 | * Stomach, Forestomach   | * Stomach, Glandular       | * Testes                  |
| * Thymus                    | * Thyroid Gland          | * Trachea                  | * Urinary Bladder         |

MISSING

- \* Lymph Node, Mediastinal

OBSERVATIONS

- |  |                                  |                          |
|--|----------------------------------|--------------------------|
| * Heart  | Cardiomyopathy                   | Minimal                  |
| * Kidney   | Nephropathy                      | Minimal                  |
| * Liver  | Basophilic Focus                 |                          |
| * Lymph Node, Mesenteric                         | Hemangiosarcoma                  |                          |
| [ Hemangiosarcoma TGLs = 4-16 ]                  |                                  |                          |
| * Pituitary Gland                                | Hyperplasia                      | Mild                     |
| * Prostate                                       | Inflammation                     | Chronic Active, Moderate |
| [ Inflammation TGLs = 3-17 ]                     |                                  |                          |
| * Skin   | Inflammation                     | Chronic Active, Moderate |
| [ Inflammation TGLs = 5-18 ]                     |                                  |                          |
| * Spleen   | Hematopoietic Cell Proliferation | Moderate                 |
| [ Hematopoietic Cell Proliferation TGLs = 2-15 ] |                                  |                          |

PRIMARY CAUSE OF DEATH - Lymph Node, Mesenteric Hemangiosarcoma

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 29

TRT#: 1

SEX: Male

DAY ON TEST: 730

DOSE: Control

DISP: Terminal Sacrifice

HISTO: 56848

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                          |                            |                           |                             |
|--------------------------|----------------------------|---------------------------|-----------------------------|
| * Adrenal Medulla        | * Bone                     | * Bone Marrow             | * Brain                     |
| * Epididymis             | * Esophagus                | * Eye                     | * Heart                     |
| * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum | * Intestine Small, Duodenum |
| * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      | * Larynx                    |
| * Lung                   | * Lymph Node, Bronchial    | * Lymph Node, Mandibular  | * Lymph Node, Mediastinal   |
| * Lymph Node, Mesenteric | * Parathyroid Gland        | * Preputial Gland         | * Salivary Glands           |
| * Seminal Vesicle        | * Spleen                   | * Stomach, Forestomach    | * Stomach, Glandular        |
| * Thymus                 | * Trachea                  | * Urinary Bladder         |                             |

MISSING

- \* Mammary Gland

OBSERVATIONS

- |                   |  |  |                        |
|-------------------|--|--|------------------------|
| * Adrenal Cortex  |  | Accessory Adrenal Cortical Nodule<br>Hyperplasia | Moderate<br>Mild       |
|                   | [ Accessory Adrenal Cortical Nodule TGLs = 3-7 ] |  |                        |
| * Harderian Gland |  | Hyperplasia                                      | Mild                   |
| * Kidney          |  | Nephropathy                                      | Minimal                |
| * Liver           |  | Clear Cell Focus                                 |                        |
| Mesentery         | Fat  | Necrosis   | Mild                   |
|                   | [ Necrosis TGLs = 2-16 ]                         |  |                        |
| * Nose            |  | Accumulation, Hyaline Droplet                    | Minimal                |
|                   | Glands, Olfactory Epi                            | Hyperplasia                                      | Minimal                |
| * Pancreas        |  | Atrophy  | Minimal                |
| * Pituitary Gland | Pars Distalis                                    | Adenoma  |                        |
| * Prostate        |  | Hyperplasia                                      | Moderate               |
| * Skin            |  | Inflammation                                     | Chronic Active, Marked |
|                   | [ Inflammation TGLs = 1-15 ]                     |  |                        |
| * Testes          |  | Atrophy  | Marked                 |
|                   |  | Edema  | Moderate               |
| * Thyroid Gland   | C Cell   | Hyperplasia                                      | Minimal                |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 30

TRT#: 1

SEX: Male

DAY ON TEST: 729

DOSE: Control

DISP: Terminal Sacrifice

HISTO: 56849

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Medulla
- \* Epididymis
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Lymph Node, Mandibular
- \* Nose
- \* Salivary Glands
- \* Stomach, Forestomach
- \* Urinary Bladder
- \* Bone
- \* Esophagus
- \* Intestine Small, Duodenum
- \* Larynx
- \* Lymph Node, Mediastinal
- \* Pancreas
- \* Seminal Vesicle
- \* Stomach, Glandular
- \* Bone Marrow
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Lung
- \* Lymph Node, Mesenteric
- \* Preputial Gland
- \* Skin
- \* Thymus
- \* Brain
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Lymph Node, Bronchial
- \* Mammary Gland
- \* Prostate
- \* Spleen
- \* Trachea

MISSING

- \* Parathyroid Gland

OBSERVATIONS

- \* Adrenal Cortex [ Carcinoma TGLs = 1-15 ] Bilateral Carcinoma
- \* Eye Retina Atrophy Mild
- \* Harderian Gland Hyperplasia Mild
- \* Heart Cardiomyopathy Minimal
- \* Kidney Nephropathy Mild
- \* Liver Clear Cell Focus
- \* Pituitary Gland Pars Distalis Hyperplasia Mild
- \* Testes Interstit Cell Adenoma
- \* Thyroid Gland C Cell Atrophy Mild
- Hyperplasia Minimal



TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 31

TRT#: 1

SEX: Male

DAY ON TEST: 730

DOSE: Control

DISP: Terminal Sacrifice

HISTO: 56850

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                          |                            |                           |                             |
|--------------------------|----------------------------|---------------------------|-----------------------------|
| * Adrenal Cortex         | * Adrenal Medulla          | * Bone                    | * Bone Marrow               |
| * Brain                  | * Epididymis               | * Esophagus               | * Eye                       |
| * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum | * Intestine Small, Duodenum |
| * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      | * Larynx                    |
| * Lymph Node, Bronchial  | * Lymph Node, Mandibular   | * Lymph Node, Mediastinal | * Lymph Node, Mesenteric    |
| * Nose                   | * Pancreas                 | * Parathyroid Gland       | * Preputial Gland           |
| * Prostate               | * Salivary Glands          | * Seminal Vesicle         | * Spleen                    |
| * Stomach, Glandular     | * Thymus                   | * Trachea                 | * Urinary Bladder           |

MISSING

- |                 |                   |
|-----------------|-------------------|
| * Mammary Gland | * Pituitary Gland |
|-----------------|-------------------|

OBSERVATIONS

- |                        |  |                       |                          |
|------------------------|--|-----------------------|--------------------------|
| * Harderian Gland      |  | Hyperplasia           | Minimal                  |
| * Heart                |  | Cardiomyopathy        | Minimal                  |
| * Kidney               |  | Nephropathy           | Minimal                  |
| * Liver                |  | Clear Cell Focus      |                          |
| * Lung                 | Alveolus                               | Infiltration Cellular | Histiocyte, Mild         |
|                        | [ Infiltration Cellular TGLs = 4-4+5 ] |                       |                          |
|                        | Lymph Node                             | Ectasia               | Moderate                 |
|                        |  | Inflammation          | Chronic Active, Marked   |
|                        | [ Ectasia TGLs = 2-17 ]                |                       |                          |
|                        | [ Inflammation TGLs = 3-18 ]           |                       |                          |
| * Skin                 |  | Inflammation          | Chronic Active, Moderate |
|                        | [ Inflammation TGLs = 1-16 ]           |                       |                          |
| * Stomach, Forestomach |  | Inflammation          | Chronic Active, Marked   |
|                        | [ Inflammation TGLs = 5-15 ]           |                       |                          |
| * Testes               |  | Atrophy               | Moderate                 |
|                        |  | Edema                 | Mild                     |
| * Thyroid Gland        | C Cell                                 | Hyperplasia           | Mild                     |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 32

TRT#: 1

SEX: Male

DAY ON TEST: 619

DOSE: Control

DISP: Moribund Sacrifice

HISTO: 56851

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Cortex
- \* Brain
- \* Heart
- \* Intestine Small, Duodenum
- \* Kidney
- \* Lymph Node, Mandibular
- \* Pancreas
- \* Salivary Glands
- \* Stomach, Glandular
- \* Adrenal Medulla
- \* Esophagus
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Larynx
- \* Lymph Node, Mediastinal
- \* Parathyroid Gland
- \* Seminal Vesicle
- \* Thymus
- \* Bone
- \* Eye
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Liver
- \* Lymph Node, Mesenteric
- \* Preputial Gland
- \* Spleen
- \* Trachea
- \* Bone Marrow
- \* Harderian Gland
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Lymph Node, Bronchial
- \* Nose
- \* Prostate
- \* Stomach, Forestomach
- \* Urinary Bladder

MISSING

- \* Mammary Gland

OBSERVATIONS

- \* Epididymis [ Granuloma Sperm TGLs = 8-9 ] Granuloma Sperm Moderate
- \* Lung [ Alveolar/Bronchiolar Carcinoma TGLs = 3-15 ] Alveolar Infiltration Cellular Alveolar/Bronchiolar Carcinoma Histiocyte, Minimal
- [ Infiltration Cellular TGLs = 2,4,5-5+16+15 ]
- Lymph Node [ Ectasia TGLs = 9-17 ] Lumbar Ectasia Marked
- \* Pituitary Gland [ Adenoma TGLs = 6-10 ] Pars Distalis Adenoma
- \* Skin [ Inflammation TGLs = 1-18 ] Inflammation Chronic Active, Moderate
- \* Testes [ Atrophy TGLs = 7-9 ] Atrophy Moderate
- \* Thyroid Gland C Cell Hyperplasia Minimal

PRIMARY CAUSE OF DEATH - Pituitary Gland Pars Distalis Adenoma

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 33

TRT#: 1

SEX: Male

DAY ON TEST: 731

DOSE: Control

DISP: Terminal Sacrifice

HISTO: 56852

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                            |                           |                             |                          |
|----------------------------|---------------------------|-----------------------------|--------------------------|
| * Bone                     | * Bone Marrow             | * Brain                     | * Epididymis             |
| * Esophagus                | * Eye                     | * Harderian Gland           | * Intestine Large, Cecum |
| * Intestine Large, Colon   | * Intestine Large, Rectum | * Intestine Small, Duodenum | * Intestine Small, Ileum |
| * Intestine Small, Jejunum | * Islets, Pancreatic      | * Larynx                    | * Lung                   |
| * Lymph Node, Bronchial    | * Lymph Node, Mandibular  | * Lymph Node, Mediastinal   | * Lymph Node, Mesenteric |
| * Pancreas                 | * Parathyroid Gland       | * Preputial Gland           | * Prostate               |
| * Salivary Glands          | * Seminal Vesicle         | * Skin                      | * Spleen                 |
| * Stomach, Forestomach     | * Stomach, Glandular      | * Testes                    | * Thyroid Gland          |
| * Trachea                  | * Urinary Bladder         |                             |                          |

MISSING

- \* Mammary Gland

OBSERVATIONS

- |                   |               |                               |         |
|-------------------|---------------|-------------------------------|---------|
| * Adrenal Cortex  |               | Hyperplasia                   | Mild    |
|                   |               | Hypertrophy                   | Mild    |
| * Adrenal Medulla |               | Hyperplasia                   | Mild    |
| * Heart           |               | Cardiomyopathy                | Minimal |
| * Kidney          |               | Nephropathy                   | Mild    |
| * Liver           |               | Basophilic Focus              |         |
|                   |               | Clear Cell Focus              |         |
| * Nose            |               | Accumulation, Hyaline Droplet | Mild    |
| * Pituitary Gland | Pars Distalis | Hyperplasia                   | Mild    |
| * Thymus          |               | Lymphoma Malignant            |         |

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 34

TRT#: 1

SEX: Male

DAY ON TEST: 729

DOSE: Control

DISP: Terminal Sacrifice

HISTO: 56853

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                          |                            |                           |                             |
|--------------------------|----------------------------|---------------------------|-----------------------------|
| * Adrenal Medulla        | * Bone                     | * Bone Marrow             | * Brain                     |
| * Epididymis             | * Esophagus                | * Eye                     | * Harderian Gland           |
| * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum | * Intestine Small, Duodenum |
| * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      | * Larynx                    |
| * Lung                   | * Lymph Node, Bronchial    | * Lymph Node, Mandibular  | * Lymph Node, Mediastinal   |
| * Lymph Node, Mesenteric | * Nose                     | * Pancreas                | * Parathyroid Gland         |
| * Pituitary Gland        | * Preputial Gland          | * Prostate                | * Salivary Glands           |
| * Seminal Vesicle        | * Spleen                   | * Stomach, Forestomach    | * Stomach, Glandular        |
| * Testes                 | * Thymus                   | * Trachea                 | * Urinary Bladder           |

MISSING

- \* Mammary Gland

OBSERVATIONS

- |                  |                                 |                  |                        |
|------------------|---------------------------------|------------------|------------------------|
| * Adrenal Cortex |                                 | Hyperplasia      | Mild                   |
|                  |                                 | Hypertrophy      | Mild                   |
| * Heart          |                                 | Cardiomyopathy   | Minimal                |
| * Kidney         |                                 | Cyst             | Mild                   |
|                  |                                 | Nephropathy      | Mild                   |
|                  | [ Cyst TGLs = 1-15 ]            |                  |                        |
| * Liver          |                                 | Basophilic Focus |                        |
|                  |                                 | Clear Cell Focus |                        |
|                  |                                 | Mixed Cell Focus |                        |
|                  | [ Mixed Cell Focus TGLs = 4-6 ] |                  |                        |
| * Skin           |                                 | Inflammation     | Chronic Active, Marked |
|                  | [ Inflammation TGLs = 2-16 ]    |                  |                        |
| * Thyroid Gland  | C Cell                          | Hyperplasia      | Minimal                |
|                  | Follicular Cel                  | Hyperplasia      | Mild                   |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 35

TRT#: 1

SEX: Male

DAY ON TEST: 494

DOSE: Control

DISP: Moribund Sacrifice

HISTO: 56854

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Medulla
- \* Epididymis
- \* Heart
- \* Intestine Small, Duodenum
- \* Larynx
- \* Lymph Node, Mandibular
- \* Pancreas
- \* Prostate
- \* Stomach, Forestomach
- \* Urinary Bladder
- \* Bone
- \* Esophagus
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Liver
- \* Lymph Node, Mediastinal
- \* Parathyroid Gland
- \* Salivary Glands
- \* Stomach, Glandular
- \* Bone Marrow
- \* Eye
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Lung
- \* Lymph Node, Mesenteric
- \* Pituitary Gland
- \* Seminal Vesicle
- \* Testes
- \* Brain
- \* Harderian Gland
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Lymph Node, Bronchial
- \* Nose
- \* Preputial Gland
- \* Spleen
- \* Trachea

MISSING

- \* Mammary Gland
- \* Thymus

OBSERVATIONS

- \* Adrenal Cortex
- \* Kidney
- \* Skin
- [ Inflammation TGLs = 1,2,3,5-17+18+15+16 ]
- \* Thyroid Gland
- Zymbal's Gland
- Hyperplasia
- Nephropathy
- Inflammation
- Hyperplasia
- Adenoma
- Mild
- Minimal
- Chronic Active, Marked
- Minimal

PRIMARY CAUSE OF DEATH - Skin Inflammation

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 36

TRT#: 1

SEX: Male

DAY ON TEST: 731

DOSE: Control

DISP: Terminal Sacrifice

HISTO: 56855

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                            |                           |                             |                          |
|----------------------------|---------------------------|-----------------------------|--------------------------|
| * Adrenal Medulla          | * Bone                    | * Bone Marrow               | * Brain                  |
| * Epididymis               | * Esophagus               | * Eye                       | * Intestine Large, Cecum |
| * Intestine Large, Colon   | * Intestine Large, Rectum | * Intestine Small, Duodenum | * Intestine Small, Ileum |
| * Intestine Small, Jejunum | * Islets, Pancreatic      | * Larynx                    | * Liver                  |
| * Lymph Node, Bronchial    | * Lymph Node, Mandibular  | * Lymph Node, Mediastinal   | * Lymph Node, Mesenteric |
| * Nose                     | * Pancreas                | * Parathyroid Gland         | * Preputial Gland        |
| * Prostate                 | * Salivary Glands         | * Seminal Vesicle           | * Spleen                 |
| * Stomach, Forestomach     | * Stomach, Glandular      | * Testes                    | * Thymus                 |
| * Trachea                  | * Urinary Bladder         |                             |                          |

MISSING

- \* Mammary Gland

OBSERVATIONS

- |                   |                              |                |                        |
|-------------------|------------------------------|----------------|------------------------|
| * Adrenal Cortex  |                              | Hyperplasia    | Mild                   |
| * Harderian Gland |                              | Hyperplasia    | Minimal                |
| * Heart           |                              | Cardiomyopathy | Minimal                |
| * Kidney          | Transit Epithe               | Hyperplasia    | Mild                   |
|                   |                              | Nephropathy    | Mild                   |
| * Lung            | Alveolar Epith               | Hyperplasia    | Minimal                |
| * Pituitary Gland | Pars Distalis                | Hyperplasia    | Mild                   |
| * Skin            |                              | Inflammation   | Chronic Active, Marked |
|                   | [ Inflammation TGLs = 1-15 ] |                |                        |
| * Thyroid Gland   | C Cell                       | Adenoma        |                        |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 37

TRT#: 1

SEX: Male

DAY ON TEST: 730

DOSE: Control

DISP: Terminal Sacrifice

HISTO: 56856

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                          |                            |                           |                             |
|--------------------------|----------------------------|---------------------------|-----------------------------|
| * Adrenal Medulla        | * Bone                     | * Bone Marrow             | * Brain                     |
| * Epididymis             | * Esophagus                | * Eye                     | * Heart                     |
| * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum | * Intestine Small, Duodenum |
| * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      | * Larynx                    |
| * Lung                   | * Lymph Node, Mandibular   | * Lymph Node, Mediastinal | * Lymph Node, Mesenteric    |
| * Pancreas               | * Parathyroid Gland        | * Pituitary Gland         | * Preputial Gland           |
| * Prostate               | * Salivary Glands          | * Seminal Vesicle         | * Spleen                    |
| * Stomach, Forestomach   | * Stomach, Glandular       | * Testes                  | * Thymus                    |
| * Trachea                | * Urinary Bladder          |                           |                             |

MISSING

- |                         |                 |
|-------------------------|-----------------|
| * Lymph Node, Bronchial | * Mammary Gland |
|-------------------------|-----------------|

OBSERVATIONS

- |                   |                              |                               |                          |
|-------------------|------------------------------|-------------------------------|--------------------------|
| * Adrenal Cortex  |                              | Hyperplasia                   | Mild                     |
|                   |                              | Hypertrophy                   | Mild                     |
| * Harderian Gland |                              | Hypertrophy                   | Mild                     |
| * Kidney          |                              | Nephropathy                   | Mild                     |
| * Liver           |                              | Clear Cell Focus              |                          |
| * Nose            |                              | Accumulation, Hyaline Droplet | Minimal                  |
| * Skin            |                              | Inflammation                  | Chronic Active, Moderate |
|                   | [ Inflammation TGLs = 1-15 ] |                               |                          |
| * Thyroid Gland   | C Cell                       | Adenoma                       |                          |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 38

TRT#: 1

SEX: Male

DAY ON TEST: 730

DOSE: Control

DISP: Terminal Sacrifice

HISTO: 56857

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Medulla
- \* Epididymis
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Lymph Node, Bronchial
- \* Nose
- \* Salivary Glands
- \* Stomach, Glandular
- \* Urinary Bladder
- \* Bone
- \* Esophagus
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Lymph Node, Mandibular
- \* Parathyroid Gland
- \* Seminal Vesicle
- \* Testes
- \* Bone Marrow
- \* Eye
- \* Intestine Small, Duodenum
- \* Larynx
- \* Lymph Node, Mediastinal
- \* Preputial Gland
- \* Spleen
- \* Thymus
- \* Brain
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Lung
- \* Lymph Node, Mesenteric
- \* Prostate
- \* Stomach, Forestomach
- \* Trachea

MISSING

- \* Mammary Gland

OBSERVATIONS

- \* Adrenal Cortex
    - [ Adenoma TGLs = 6-7 ]
  - \* Harderian Gland
  - \* Heart
  - \* Kidney
  - \* Liver
    - [ Mixed Cell Focus TGLs = 4-6 ]
  - \* Pancreas
    - [ Adenoma TGLs = 5-17 ]
  - \* Pituitary Gland
    - [ Adenoma TGLs = 3-10 ]
  - \* Skin
    - [ Inflammation TGLs = 2-16 ]
    - [ Squamous Cell Carcinoma TGLs = 1-15 ]
  - \* Thyroid Gland
- |  |                         |                        |
|--|-------------------------|------------------------|
|  | Adenoma                 |                        |
|  | Hyperplasia             | Mild                   |
|  | Hyperplasia             | Minimal                |
|  | Cardiomyopathy          | Minimal                |
|  | Nephropathy             | Moderate               |
|  | Clear Cell Focus        |                        |
|  | Mixed Cell Focus        |                        |
|  | Adenoma                 |                        |
|  | Adenoma                 |                        |
|  | Inflammation            | Chronic Active, Marked |
|  | Squamous Cell Carcinoma |                        |
|  | Hyperplasia             | Moderate               |

\* PROTOCOL REQUIRED TISSUE



TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 39

TRT#: 1

SEX: Male

DAY ON TEST: 731

DOSE: Control

DISP: Terminal Sacrifice

HISTO: 56858

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Medulla
- \* Esophagus
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Liver
- \* Lymph Node, Mediastinal
- \* Preputial Gland
- \* Skin
- \* Urinary Bladder
- \* Bone
- \* Eye
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Lung
- \* Lymph Node, Mesenteric
- \* Prostate
- \* Stomach, Glandular
- \* Bone Marrow
- \* Harderian Gland
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Lymph Node, Bronchial
- \* Nose
- \* Salivary Glands
- \* Thymus
- \* Brain
- \* Heart
- \* Intestine Small, Duodenum
- \* Larynx
- \* Lymph Node, Mandibular
- \* Parathyroid Gland
- \* Seminal Vesicle
- \* Trachea

MISSING

- \* Mammary Gland

OBSERVATIONS

- \* Adrenal Cortex Hyperplasia Mild
- \* Epididymis Mesothelioma Malignant
- [ Mesothelioma Malignant TGLs = 3-9 ]
- \* Kidney Cyst Mild
- [ Cyst TGLs = 9-7 ] Nephropathy Mild
- Mesentery Mesothelioma Malignant
- [ Mesothelioma Malignant TGLs = 8-18 ]
- \* Pancreas Mesothelioma Malignant
- Peritoneum Mesothelioma Malignant
- [ Mesothelioma Malignant TGLs = 5-17 ]
- \* Pituitary Gland Adenoma
- [ Adenoma TGLs = 6-10 ]
- Skeletal Muscle Mesothelioma Malignant
- [ Mesothelioma Malignant TGLs = 4-16 ]
- \* Spleen Mesothelioma Malignant
- \* Stomach, Forestomach Mesothelioma Malignant
- \* Testes Atrophy Moderate

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 39

TRT#: 1

SEX: Male

DAY ON TEST: 731

DOSE: Control

DISP: Terminal Sacrifice

HISTO: 56858

ORGAN AND ACCOUNTABLE SITE STATUS

Edema

Moderate

Mesothelioma Malignant

[ Mesothelioma Malignant TGLs = 1,2-15+9 ]

Hyperplasia

Minimal

\* Thyroid Gland

C Cell

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 40

TRT#: 1

SEX: Male

DAY ON TEST: 730

DOSE: Control

DISP: Terminal Sacrifice

HISTO: 56859

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                             |                          |                            |                           |
|-----------------------------|--------------------------|----------------------------|---------------------------|
| * Adrenal Cortex            | * Adrenal Medulla        | * Bone                     | * Bone Marrow             |
| * Brain                     | * Epididymis             | * Esophagus                | * Eye                     |
| * Harderian Gland           | * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum |
| * Intestine Small, Duodenum | * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      |
| * Larynx                    | * Lung                   | * Lymph Node, Mesenteric   | * Nose                    |
| * Pancreas                  | * Parathyroid Gland      | * Preputial Gland          | * Prostate                |
| * Salivary Glands           | * Seminal Vesicle        | * Skin                     | * Spleen                  |
| * Stomach, Forestomach      | * Stomach, Glandular     | * Trachea                  | * Urinary Bladder         |

MISSING

- |                         |                          |                           |                 |
|-------------------------|--------------------------|---------------------------|-----------------|
| * Lymph Node, Bronchial | * Lymph Node, Mandibular | * Lymph Node, Mediastinal | * Mammary Gland |
| * Thymus                |                          |                           |                 |

OBSERVATIONS

- |                   |                      |                  |          |
|-------------------|----------------------|------------------|----------|
| * Heart           |                      | Cardiomyopathy   | Minimal  |
| * Kidney          |                      | Cyst             | Moderate |
|                   |                      | Nephropathy      | Mild     |
|                   | Transit Epithe       | Papilloma        |          |
| * Liver           | [ Cyst TGLs = 2-7 ]  | Clear Cell Focus |          |
|                   |                      | Cyst             | Mild     |
|                   | [ Cyst TGLs = 1-15 ] |                  |          |
| * Pituitary Gland | Pars Distalis        | Hyperplasia      | Mild     |
| * Testes          |                      | Edema            | Mild     |
| * Thyroid Gland   | C Cell               | Hyperplasia      | Minimal  |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 41

TRT#: 1

SEX: Male

DAY ON TEST: 730

DOSE: Control

DISP: Terminal Sacrifice

HISTO: 56860

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                           |                             |                          |                            |
|---------------------------|-----------------------------|--------------------------|----------------------------|
| * Adrenal Cortex          | * Adrenal Medulla           | * Bone                   | * Bone Marrow              |
| * Brain                   | * Epididymis                | * Esophagus              | * Eye                      |
| * Harderian Gland         | * Heart                     | * Intestine Large, Cecum | * Intestine Large, Colon   |
| * Intestine Large, Rectum | * Intestine Small, Duodenum | * Intestine Small, Ileum | * Intestine Small, Jejunum |
| * Islets, Pancreatic      | * Larynx                    | * Lung                   | * Lymph Node, Bronchial    |
| * Lymph Node, Mandibular  | * Lymph Node, Mediastinal   | * Lymph Node, Mesenteric | * Pancreas                 |
| * Parathyroid Gland       | * Preputial Gland           | * Salivary Glands        | * Seminal Vesicle          |
| * Spleen                  | * Stomach, Forestomach      | * Stomach, Glandular     | * Thymus                   |
| * Trachea                 | * Urinary Bladder           |                          |                            |

MISSING

- \* Mammary Gland

OBSERVATIONS

- |                   |                              |                               |                        |
|-------------------|------------------------------|-------------------------------|------------------------|
| * Kidney          |                              | Nephropathy                   | Moderate               |
| * Liver           |                              | Angiectasis                   | Minimal                |
|                   |                              | Clear Cell Focus              |                        |
|                   | [ Angiectasis TGLs = 2-6 ]   |                               |                        |
| * Nose            |                              | Accumulation, Hyaline Droplet | Minimal                |
| * Pituitary Gland | Pars Distalis                | Hyperplasia                   | Minimal                |
| * Prostate        |                              | Hyperplasia                   | Minimal                |
| * Skin            | Subcut Tiss                  | Fibroma                       |                        |
|                   |                              | Inflammation                  | Chronic Active, Marked |
|                   | [ Fibroma TGLs = 3-16 ]      |                               |                        |
|                   | [ Inflammation TGLs = 1-15 ] |                               |                        |
| * Testes          |                              | Edema                         | Mild                   |
| * Thyroid Gland   | C Cell                       | Hyperplasia                   | Minimal                |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 42

TRT#: 1

SEX: Male

DAY ON TEST: 729

DOSE: Control

DISP: Terminal Sacrifice

HISTO: 56861

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                           |                             |                          |                            |
|---------------------------|-----------------------------|--------------------------|----------------------------|
| * Bone                    | * Bone Marrow               | * Brain                  | * Epididymis               |
| * Esophagus               | * Eye                       | * Intestine Large, Cecum | * Intestine Large, Colon   |
| * Intestine Large, Rectum | * Intestine Small, Duodenum | * Intestine Small, Ileum | * Intestine Small, Jejunum |
| * Islets, Pancreatic      | * Larynx                    | * Lung                   | * Lymph Node, Bronchial    |
| * Lymph Node, Mandibular  | * Lymph Node, Mediastinal   | * Lymph Node, Mesenteric | * Nose                     |
| * Pancreas                | * Parathyroid Gland         | * Preputial Gland        | * Prostate                 |
| * Salivary Glands         | * Seminal Vesicle           | * Skin                   | * Spleen                   |
| * Stomach, Forestomach    | * Stomach, Glandular        | * Thymus                 | * Thyroid Gland            |
| * Trachea                 | * Urinary Bladder           |                          |                            |

MISSING

- \* Mammary Gland

OBSERVATIONS

- |                   |                            |                         |          |
|-------------------|----------------------------|-------------------------|----------|
| * Adrenal Cortex  |                            | Hyperplasia             | Mild     |
|                   |                            | Hypertrophy             | Mild     |
| * Adrenal Medulla |                            | Pheochromocytoma Benign |          |
| * Harderian Gland |                            | Hyperplasia             | Minimal  |
| * Heart           |                            | Cardiomyopathy          | Mild     |
| * Kidney          |                            | Nephropathy             | Minimal  |
| * Liver           | Bile Duct                  | Dilatation              | Moderate |
|                   | [ Dilatation TGLs = 1-15 ] |                         |          |
| * Pituitary Gland | Pars Distalis              | Hyperplasia             | Mild     |
| * Testes          |                            | Edema                   | Mild     |

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 43

TRT#: 1

SEX: Male

DAY ON TEST: 520

DOSE: Control

DISP: Moribund Sacrifice

HISTO: 56862

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                           |                             |                          |                            |
|---------------------------|-----------------------------|--------------------------|----------------------------|
| * Adrenal Cortex          | * Adrenal Medulla           | * Bone                   | * Bone Marrow              |
| * Brain                   | * Epididymis                | * Esophagus              | * Eye                      |
| * Harderian Gland         | * Heart                     | * Intestine Large, Cecum | * Intestine Large, Colon   |
| * Intestine Large, Rectum | * Intestine Small, Duodenum | * Intestine Small, Ileum | * Intestine Small, Jejunum |
| * Islets, Pancreatic      | * Kidney                    | * Larynx                 | * Liver                    |
| * Lung                    | * Lymph Node, Bronchial     | * Lymph Node, Mandibular | * Lymph Node, Mediastinal  |
| * Lymph Node, Mesenteric  | * Nose                      | * Pancreas               | * Parathyroid Gland        |
| * Preputial Gland         | * Prostate                  | * Salivary Glands        | * Seminal Vesicle          |
| * Skin                    | * Spleen                    | * Stomach, Forestomach   | * Stomach, Glandular       |
| * Testes                  | * Trachea                   | * Urinary Bladder        |                            |

MISSING

- |                 |          |
|-----------------|----------|
| * Mammary Gland | * Thymus |
|-----------------|----------|

OBSERVATIONS

- |                         |               |             |      |
|-------------------------|---------------|-------------|------|
| * Pituitary Gland       | Pars Distalis | Adenoma     |      |
| [ Adenoma TGLs = 2-10 ] |               |             |      |
| * Thyroid Gland         | C Cell        | Hyperplasia | Mild |

PRIMARY CAUSE OF DEATH - Pituitary Gland Pars Distalis Adenoma

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 44

TRT#: 1

SEX: Male

DAY ON TEST: 730

DOSE: Control

DISP: Terminal Sacrifice

HISTO: 56863

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                            |                           |                             |                          |
|----------------------------|---------------------------|-----------------------------|--------------------------|
| * Bone                     | * Bone Marrow             | * Brain                     | * Epididymis             |
| * Esophagus                | * Eye                     | * Harderian Gland           | * Intestine Large, Cecum |
| * Intestine Large, Colon   | * Intestine Large, Rectum | * Intestine Small, Duodenum | * Intestine Small, Ileum |
| * Intestine Small, Jejunum | * Islets, Pancreatic      | * Kidney                    | * Larynx                 |
| * Liver                    | * Lung                    | * Lymph Node, Bronchial     | * Lymph Node, Mandibular |
| * Lymph Node, Mediastinal  | * Lymph Node, Mesenteric  | * Nose                      | * Pancreas               |
| * Parathyroid Gland        | * Preputial Gland         | * Prostate                  | * Salivary Glands        |
| * Seminal Vesicle          | * Spleen                  | * Stomach, Forestomach      | * Stomach, Glandular     |
| * Testes                   | * Thymus                  | * Trachea                   | * Urinary Bladder        |

MISSING

- \* Mammary Gland

OBSERVATIONS

- |                   |                              |                |                      |
|-------------------|------------------------------|----------------|----------------------|
| * Adrenal Cortex  |                              | Hyperplasia    | Mild                 |
| * Adrenal Medulla |                              | Hyperplasia    | Mild                 |
| * Heart           |                              | Cardiomyopathy | Minimal              |
| * Pituitary Gland | Pars Intermed                | Hyperplasia    | Mild                 |
| * Skin            |                              | Inflammation   | Chronic Active, Mild |
|                   | [ Inflammation TGLs = 1-15 ] |                |                      |
| * Thyroid Gland   | C Cell                       | Hyperplasia    | Mild                 |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 45

TRT#: 1

SEX: Male

DAY ON TEST: 729

DOSE: Control

DISP: Terminal Sacrifice

HISTO: 56864

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                            |                           |                             |                          |
|----------------------------|---------------------------|-----------------------------|--------------------------|
| * Adrenal Medulla          | * Bone                    | * Bone Marrow               | * Brain                  |
| * Epididymis               | * Esophagus               | * Eye                       | * Intestine Large, Cecum |
| * Intestine Large, Colon   | * Intestine Large, Rectum | * Intestine Small, Duodenum | * Intestine Small, Ileum |
| * Intestine Small, Jejunum | * Islets, Pancreatic      | * Larynx                    | * Lymph Node, Bronchial  |
| * Lymph Node, Mandibular   | * Lymph Node, Mediastinal | * Lymph Node, Mesenteric    | * Nose                   |
| * Pancreas                 | * Parathyroid Gland       | * Preputial Gland           | * Prostate               |
| * Salivary Glands          | * Seminal Vesicle         | * Spleen                    | * Stomach, Forestomach   |
| * Stomach, Glandular       | * Thymus                  | * Trachea                   | * Urinary Bladder        |

MISSING

- \* Mammary Gland

OBSERVATIONS

- |                   |                              |                  |                        |
|-------------------|------------------------------|------------------|------------------------|
| * Adrenal Cortex  |                              | Hypertrophy      | Mild                   |
| * Harderian Gland |                              | Hyperplasia      | Minimal                |
| * Heart           |                              | Cardiomyopathy   | Mild                   |
| * Kidney          |                              | Nephropathy      | Mild                   |
| * Liver           |                              | Basophilic Focus |                        |
|                   |                              | Clear Cell Focus |                        |
| * Lung            | Alveolar Epith               | Hyperplasia      | Minimal                |
| * Pituitary Gland | Pars Distalis                | Adenoma          |                        |
|                   | [ Adenoma TGLs = 2-10 ]      |                  |                        |
| * Skin            |                              | Inflammation     | Chronic Active, Marked |
|                   | [ Inflammation TGLs = 1-15 ] |                  |                        |
| * Testes          |                              | Edema            | Mild                   |
| * Thyroid Gland   | C Cell                       | Hyperplasia      | Minimal                |
|                   | Follicular Cel               | Hyperplasia      | Moderate               |

\* PROTOCOL REQUIRED TISSUE



TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 46

TRT#: 1

SEX: Male

DAY ON TEST: 729

DOSE: Control

DISP: Terminal Sacrifice

HISTO: 56865

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Medulla
- \* Epididymis
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Lung
- \* Lymph Node, Mesenteric
- \* Prostate
- \* Stomach, Glandular
- \* Urinary Bladder
- \* Bone
- \* Esophagus
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Lymph Node, Bronchial
- \* Pancreas
- \* Salivary Glands
- \* Testes
- \* Bone Marrow
- \* Eye
- \* Intestine Small, Duodenum
- \* Larynx
- \* Lymph Node, Mandibular
- \* Parathyroid Gland
- \* Spleen
- \* Thymus
- \* Brain
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Liver
- \* Lymph Node, Mediastinal
- \* Preputial Gland
- \* Stomach, Forestomach
- \* Trachea

MISSING

- \* Mammary Gland

OBSERVATIONS

- \* Adrenal Cortex Hyperplasia Mild
- \* Harderian Gland Hypertrophy Mild
- \* Heart Hyperplasia Minimal
- \* Kidney Cardiomyopathy Mild  
  - [ Nephropathy TGLs = 3-7+15 ] Nephropathy Marked
- \* Nose Accumulation, Hyaline Droplet Mild
- \* Pituitary Gland Adenoma  
  - [ Adenoma TGLs = 2-10 ] Pars Distalis
- \* Seminal Vesicle Hyperplasia Mild
- \* Skin Inflammation Chronic Active, Marked  
  - [ Inflammation TGLs = 1-16 ]
- \* Thyroid Gland Hyperplasia Minimal  
  - C Cell

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 47

TRT#: 1

SEX: Male

DAY ON TEST: 730

DOSE: Control

DISP: Terminal Sacrifice

HISTO: 56866

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                           |                             |                          |                            |
|---------------------------|-----------------------------|--------------------------|----------------------------|
| * Adrenal Medulla         | * Bone                      | * Bone Marrow            | * Brain                    |
| * Epididymis              | * Esophagus                 | * Intestine Large, Cecum | * Intestine Large, Colon   |
| * Intestine Large, Rectum | * Intestine Small, Duodenum | * Intestine Small, Ileum | * Intestine Small, Jejunum |
| * Islets, Pancreatic      | * Larynx                    | * Lung                   | * Lymph Node, Bronchial    |
| * Lymph Node, Mandibular  | * Lymph Node, Mediastinal   | * Lymph Node, Mesenteric | * Nose                     |
| * Pancreas                | * Parathyroid Gland         | * Preputial Gland        | * Prostate                 |
| * Salivary Glands         | * Seminal Vesicle           | * Spleen                 | * Stomach, Forestomach     |
| * Stomach, Glandular      | * Thymus                    | * Trachea                | * Urinary Bladder          |

MISSING

- \* Mammary Gland

OBSERVATIONS

- |                   |                                    |                  |                          |
|-------------------|------------------------------------|------------------|--------------------------|
| * Adrenal Cortex  |                                    | Hyperplasia      | Mild                     |
|                   |                                    | Hypertrophy      | Mild                     |
| * Eye             | Retina                             | Atrophy          | Moderate                 |
|                   |                                    | Cataract         | Mild                     |
| * Harderian Gland |                                    | Hypertrophy      | Mild                     |
| * Heart           |                                    | Cardiomyopathy   | Minimal                  |
| * Kidney          |                                    | Nephropathy      | Mild                     |
| * Liver           |                                    | Clear Cell Focus |                          |
|                   |                                    | Mixed Cell Focus |                          |
|                   | [ Mixed Cell Focus TGLs = 2-6+15 ] |                  |                          |
| * Pituitary Gland | Pars Intermed                      | Hyperplasia      | Moderate                 |
| * Skin            |                                    | Inflammation     | Chronic Active, Moderate |
|                   | [ Inflammation TGLs = 1-16 ]       |                  |                          |
| * Testes          |                                    | Edema            | Minimal                  |
| * Thyroid Gland   | C Cell                             | Hyperplasia      | Mild                     |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 48

TRT#: 1

SEX: Male

DAY ON TEST: 607

DOSE: Control

DISP: Moribund Sacrifice

HISTO: 56867

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                             |                           |                            |                           |
|-----------------------------|---------------------------|----------------------------|---------------------------|
| * Adrenal Cortex            | * Adrenal Medulla         | * Bone                     | * Bone Marrow             |
| * Brain                     | * Epididymis              | * Esophagus                | * Eye                     |
| * Heart                     | * Intestine Large, Cecum  | * Intestine Large, Colon   | * Intestine Large, Rectum |
| * Intestine Small, Duodenum | * Intestine Small, Ileum  | * Intestine Small, Jejunum | * Islets, Pancreatic      |
| * Larynx                    | * Liver                   | * Lung                     | * Lymph Node, Bronchial   |
| * Lymph Node, Mandibular    | * Lymph Node, Mediastinal | * Lymph Node, Mesenteric   | * Nose                    |
| * Pancreas                  | * Parathyroid Gland       | * Salivary Glands          | * Seminal Vesicle         |
| * Skin                      | * Spleen                  | * Stomach, Forestomach     | * Stomach, Glandular      |
| * Thymus                    | * Trachea                 | * Urinary Bladder          |                           |

MISSING

- \* Mammary Gland

OBSERVATIONS

- |                   |                         |              |                      |
|-------------------|-------------------------|--------------|----------------------|
| * Harderian Gland |                         | Atrophy      | Mild                 |
| * Kidney          |                         | Nephropathy  | Mild                 |
| * Pituitary Gland | Pars Distalis           | Adenoma      |                      |
|                   | [ Adenoma TGLs = 1-10 ] |              |                      |
| * Preputial Gland |                         | Inflammation | Chronic Active, Mild |
| * Prostate        |                         | Hyperplasia  | Minimal              |
| * Testes          |                         | Atrophy      | Moderate             |
| * Thyroid Gland   | C Cell                  | Hyperplasia  | Mild                 |

PRIMARY CAUSE OF DEATH - Pituitary Gland Pars Distalis Adenoma

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 49

TRT#: 1

SEX: Male

DAY ON TEST: 653

DOSE: Control

DISP: Moribund Sacrifice

HISTO: 56868

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Medulla
- \* Esophagus
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Lung
- \* Lymph Node, Mesenteric
- \* Prostate
- \* Stomach, Forestomach
- \* Thyroid Gland
- \* Bone Marrow
- \* Eye
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Lymph Node, Bronchial
- \* Pancreas
- \* Salivary Glands
- \* Stomach, Glandular
- \* Trachea
- \* Brain
- \* Harderian Gland
- \* Intestine Small, Duodenum
- \* Larynx
- \* Lymph Node, Mandibular
- \* Parathyroid Gland
- \* Seminal Vesicle
- \* Testes
- \* Urinary Bladder
- \* Epididymis
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Liver
- \* Lymph Node, Mediastinal
- \* Preputial Gland
- \* Spleen
- \* Thymus

MISSING

- \* Mammary Gland

OBSERVATIONS

- \* Adrenal Cortex Degeneration  
Hyperplasia  
Cystic, Minimal  
Mild
- \* Bone Hyperostosis  
Mild  
  - [ Hyperostosis TGLs = 4-15 ]
- \* Heart Cardiomyopathy  
Minimal
- \* Kidney Nephropathy  
Minimal
- \* Nose Accumulation, Hyaline Droplet  
Mild
- \* Pituitary Gland Adenoma  
  - [ Adenoma TGLs = 3-10 ] Pars Distalis
- \* Skin Inflammation  
Chronic Active, Moderate  
  - [ Inflammation TGLs = 2-7 ]

PRIMARY CAUSE OF DEATH - Pituitary Gland Pars Distalis Adenoma

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 50

TRT#: 1

SEX: Male

DAY ON TEST: 729

DOSE: Control

DISP: Terminal Sacrifice

HISTO: 56869

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                           |                            |                           |                             |
|---------------------------|----------------------------|---------------------------|-----------------------------|
| * Adrenal Medulla         | * Bone                     | * Bone Marrow             | * Brain                     |
| * Epididymis              | * Esophagus                | * Eye                     | * Heart                     |
| * Intestine Large, Cecum  | * Intestine Large, Colon   | * Intestine Large, Rectum | * Intestine Small, Duodenum |
| * Intestine Small, Ileum  | * Intestine Small, Jejunum | * Islets, Pancreatic      | * Larynx                    |
| * Liver                   | * Lung                     | * Lymph Node, Bronchial   | * Lymph Node, Mandibular    |
| * Lymph Node, Mediastinal | * Lymph Node, Mesenteric   | * Nose                    | * Pancreas                  |
| * Parathyroid Gland       | * Pituitary Gland          | * Preputial Gland         | * Prostate                  |
| * Salivary Glands         | * Seminal Vesicle          | * Skin                    | * Spleen                    |
| * Stomach, Forestomach    | * Stomach, Glandular       | * Thymus                  | * Thyroid Gland             |
| * Trachea                 | * Urinary Bladder          |                           |                             |

MISSING

- \* Mammary Gland

OBSERVATIONS

- |                   |             |         |
|-------------------|-------------|---------|
| * Adrenal Cortex  | Hyperplasia | Mild    |
|                   | Hypertrophy | Mild    |
| * Harderian Gland | Hyperplasia | Mild    |
| * Kidney          | Nephropathy | Minimal |
| * Testes          | Edema       | Mild    |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 201

TRT#: 3

SEX: Male

DAY ON TEST: 730

DOSE: 10 mg/m3

DISP: Terminal Sacrifice

HISTO: 57120

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Bone
- \* Harderian Gland
- \* Intestine Small, Duodenum
- \* Larynx
- \* Lymph Node, Mediastinal
- \* Preputial Gland
- \* Spleen
- \* Trachea
- \* Bone Marrow
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Lung
- \* Lymph Node, Mesenteric
- \* Prostate
- \* Stomach, Forestomach
- \* Urinary Bladder
- \* Epididymis
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Lymph Node, Bronchial
- \* Pancreas
- \* Salivary Glands
- \* Stomach, Glandular
- \* Esophagus
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Lymph Node, Mandibular
- \* Parathyroid Gland
- \* Seminal Vesicle
- \* Thymus

MISSING

- \* Mammary Gland

OBSERVATIONS

- \* Adrenal Cortex Hypertrophy Mild
- \* Adrenal Medulla Pheochromocytoma Malignant
- [ Pheochromocytoma Malignant TGLs = 6-7 ]
- \* Brain Granular Cell Tumor Benign
- \* Eye Cataract Moderate
- [ Cataract TGLs = 1-13 ]
- \* Heart Cardiomyopathy Mild
- \* Kidney Nephropathy Moderate
- \* Liver Basophilic Focus
- Clear Cell Focus
- \* Nose Accumulation, Hyaline Droplet Moderate
- \* Pituitary Gland Pars Distalis Hyperplasia Mild
- \* Skin Inflammation Chronic Active, Marked
- [ Inflammation TGLs = 4,5-16+17 ]
- \* Testes Atrophy Marked
- Edema Moderate
- [ Atrophy TGLs = 2-9 ]
- [ Edema TGLs = 3-9 ]
- \* Thyroid Gland C Cell Hyperplasia Mild

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 202

TRT#: 3

SEX: Male

DAY ON TEST: 730

DOSE: 10 mg/m3

DISP: Terminal Sacrifice

HISTO: 57121

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                          |                            |                           |                             |
|--------------------------|----------------------------|---------------------------|-----------------------------|
| * Adrenal Medulla        | * Bone                     | * Bone Marrow             | * Brain                     |
| * Epididymis             | * Esophagus                | * Eye                     | * Heart                     |
| * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum | * Intestine Small, Duodenum |
| * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      | * Lung                      |
| * Lymph Node, Bronchial  | * Lymph Node, Mandibular   | * Lymph Node, Mediastinal | * Lymph Node, Mesenteric    |
| * Mammary Gland          | * Pancreas                 | * Parathyroid Gland       | * Preputial Gland           |
| * Prostate               | * Salivary Glands          | * Seminal Vesicle         | * Skin                      |
| * Spleen                 | * Stomach, Forestomach     | * Stomach, Glandular      | * Testes                    |
| * Thymus                 | * Trachea                  | * Urinary Bladder         |                             |

OBSERVATIONS

- |                   |                       |                               |                   |
|-------------------|-----------------------|-------------------------------|-------------------|
| * Adrenal Cortex  |                       | Hypertrophy                   | Mild              |
| * Harderian Gland |                       | Hyperplasia                   | Minimal           |
| * Kidney          |                       | Nephropathy                   | Mild              |
| * Larynx          |                       | Metaplasia                    | Squamous, Minimal |
| * Liver           |                       | Clear Cell Focus              |                   |
| * Nose            |                       | Accumulation, Hyaline Droplet | Moderate          |
|                   | Glands, Olfactory Epi | Hyperplasia                   | Minimal           |
| * Pituitary Gland | Pars Distalis         | Hyperplasia                   | Mild              |
| * Thyroid Gland   | C Cell                | Hyperplasia                   | Minimal           |

\* PROTOCOL REQUIRED TISSUE

**TDMS No.** 20515 - 03

**Test Type:** CHRONIC

**Route:** RESPIRATORY EXPOSURE WHOLE BODY

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

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Metal working fluids (CIMSTAR 3800)

**CAS Number:** CIMSTAR3800

**Date Report Requested:** 01/21/2011

**Time Report Requested:** 07:49:51

**First Dose M/F:** 04/14/08 / 04/14/08

**Lab:** BNW

**ANIMAL ID:** 203

**TRT#:** 3

**SEX:** Male

**DAY ON TEST:** 547

**DOSE:** 10 mg/m3

**DISP:** Natural Death

**HISTO:** 57122

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

- |                          |                      |                           |                      |
|--------------------------|----------------------|---------------------------|----------------------|
| * Bone                   | * Bone Marrow        | * Epididymis              | * Esophagus          |
| * Eye                    | * Harderian Gland    | * Intestine Large, Rectum | * Islets, Pancreatic |
| * Lymph Node, Mandibular | * Prostate           | * Salivary Glands         | * Seminal Vesicle    |
| * Stomach, Forestomach   | * Stomach, Glandular | * Testes                  | * Thymus             |
| * Thyroid Gland          |                      |                           |                      |

**MISSING**

- \* Mammary Gland

**AUTO PRECLUDES DIAG.**

- |                            |                          |                             |                          |
|----------------------------|--------------------------|-----------------------------|--------------------------|
| * Intestine Large, Cecum   | * Intestine Large, Colon | * Intestine Small, Duodenum | * Intestine Small, Ileum |
| * Intestine Small, Jejunum | * Trachea                |                             |                          |

**OBSERVATIONS**

- |                         |                                       |                      |                    |
|-------------------------|---------------------------------------|----------------------|--------------------|
| * Adrenal Cortex        |                                       | Leukemia Mononuclear |                    |
| * Adrenal Medulla       |                                       | Leukemia Mononuclear |                    |
| * Brain                 |                                       | Leukemia Mononuclear |                    |
| * Heart                 |                                       | Cardiomyopathy       | Minimal            |
| * Kidney                |                                       | Leukemia Mononuclear |                    |
|                         | [ Leukemia Mononuclear TGLs = 9-15 ]  | Leukemia Mononuclear |                    |
| * Larynx                |                                       | Metaplasia           | Squamous, Moderate |
| * Liver                 |                                       | Leukemia Mononuclear |                    |
|                         | [ Leukemia Mononuclear TGLs = 6,7-6 ] | Necrosis             | Marked             |
| * Lung                  |                                       | Leukemia Mononuclear |                    |
|                         | [ Leukemia Mononuclear TGLs = 4-4+5 ] |                      |                    |
| Lymph Node              | Pancreatic                            | Leukemia Mononuclear |                    |
|                         | Axillary                              | Leukemia Mononuclear |                    |
|                         | [ Leukemia Mononuclear TGLs = 5-17 ]  |                      |                    |
|                         | [ Leukemia Mononuclear TGLs = 2-18 ]  |                      |                    |
| * Lymph Node, Bronchial |                                       | Leukemia Mononuclear |                    |

\* PROTOCOL REQUIRED TISSUE



TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 203

TRT#: 3

SEX: Male

DAY ON TEST: 547

DOSE: 10 mg/m3

DISP: Natural Death

HISTO: 57122

ORGAN AND ACCOUNTABLE SITE STATUS

* Lymph Node, Mediastinal		Leukemia Mononuclear	
* Lymph Node, Mesenteric		Leukemia Mononuclear	
* Nose		Accumulation, Hyaline Droplet	Marked
	Glands, Olfactory Epi	Hyperplasia	Mild
* Pancreas		Atrophy	Mild
* Parathyroid Gland		Adenoma	
* Pituitary Gland		Leukemia Mononuclear	
* Preputial Gland		Inflammation	Chronic Active, Moderate
* Skin	Subcut Tiss	Leukemia Mononuclear	
	[ Leukemia Mononuclear TGLs = 1-19+20 ]		
* Spleen		Leukemia Mononuclear	
	[ Leukemia Mononuclear TGLs = 8-15 ]		
* Urinary Bladder		Leukemia Mononuclear	

PRIMARY CAUSE OF DEATH - Spleen Leukemia Mononuclear

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 204

TRT#: 3

SEX: Male

DAY ON TEST: 730

DOSE: 10 mg/m3

DISP: Terminal Sacrifice

HISTO: 57123

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                          |                            |                           |                             |
|--------------------------|----------------------------|---------------------------|-----------------------------|
| * Adrenal Cortex         | * Adrenal Medulla          | * Bone                    | * Bone Marrow               |
| * Brain                  | * Esophagus                | * Eye                     | * Harderian Gland           |
| * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum | * Intestine Small, Duodenum |
| * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      | * Liver                     |
| * Lung                   | * Lymph Node, Bronchial    | * Lymph Node, Mandibular  | * Lymph Node, Mediastinal   |
| * Lymph Node, Mesenteric | * Mammary Gland            | * Pancreas                | * Parathyroid Gland         |
| * Prostate               | * Salivary Glands          | * Seminal Vesicle         | * Skin                      |
| * Spleen                 | * Stomach, Forestomach     | * Stomach, Glandular      | * Thymus                    |
| * Thyroid Gland          | * Trachea                  | * Urinary Bladder         |                             |

OBSERVATIONS

- |                   |   |                               |                      |
|-------------------|---|-------------------------------|----------------------|
| * Epididymis      |   | Mesothelioma Malignant        |                      |
|                   | [ Mesothelioma Malignant TGLs = 2-9 ]   |                               |                      |
| * Heart           |   | Cardiomyopathy                | Mild                 |
| * Kidney          |   | Nephropathy                   | Minimal              |
| * Larynx          |   | Metaplasia                    | Squamous, Minimal    |
| * Nose            |   | Accumulation, Hyaline Droplet | Mild                 |
| * Pituitary Gland | Pars Distalis                           | Adenoma                       |                      |
|                   | [ Adenoma TGLs = 4-10 ]                 |                               |                      |
| * Preputial Gland |   | Inflammation                  | Chronic Active, Mild |
| * Testes          |   | Mesothelioma Malignant        |                      |
|                   | [ Mesothelioma Malignant TGLs = 1,3-9 ] |                               |                      |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 205

TRT#: 3

SEX: Male

DAY ON TEST: 729

DOSE: 10 mg/m3

DISP: Terminal Sacrifice

HISTO: 57124

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                           |                             |                          |                            |
|---------------------------|-----------------------------|--------------------------|----------------------------|
| * Bone                    | * Bone Marrow               | * Brain                  | * Epididymis               |
| * Esophagus               | * Eye                       | * Intestine Large, Cecum | * Intestine Large, Colon   |
| * Intestine Large, Rectum | * Intestine Small, Duodenum | * Intestine Small, Ileum | * Intestine Small, Jejunum |
| * Islets, Pancreatic      | * Lung                      | * Lymph Node, Bronchial  | * Lymph Node, Mediastinal  |
| * Lymph Node, Mesenteric  | * Parathyroid Gland         | * Preputial Gland        | * Salivary Glands          |
| * Seminal Vesicle         | * Spleen                    | * Stomach, Forestomach   | * Stomach, Glandular       |
| * Testes                  | * Thymus                    | * Trachea                | * Urinary Bladder          |

MISSING

- \* Mammary Gland

OBSERVATIONS

- |                          |                              |                               |                        |
|--------------------------|------------------------------|-------------------------------|------------------------|
| * Adrenal Cortex         |                              | Hyperplasia                   | Mild                   |
|                          |                              | Hypertrophy                   | Minimal                |
| * Adrenal Medulla        |                              | Hyperplasia                   | Mild                   |
| * Harderian Gland        |                              | Hyperplasia                   | Mild                   |
| * Heart                  |                              | Cardiomyopathy                | Minimal                |
| * Kidney                 |                              | Nephropathy                   | Moderate               |
| * Larynx                 |                              | Metaplasia                    | Squamous, Minimal      |
| * Liver                  |                              | Angiectasis                   | Minimal                |
|                          |                              | Basophilic Focus              |                        |
|                          |                              | Clear Cell Focus              |                        |
|                          | [ Angiectasis TGLs = 3-6 ]   |                               |                        |
| * Lymph Node, Mandibular |                              | Ectasia                       | Moderate               |
|                          | [ Ectasia TGLs = 1-14 ]      |                               |                        |
| * Nose                   |                              | Accumulation, Hyaline Droplet | Moderate               |
| * Pancreas               |                              | Basophilic Focus              |                        |
| * Pituitary Gland        | Pars Distalis                | Adenoma                       |                        |
|                          | [ Adenoma TGLs = 2-10 ]      |                               |                        |
| * Prostate               |                              | Hyperplasia                   | Mild                   |
| * Skin                   |                              | Inflammation                  | Chronic Active, Marked |
|                          | [ Inflammation TGLs = 4-15 ] |                               |                        |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

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**ANIMAL ID:** 205

**TRT#:** 3

**SEX:** Male

**DAY ON TEST:** 729

**DOSE:** 10 mg/m3

**DISP:** Terminal Sacrifice

**HISTO:** 57124

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**ORGAN AND ACCOUNTABLE SITE STATUS**

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\* Thyroid Gland

C Cell

Adenoma

C Cell

Hyperplasia

Mild

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TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 206

TRT#: 3

SEX: Male

DAY ON TEST: 729

DOSE: 10 mg/m3

DISP: Terminal Sacrifice

HISTO: 57125

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                            |                           |                             |                          |
|----------------------------|---------------------------|-----------------------------|--------------------------|
| * Adrenal Medulla          | * Bone                    | * Bone Marrow               | * Brain                  |
| * Epididymis               | * Esophagus               | * Eye                       | * Intestine Large, Cecum |
| * Intestine Large, Colon   | * Intestine Large, Rectum | * Intestine Small, Duodenum | * Intestine Small, Ileum |
| * Intestine Small, Jejunum | * Islets, Pancreatic      | * Lymph Node, Bronchial     | * Lymph Node, Mandibular |
| * Lymph Node, Mediastinal  | * Lymph Node, Mesenteric  | * Mammary Gland             | * Pancreas               |
| * Parathyroid Gland        | * Prostate                | * Salivary Glands           | * Seminal Vesicle        |
| * Skin                     | * Spleen                  | * Stomach, Forestomach      | * Stomach, Glandular     |
| * Testes                   | * Thymus                  | * Trachea                   | * Urinary Bladder        |

OBSERVATIONS

- |                   |                              |                               |                                     |
|-------------------|------------------------------|-------------------------------|-------------------------------------|
| * Adrenal Cortex  |                              | Hypertrophy                   | Mild                                |
| * Harderian Gland |                              | Hyperplasia                   | Minimal                             |
| * Heart           |                              | Cardiomyopathy                | Minimal                             |
| * Kidney          |                              | Nephropathy                   | Minimal                             |
| * Larynx          |                              | Metaplasia                    | Squamous, Mild                      |
| * Liver           |                              | Basophilic Focus              |                                     |
|                   |                              | Clear Cell Focus              |                                     |
| * Lung            | Bronchiole                   | Hyperplasia                   | Minimal                             |
|                   |                              | Inflammation                  | Granulomatous, Minimal              |
|                   |                              | Osteosarcoma                  | Metastatic (Uncertain Primary Site) |
|                   | [ Osteosarcoma TGLs = 1-15 ] |                               |                                     |
| * Nose            |                              | Accumulation, Hyaline Droplet | Moderate                            |
|                   | Glands, Olfactory Epi        | Hyperplasia                   | Minimal                             |
| * Pituitary Gland | Pars Distalis                | Hyperplasia                   | Mild                                |
| * Preputial Gland |                              | Inflammation                  | Chronic Active, Mild                |
| * Thyroid Gland   | C Cell                       | Adenoma                       |                                     |
|                   | C Cell                       | Hyperplasia                   | Mild                                |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 207

TRT#: 3

SEX: Male

DAY ON TEST: 729

DOSE: 10 mg/m3

DISP: Terminal Sacrifice

HISTO: 57126

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                          |                            |                           |                             |
|--------------------------|----------------------------|---------------------------|-----------------------------|
| * Adrenal Cortex         | * Adrenal Medulla          | * Bone                    | * Bone Marrow               |
| * Brain                  | * Epididymis               | * Esophagus               | * Eye                       |
| * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum | * Intestine Small, Duodenum |
| * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      | * Lung                      |
| * Lymph Node, Mandibular | * Lymph Node, Mediastinal  | * Lymph Node, Mesenteric  | * Pancreas                  |
| * Parathyroid Gland      | * Preputial Gland          | * Prostate                | * Salivary Glands           |
| * Seminal Vesicle        | * Spleen                   | * Stomach, Forestomach    | * Stomach, Glandular        |
| * Thymus                 | * Trachea                  | * Urinary Bladder         |                             |

MISSING

- |                         |                 |
|-------------------------|-----------------|
| * Lymph Node, Bronchial | * Mammary Gland |
|-------------------------|-----------------|

OBSERVATIONS

- |                   |                                      |                               |                        |
|-------------------|--------------------------------------|-------------------------------|------------------------|
| * Harderian Gland |                                      | Hyperplasia                   | Minimal                |
| * Heart           |                                      | Cardiomyopathy                | Minimal                |
| * Kidney          | Renal Tubule                         | Adenoma                       |                        |
|                   |                                      | Nephropathy                   | Mild                   |
| * Larynx          |                                      | Metaplasia                    | Squamous, Minimal      |
| * Liver           |                                      | Basophilic Focus              |                        |
|                   |                                      | Clear Cell Focus              |                        |
| * Nose            |                                      | Accumulation, Hyaline Droplet | Moderate               |
|                   | Glands, Olfactory Epi                | Hyperplasia                   | Mild                   |
| * Pituitary Gland | Pars Distalis                        | Hyperplasia                   | Moderate               |
| * Skin            |                                      | Inflammation                  | Chronic Active, Marked |
|                   | Subcut Tiss                          | Schwannoma Malignant          |                        |
|                   | [ Inflammation TGLs = 2-16 ]         |                               |                        |
|                   | [ Schwannoma Malignant TGLs = 1-15 ] |                               |                        |
| * Testes          |                                      | Edema                         | Mild                   |
| * Thyroid Gland   | C Cell                               | Hyperplasia                   | Minimal                |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 208

TRT#: 3

SEX: Male

DAY ON TEST: 286

DOSE: 10 mg/m3

DISP: Natural Death

HISTO: 57127

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                             |                          |                            |                           |
|-----------------------------|--------------------------|----------------------------|---------------------------|
| * Adrenal Cortex            | * Bone                   | * Brain                    | * Esophagus               |
| * Heart                     | * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum |
| * Intestine Small, Duodenum | * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      |
| * Pancreas                  | * Parathyroid Gland      | * Pituitary Gland          | * Preputial Gland         |
| * Seminal Vesicle           | * Skin                   | * Stomach, Forestomach     | * Stomach, Glandular      |
| * Testes                    | * Trachea                | * Urinary Bladder          |                           |

MISSING

- \* Mammary Gland

OBSERVATIONS

- |                           |                                       |                      |                |
|---------------------------|---------------------------------------|----------------------|----------------|
| * Adrenal Medulla         |                                       | Leukemia Mononuclear |                |
| * Bone Marrow             |                                       | Leukemia Mononuclear |                |
| * Epididymis              |                                       | Leukemia Mononuclear |                |
| * Eye                     |                                       | Leukemia Mononuclear |                |
| * Harderian Gland         |                                       | Leukemia Mononuclear |                |
| * Kidney                  |                                       | Leukemia Mononuclear |                |
|                           | [ Leukemia Mononuclear TGLs = 5-7 ]   |                      |                |
| * Larynx                  |                                       | Metaplasia           | Squamous, Mild |
| * Liver                   |                                       | Leukemia Mononuclear |                |
|                           | [ Leukemia Mononuclear TGLs = 4-6 ]   |                      |                |
| * Lung                    |                                       | Leukemia Mononuclear |                |
|                           | [ Leukemia Mononuclear TGLs = 6-4+5 ] |                      |                |
| * Lymph Node, Bronchial   |                                       | Leukemia Mononuclear |                |
| * Lymph Node, Mandibular  |                                       | Leukemia Mononuclear |                |
|                           | [ Leukemia Mononuclear TGLs = 1-14 ]  |                      |                |
| * Lymph Node, Mediastinal |                                       | Leukemia Mononuclear |                |
|                           | [ Leukemia Mononuclear TGLs = 2-3 ]   |                      |                |
| * Lymph Node, Mesenteric  |                                       | Leukemia Mononuclear |                |
|                           | [ Leukemia Mononuclear TGLs = 7-8 ]   |                      |                |
| * Nose                    |                                       | Leukemia Mononuclear |                |
| * Prostate                |                                       | Leukemia Mononuclear |                |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

---

ANIMAL ID: 208

TRT#: 3

SEX: Male

DAY ON TEST: 286

DOSE: 10 mg/m3

DISP: Natural Death

HISTO: 57127

---

**ORGAN AND ACCOUNTABLE SITE STATUS**

---

\* Salivary Glands

Leukemia Mononuclear

\* Spleen

Leukemia Mononuclear

[ Leukemia Mononuclear TGLs = 3-16 ]

\* Thymus

Leukemia Mononuclear

\* Thyroid Gland

Leukemia Mononuclear

---

PRIMARY CAUSE OF DEATH

- Spleen Leukemia Mononuclear

---



TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 209

TRT#: 3

SEX: Male

DAY ON TEST: 730

DOSE: 10 mg/m3

DISP: Terminal Sacrifice

HISTO: 57128

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Medulla
- \* Epididymis
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Lymph Node, Bronchial
- \* Parathyroid Gland
- \* Spleen
- \* Trachea
- \* Bone
- \* Esophagus
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Lymph Node, Mediastinal
- \* Preputial Gland
- \* Stomach, Forestomach
- \* Urinary Bladder
- \* Bone Marrow
- \* Eye
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Lymph Node, Mesenteric
- \* Salivary Glands
- \* Stomach, Glandular
- \* Brain
- \* Harderian Gland
- \* Intestine Small, Duodenum
- \* Lung
- \* Pancreas
- \* Seminal Vesicle
- \* Testes

MISSING

- \* Lymph Node, Mandibular
- \* Mammary Gland

INSUFFICIENT TISSUE

- \* Thymus

OBSERVATIONS

- |                              |                       |                               |                          |
|------------------------------|-----------------------|-------------------------------|--------------------------|
| * Adrenal Cortex             |                       | Hyperplasia                   | Mild                     |
| * Heart                      |                       | Cardiomyopathy                | Mild                     |
| * Kidney                     |                       | Nephropathy                   | Mild                     |
| * Larynx                     |                       | Metaplasia                    | Squamous, Mild           |
| * Liver                      |                       | Basophilic Focus              |                          |
|                              |                       | Clear Cell Focus              |                          |
| * Nose                       |                       | Accumulation, Hyaline Droplet | Marked                   |
|                              | Glands, Olfactory Epi | Hyperplasia                   | Moderate                 |
| * Pituitary Gland            | Pars Distalis         | Adenoma                       |                          |
| [ Adenoma TGLs = 3-10 ]      |                       |                               |                          |
| * Prostate                   |                       | Hyperplasia                   | Mild                     |
| * Skin                       | Sebaceous GI          | Adenoma                       |                          |
|                              |                       | Inflammation                  | Chronic Active, Moderate |
| [ Adenoma TGLs = 1-15 ]      |                       |                               |                          |
| [ Inflammation TGLs = 2-16 ] |                       |                               |                          |
| * Thyroid Gland              | C Cell                | Hyperplasia                   | Minimal                  |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 210

TRT#: 3

SEX: Male

DAY ON TEST: 729

DOSE: 10 mg/m3

DISP: Terminal Sacrifice

HISTO: 57129

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Medulla
- \* Epididymis
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Lymph Node, Bronchial
- \* Parathyroid Gland
- \* Seminal Vesicle
- \* Stomach, Glandular
- \* Urinary Bladder
- \* Bone
- \* Esophagus
- \* Intestine Large, Colon
- \* Islets, Pancreatic
- \* Lymph Node, Mandibular
- \* Pituitary Gland
- \* Skin
- \* Testes
- \* Bone Marrow
- \* Eye
- \* Intestine Large, Rectum
- \* Kidney
- \* Lymph Node, Mediastinal
- \* Preputial Gland
- \* Spleen
- \* Thymus
- \* Brain
- \* Harderian Gland
- \* Intestine Small, Duodenum
- \* Lung
- \* Lymph Node, Mesenteric
- \* Salivary Glands
- \* Stomach, Forestomach
- \* Trachea

MISSING

- \* Mammary Gland

OBSERVATIONS

- |  |   |   |   |
|--|---|---|---|
| <ul style="list-style-type: none"> <li>* Adrenal Cortex</li> <li>* Heart</li> <li>* Intestine Small, Jejunum<br/>    [ Diverticulum TGLs = 2-16 ]</li> <li>* Larynx</li> <li>* Liver</li> <li>* Nose</li> <li>* Pancreas</li> <li>* Prostate</li> <li>* Thyroid Gland</li> </ul> | <ul style="list-style-type: none"> <li>Bile Duct</li> <li>C Cell</li> </ul> | <ul style="list-style-type: none"> <li>Hyperplasia</li> <li>Hypertrophy</li> <li>Cardiomyopathy</li> <li>Diverticulum</li> <li>Metaplasia</li> <li>Clear Cell Focus</li> <li>Cyst</li> <li>Hyperplasia</li> <li>Necrosis</li> <li>Accumulation, Hyaline Droplet</li> <li>Hyperplasia</li> <li>Basophilic Focus</li> <li>Hyperplasia</li> <li>Hyperplasia</li> </ul> | <ul style="list-style-type: none"> <li>Mild</li> <li>Mild</li> <li>Mild</li> <li>Marked</li> <li>Squamous, Minimal</li> <li>Mild</li> <li>Minimal</li> <li>Mild</li> <li>Moderate</li> <li>Mild</li> <li>Mild</li> <li>Minimal</li> </ul> |
|--|---|---|---|

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 211

TRT#: 3

SEX: Male

DAY ON TEST: 730

DOSE: 10 mg/m3

DISP: Terminal Sacrifice

HISTO: 57130

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                           |                             |                          |                            |
|---------------------------|-----------------------------|--------------------------|----------------------------|
| * Adrenal Medulla         | * Bone                      | * Bone Marrow            | * Brain                    |
| * Epididymis              | * Esophagus                 | * Intestine Large, Cecum | * Intestine Large, Colon   |
| * Intestine Large, Rectum | * Intestine Small, Duodenum | * Intestine Small, Ileum | * Intestine Small, Jejunum |
| * Islets, Pancreatic      | * Lung                      | * Lymph Node, Bronchial  | * Lymph Node, Mandibular   |
| * Lymph Node, Mediastinal | * Lymph Node, Mesenteric    | * Pancreas               | * Preputial Gland          |
| * Prostate                | * Salivary Glands           | * Seminal Vesicle        | * Skin                     |
| * Spleen                  | * Stomach, Forestomach      | * Stomach, Glandular     | * Testes                   |
| * Thymus                  | * Thyroid Gland             | * Trachea                | * Urinary Bladder          |

MISSING

- |                 |                     |
|-----------------|---------------------|
| * Mammary Gland | * Parathyroid Gland |
|-----------------|---------------------|

OBSERVATIONS

- |                   |  |                               |                |
|-------------------|--|-------------------------------|----------------|
| * Adrenal Cortex  |  | Hyperplasia                   | Mild           |
|                   |  | Hypertrophy                   | Mild           |
| * Eye             | Retina                                 | Atrophy                       | Moderate       |
|                   |  | Cataract                      | Marked         |
| * Harderian Gland |  | Hyperplasia                   | Mild           |
| * Heart           |  | Cardiomyopathy                | Minimal        |
| * Kidney          |  | Nephropathy                   | Moderate       |
| * Larynx          |  | Metaplasia                    | Squamous, Mild |
| * Liver           |  | Hepatocellular Adenoma        |                |
|                   | [ Hepatocellular Adenoma TGLs = 1-15 ] |                               |                |
| * Nose            |  | Accumulation, Hyaline Droplet | Moderate       |
|                   | Glands, Olfactory Epi                  | Hyperplasia                   | Minimal        |
| * Pituitary Gland | Pars Distalis                          | Hyperplasia                   | Mild           |

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 212

TRT#: 3

SEX: Male

DAY ON TEST: 729

DOSE: 10 mg/m3

DISP: Terminal Sacrifice

HISTO: 57131

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                          |                            |                           |                             |
|--------------------------|----------------------------|---------------------------|-----------------------------|
| * Adrenal Medulla        | * Bone                     | * Bone Marrow             | * Brain                     |
| * Epididymis             | * Esophagus                | * Eye                     | * Harderian Gland           |
| * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum | * Intestine Small, Duodenum |
| * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      | * Kidney                    |
| * Lymph Node, Bronchial  | * Lymph Node, Mandibular   | * Lymph Node, Mediastinal | * Lymph Node, Mesenteric    |
| * Mammary Gland          | * Pancreas                 | * Parathyroid Gland       | * Preputial Gland           |
| * Prostate               | * Salivary Glands          | * Seminal Vesicle         | * Skin                      |
| * Spleen                 | * Stomach, Forestomach     | * Stomach, Glandular      | * Testes                    |
| * Thymus                 | * Trachea                  | * Urinary Bladder         |                             |

OBSERVATIONS

- |                   |                               |                               |                        |
|-------------------|-------------------------------|-------------------------------|------------------------|
| * Adrenal Cortex  |                               | Hyperplasia                   | Mild                   |
| * Heart           |                               | Cardiomyopathy                | Minimal                |
| * Larynx          |                               | Metaplasia                    | Squamous, Minimal      |
| * Liver           |                               | Angiectasis                   | Minimal                |
|                   |                               | Basophilic Focus              |                        |
|                   |                               | Clear Cell Focus              |                        |
| * Lung            | [ Angiectasis TGLs = 2-6+15 ] | Bronchiole                    | Hyperplasia            |
|                   |                               |                               | Inflammation           |
|                   | [ Inflammation TGLs = 3-4+5 ] |                               | Minimal                |
|                   |                               |                               | Granulomatous, Minimal |
|                   | Mesentery                     | Fat                           | Necrosis               |
|                   | [ Necrosis TGLs = 1-16 ]      |                               | Mild                   |
| * Nose            |                               | Accumulation, Hyaline Droplet | Marked                 |
|                   |                               | Glands, Olfactory Epi         | Hyperplasia            |
| * Pituitary Gland |                               | Pars Distalis                 | Adenoma                |
| * Thyroid Gland   |                               | C Cell                        | Hyperplasia            |
|                   |                               | Follicular Cel                | Hyperplasia            |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 213

TRT#: 3

SEX: Male

DAY ON TEST: 729

DOSE: 10 mg/m3

DISP: Terminal Sacrifice

HISTO: 57132

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                             |                          |                            |                           |
|-----------------------------|--------------------------|----------------------------|---------------------------|
| * Adrenal Cortex            | * Bone                   | * Bone Marrow              | * Brain                   |
| * Epididymis                | * Esophagus              | * Eye                      | * Harderian Gland         |
| * Heart                     | * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum |
| * Intestine Small, Duodenum | * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      |
| * Lung                      | * Lymph Node, Bronchial  | * Lymph Node, Mediastinal  | * Lymph Node, Mesenteric  |
| * Pancreas                  | * Parathyroid Gland      | * Pituitary Gland          | * Preputial Gland         |
| * Salivary Glands           | * Seminal Vesicle        | * Spleen                   | * Stomach, Forestomach    |
| * Stomach, Glandular        | * Thymus                 | * Trachea                  | * Urinary Bladder         |

MISSING

- \* Mammary Gland

INSUFFICIENT TISSUE

- \* Adrenal Medulla

OBSERVATIONS

- |                          |                              |                               |                        |
|--------------------------|------------------------------|-------------------------------|------------------------|
| * Kidney                 |                              | Nephropathy                   | Mild                   |
| * Larynx                 |                              | Metaplasia                    | Squamous, Mild         |
| * Liver                  |                              | Angiectasis                   | Minimal                |
|                          |                              | Clear Cell Focus              |                        |
|                          | [ Angiectasis TGLs = 7-6 ]   |                               |                        |
| * Lymph Node, Mandibular |                              | Hyperplasia                   | Lymphoid, Moderate     |
|                          | [ Hyperplasia TGLs = 3-17 ]  |                               |                        |
| * Nose                   |                              | Accumulation, Hyaline Droplet | Mild                   |
| * Prostate               |                              | Hyperplasia                   | Moderate               |
| * Skin                   | Subcut Tiss                  | Fibroma                       |                        |
|                          |                              | Inflammation                  | Chronic Active, Marked |
|                          | [ Fibroma TGLs = 8-18 ]      |                               |                        |
|                          | [ Inflammation TGLs = 2-16 ] |                               |                        |
| * Testes                 | Interstit Cell               | Adenoma                       |                        |
|                          | [ Adenoma TGLs = 4-9 ]       |                               |                        |
| * Thyroid Gland          | C Cell                       | Hyperplasia                   | Minimal                |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 214

TRT#: 3

SEX: Male

DAY ON TEST: 729

DOSE: 10 mg/m3

DISP: Terminal Sacrifice

HISTO: 57133

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                            |                           |                             |                          |
|----------------------------|---------------------------|-----------------------------|--------------------------|
| * Adrenal Medulla          | * Bone                    | * Bone Marrow               | * Brain                  |
| * Epididymis               | * Esophagus               | * Eye                       | * Harderian Gland        |
| * Intestine Large, Cecum   | * Intestine Large, Colon  | * Intestine Small, Duodenum | * Intestine Small, Ileum |
| * Intestine Small, Jejunum | * Islets, Pancreatic      | * Lung                      | * Lymph Node, Bronchial  |
| * Lymph Node, Mandibular   | * Lymph Node, Mediastinal | * Lymph Node, Mesenteric    | * Pancreas               |
| * Preputial Gland          | * Prostate                | * Salivary Glands           | * Seminal Vesicle        |
| * Skin                     | * Spleen                  | * Stomach, Forestomach      | * Stomach, Glandular     |
| * Testes                   | * Thymus                  | * Trachea                   | * Urinary Bladder        |

MISSING

- |                 |                     |
|-----------------|---------------------|
| * Mammary Gland | * Parathyroid Gland |
|-----------------|---------------------|

INSUFFICIENT TISSUE

- \* Intestine Large, Rectum

OBSERVATIONS

- |                   |                       |                               |                   |
|-------------------|-----------------------|-------------------------------|-------------------|
| * Adrenal Cortex  |                       | Hyperplasia                   | Mild              |
|                   |                       | Hypertrophy                   | Mild              |
| * Heart           |                       | Cardiomyopathy                | Minimal           |
| * Kidney          |                       | Nephropathy                   | Moderate          |
| * Larynx          |                       | Metaplasia                    | Squamous, Minimal |
| * Liver           |                       | Basophilic Focus              |                   |
|                   |                       | Clear Cell Focus              |                   |
| * Nose            |                       | Accumulation, Hyaline Droplet | Moderate          |
|                   | Glands, Olfactory Epi | Hyperplasia                   | Minimal           |
| * Pituitary Gland | Pars Distalis         | Adenoma                       |                   |
| * Thyroid Gland   | C Cell                | Hyperplasia                   | Minimal           |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 215

TRT#: 3

SEX: Male

DAY ON TEST: 730

DOSE: 10 mg/m3

DISP: Terminal Sacrifice

HISTO: 57134

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                          |                            |                           |                             |
|--------------------------|----------------------------|---------------------------|-----------------------------|
| * Adrenal Medulla        | * Bone                     | * Bone Marrow             | * Brain                     |
| * Epididymis             | * Esophagus                | * Eye                     | * Harderian Gland           |
| * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum | * Intestine Small, Duodenum |
| * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      | * Liver                     |
| * Lung                   | * Lymph Node, Bronchial    | * Lymph Node, Mandibular  | * Lymph Node, Mediastinal   |
| * Lymph Node, Mesenteric | * Pancreas                 | * Parathyroid Gland       | * Preputial Gland           |
| * Salivary Glands        | * Seminal Vesicle          | * Spleen                  | * Stomach, Forestomach      |
| * Stomach, Glandular     | * Trachea                  | * Urinary Bladder         |                             |

MISSING

- |                 |          |
|-----------------|----------|
| * Mammary Gland | * Thymus |
|-----------------|----------|

OBSERVATIONS

- |                   |                              |                               |                        |
|-------------------|------------------------------|-------------------------------|------------------------|
| * Adrenal Cortex  |                              | Hypertrophy                   | Mild                   |
| * Heart           |                              | Cardiomyopathy                | Minimal                |
| * Kidney          |                              | Nephropathy                   | Minimal                |
| * Larynx          |                              | Metaplasia                    | Squamous, Mild         |
| * Nose            |                              | Accumulation, Hyaline Droplet | Moderate               |
|                   | Glands, Olfactory Epi        | Hyperplasia                   | Minimal                |
| * Pituitary Gland | Pars Distalis                | Hyperplasia                   | Mild                   |
| * Prostate        |                              | Hyperplasia                   | Moderate               |
| * Skin            |                              | Inflammation                  | Chronic Active, Marked |
|                   | [ Inflammation TGLs = 1-15 ] |                               |                        |
| * Testes          |                              | Edema                         | Mild                   |
| * Thyroid Gland   | C Cell                       | Hyperplasia                   | Minimal                |

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 216

TRT#: 3

SEX: Male

DAY ON TEST: 633

DOSE: 10 mg/m3

DISP: Moribund Sacrifice

HISTO: 57135

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                           |                             |                          |                            |
|---------------------------|-----------------------------|--------------------------|----------------------------|
| * Adrenal Cortex          | * Adrenal Medulla           | * Bone                   | * Bone Marrow              |
| * Brain                   | * Epididymis                | * Esophagus              | * Eye                      |
| * Harderian Gland         | * Heart                     | * Intestine Large, Cecum | * Intestine Large, Colon   |
| * Intestine Large, Rectum | * Intestine Small, Duodenum | * Intestine Small, Ileum | * Intestine Small, Jejunum |
| * Islets, Pancreatic      | * Liver                     | * Lung                   | * Lymph Node, Bronchial    |
| * Lymph Node, Mandibular  | * Lymph Node, Mediastinal   | * Lymph Node, Mesenteric | * Parathyroid Gland        |
| Peripheral Nerve          | * Preputial Gland           | * Prostate               | * Salivary Glands          |
| * Seminal Vesicle         | Spinal Cord                 | * Spleen                 | * Stomach, Forestomach     |
| * Stomach, Glandular      | * Testes                    | * Thymus                 | * Trachea                  |
| * Urinary Bladder         |                             |                          |                            |

MISSING

- \* Mammary Gland

OBSERVATIONS

- |                   |                       |                               |                        |
|-------------------|-----------------------|-------------------------------|------------------------|
| * Kidney          |                       | Inflammation                  | Suppurative, Mild      |
| * Larynx          |                       | Metaplasia                    | Squamous, Mild         |
| Lymph Node        | Renal                 | Ectasia                       | Moderate               |
|                   | Lumbar                | Infiltration Cellular         | Plasma Cell, Mild      |
|                   |                       |                               |                        |
|                   |                       |                               |                        |
|                   |                       |                               |                        |
| * Nose            |                       | Accumulation, Hyaline Droplet | Moderate               |
|                   | Glands, Olfactory Epi | Hyperplasia                   | Mild                   |
| * Pancreas        |                       | Basophilic Focus              |                        |
| * Pituitary Gland | Pars Distalis         | Adenoma                       |                        |
|                   |                       |                               |                        |
|                   |                       |                               |                        |
| * Skin            |                       | Inflammation                  | Chronic Active, Marked |
|                   |                       |                               |                        |
|                   |                       |                               |                        |
| * Thyroid Gland   | C Cell                | Hyperplasia                   | Minimal                |

PRIMARY CAUSE OF DEATH - Pituitary Gland Pars Distalis Adenoma

\* PROTOCOL REQUIRED TISSUE



TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 217

TRT#: 3

SEX: Male

DAY ON TEST: 562

DOSE: 10 mg/m3

DISP: Moribund Sacrifice

HISTO: 57136

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                             |                           |                            |                           |
|-----------------------------|---------------------------|----------------------------|---------------------------|
| * Adrenal Cortex            | * Adrenal Medulla         | * Bone                     | * Bone Marrow             |
| * Epididymis                | * Esophagus               | * Eye                      | * Harderian Gland         |
| * Heart                     | * Intestine Large, Cecum  | * Intestine Large, Colon   | * Intestine Large, Rectum |
| * Intestine Small, Duodenum | * Intestine Small, Ileum  | * Intestine Small, Jejunum | * Islets, Pancreatic      |
| * Kidney                    | * Liver                   | * Lung                     | * Lymph Node, Bronchial   |
| * Lymph Node, Mandibular    | * Lymph Node, Mediastinal | * Lymph Node, Mesenteric   | * Pancreas                |
| * Parathyroid Gland         | * Pituitary Gland         | * Preputial Gland          | * Prostate                |
| * Salivary Glands           | * Seminal Vesicle         | * Skin                     | * Spleen                  |
| * Stomach, Forestomach      | * Stomach, Glandular      | * Testes                   | * Thymus                  |
| * Trachea                   | * Urinary Bladder         |                            |                           |

MISSING

- \* Mammary Gland

OBSERVATIONS

- |                 |                                      |                               |                   |
|-----------------|--------------------------------------|-------------------------------|-------------------|
| * Brain         |                                      | Astrocytoma Malignant         |                   |
|                 | [ Astrocytoma Malignant TGLs = 2-1 ] |                               |                   |
| * Larynx        |                                      | Metaplasia                    | Squamous, Minimal |
| Mesentery       | Fat                                  | Necrosis                      | Mild              |
|                 | [ Necrosis TGLs = 1-15 ]             |                               |                   |
| * Nose          |                                      | Accumulation, Hyaline Droplet | Moderate          |
|                 | Glands, Olfactory Epi                | Hyperplasia                   | Mild              |
| * Thyroid Gland | C Cell                               | Hyperplasia                   | Minimal           |

PRIMARY CAUSE OF DEATH - Brain Astrocytoma Malignant

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 218

TRT#: 3

SEX: Male

DAY ON TEST: 564

DOSE: 10 mg/m3

DISP: Moribund Sacrifice

HISTO: 57137

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Medulla
- \* Esophagus
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Liver
- \* Pancreas
- \* Salivary Glands
- \* Spleen
- \* Thyroid Gland
- \* Bone Marrow
- \* Eye
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Lymph Node, Bronchial
- \* Parathyroid Gland
- \* Seminal Vesicle
- \* Stomach, Forestomach
- \* Trachea
- \* Brain
- \* Harderian Gland
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Lymph Node, Mediastinal
- Peripheral Nerve
- \* Skin
- \* Stomach, Glandular
- \* Epididymis
- \* Heart
- \* Intestine Small, Duodenum
- \* Kidney
- \* Lymph Node, Mesenteric
- \* Preputial Gland
- Spinal Cord
- \* Thymus

MISSING

- \* Lymph Node, Mandibular
- \* Mammary Gland

OBSERVATIONS

- \* Adrenal Cortex
- \* Bone [ Osteosarcoma TGLs = 1-16 ]
- \* Larynx
- \* Lung
- \* Nose
- \* Pituitary Gland
- \* Prostate
- \* Testes
- \* Urinary Bladder
- Hyperplasia
- Osteosarcoma
- Metaplasia
- Hyperplasia
- Osteosarcoma
- Accumulation, Hyaline Droplet
- Hyperplasia
- Inflammation
- Atrophy
- Hyperplasia
- Inflammation
- Mild
- Squamous, Mild
- Minimal
- Metastatic (Bone)
- Moderate
- Mild
- Chronic Active, Moderate
- Mild
- Mild
- Chronic Active, Minimal

PRIMARY CAUSE OF DEATH

- Bone Osteosarcoma

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 219

TRT#: 3

SEX: Male

DAY ON TEST: 429

DOSE: 10 mg/m3

DISP: Natural Death

HISTO: 57138

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                         |                          |                           |                          |
|-------------------------|--------------------------|---------------------------|--------------------------|
| * Adrenal Medulla       | * Bone                   | * Bone Marrow             | * Brain                  |
| * Epididymis            | * Esophagus              | * Harderian Gland         | * Intestine Large, Colon |
| * Islets, Pancreatic    | * Kidney                 | * Liver                   | * Lung                   |
| * Lymph Node, Bronchial | * Lymph Node, Mandibular | * Lymph Node, Mediastinal | * Lymph Node, Mesenteric |
| * Pancreas              | * Parathyroid Gland      | * Pituitary Gland         | * Preputial Gland        |
| * Prostate              | * Salivary Glands        | * Seminal Vesicle         | * Spleen                 |
| * Stomach, Forestomach  | * Stomach, Glandular     | * Testes                  | * Thymus                 |
| * Thyroid Gland         | * Trachea                | * Urinary Bladder         |                          |

MISSING

- \* Mammary Gland

AUTO PRECLUDES DIAG.

- |                            |                           |                             |                          |
|----------------------------|---------------------------|-----------------------------|--------------------------|
| * Intestine Large, Cecum   | * Intestine Large, Rectum | * Intestine Small, Duodenum | * Intestine Small, Ileum |
| * Intestine Small, Jejunum |                           |                             |                          |

OBSERVATIONS

- |   |                       |                               |                          |
|---|-----------------------|-------------------------------|--------------------------|
| * Adrenal Cortex<br>[ Carcinoma TGLs = 3-15 ] |                       | Carcinoma                     |                          |
| * Eye   |                       | Cataract                      | Mild                     |
| * Heart                                       |                       | Cardiomyopathy                | Minimal                  |
| * Larynx                                      |                       | Metaplasia                    | Squamous, Moderate       |
| * Nose  |                       | Accumulation, Hyaline Droplet | Moderate                 |
|   | Glands, Olfactory Epi | Hyperplasia                   | Mild                     |
| * Skin<br>[ Inflammation TGLs = 1-16 ]        |                       | Inflammation                  | Chronic Active, Moderate |

PRIMARY CAUSE OF DEATH

- Adrenal Cortex Carcinoma

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 220

TRT#: 3

SEX: Male

DAY ON TEST: 730

DOSE: 10 mg/m3

DISP: Terminal Sacrifice

HISTO: 57139

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                            |                           |                             |                          |
|----------------------------|---------------------------|-----------------------------|--------------------------|
| * Adrenal Medulla          | * Bone                    | * Bone Marrow               | * Brain                  |
| * Epididymis               | * Esophagus               | * Harderian Gland           | * Intestine Large, Cecum |
| * Intestine Large, Colon   | * Intestine Large, Rectum | * Intestine Small, Duodenum | * Intestine Small, Ileum |
| * Intestine Small, Jejunum | * Islets, Pancreatic      | * Larynx                    | * Lung                   |
| * Lymph Node, Bronchial    | * Lymph Node, Mediastinal | * Lymph Node, Mesenteric    | * Pancreas               |
| * Parathyroid Gland        | * Preputial Gland         | * Salivary Glands           | * Seminal Vesicle        |
| * Spleen                   | * Stomach, Forestomach    | * Stomach, Glandular        | * Testes                 |
| * Thymus                   | * Trachea                 | * Urinary Bladder           |                          |

MISSING

- |                          |                 |
|--------------------------|-----------------|
| * Lymph Node, Mandibular | * Mammary Gland |
|--------------------------|-----------------|

OBSERVATIONS

- |                   |                                    |                               |          |
|-------------------|------------------------------------|-------------------------------|----------|
| * Adrenal Cortex  |                                    | Hyperplasia                   | Mild     |
| * Eye             | Retina                             | Atrophy                       | Moderate |
| * Heart           |                                    | Cardiomyopathy                | Minimal  |
| * Kidney          |                                    | Nephropathy                   | Mild     |
| * Liver           |                                    | Clear Cell Focus              |          |
| * Nose            |                                    | Accumulation, Hyaline Droplet | Mild     |
| * Pituitary Gland | Glands, Olfactory Epi              | Hyperplasia                   | Minimal  |
|                   | Pars Distalis                      | Adenoma                       |          |
|                   | [ Adenoma TGLs = 2-10 ]            |                               |          |
| * Prostate        |                                    | Hyperplasia                   | Mild     |
| * Skin            | Subcut Tiss                        | Neural Crest Tumor            |          |
|                   | [ Neural Crest Tumor TGLs = 1-15 ] |                               |          |
| * Thyroid Gland   | C Cell                             | Hyperplasia                   | Minimal  |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 221

TRT#: 3

SEX: Male

DAY ON TEST: 730

DOSE: 10 mg/m3

DISP: Terminal Sacrifice

HISTO: 57140

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                             |                          |                            |                           |
|-----------------------------|--------------------------|----------------------------|---------------------------|
| * Adrenal Cortex            | * Adrenal Medulla        | * Bone                     | * Bone Marrow             |
| * Brain                     | * Epididymis             | * Esophagus                | * Eye                     |
| * Harderian Gland           | * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum |
| * Intestine Small, Duodenum | * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      |
| * Lymph Node, Bronchial     | * Lymph Node, Mandibular | * Lymph Node, Mediastinal  | * Lymph Node, Mesenteric  |
| * Pancreas                  | * Parathyroid Gland      | * Preputial Gland          | * Prostate                |
| * Salivary Glands           | * Seminal Vesicle        | * Spleen                   | * Stomach, Forestomach    |
| * Stomach, Glandular        | * Thymus                 | * Trachea                  |                           |

MISSING

- \* Mammary Gland

OBSERVATIONS

- |                   |                              |                               |                          |
|-------------------|------------------------------|-------------------------------|--------------------------|
| * Heart           |                              | Cardiomyopathy                | Minimal                  |
| * Kidney          |                              | Nephropathy                   | Moderate                 |
|                   | [ Nephropathy TGLs = 5-7 ]   |                               |                          |
| * Larynx          |                              | Metaplasia                    | Squamous, Minimal        |
| * Liver           |                              | Basophilic Focus              |                          |
|                   |                              | Clear Cell Focus              |                          |
|                   |                              | Bile Duct                     |                          |
|                   | [ Dilatation TGLs = 4-15 ]   | Dilatation                    | Mild                     |
| * Lung            |                              | Alveolar Epith                | Hyperplasia              |
|                   |                              | Lumbar                        | Ectasia                  |
|                   | [ Ectasia TGLs = 6-16 ]      |                               |                          |
| * Nose            |                              | Accumulation, Hyaline Droplet | Moderate                 |
|                   |                              | Glands, Olfactory Epi         | Hyperplasia              |
| * Pituitary Gland |                              | Pars Distalis                 | Adenoma                  |
|                   | [ Adenoma TGLs = 3-10 ]      |                               |                          |
| * Skin            |                              | Inflammation                  | Chronic Active, Moderate |
|                   | [ Inflammation TGLs = 1-17 ] |                               |                          |
| * Testes          |                              | Artery                        | Inflammation             |
| * Thyroid Gland   |                              | C Cell                        | Hyperplasia              |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

---

ANIMAL ID: 221

TRT#: 3

SEX: Male

DAY ON TEST: 730

DOSE: 10 mg/m3

DISP: Terminal Sacrifice

HISTO: 57140

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**ORGAN AND ACCOUNTABLE SITE STATUS**

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\* Urinary Bladder

Calculus Gross Observation

Mild

[ Calculus Gross Observation TGLs = 2-10 ]

---

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 222

TRT#: 3

SEX: Male

DAY ON TEST: 677

DOSE: 10 mg/m3

DISP: Moribund Sacrifice

HISTO: 57141

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Medulla
- \* Epididymis
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Lung
- \* Lymph Node, Mesenteric
- \* Preputial Gland
- \* Spleen
- \* Trachea
- \* Bone
- \* Esophagus
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Lymph Node, Bronchial
- \* Pancreas
- \* Prostate
- \* Stomach, Forestomach
- \* Urinary Bladder
- \* Bone Marrow
- \* Eye
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Lymph Node, Mandibular
- \* Parathyroid Gland
- \* Salivary Glands
- \* Stomach, Glandular
- \* Brain
- \* Harderian Gland
- \* Intestine Small, Duodenum
- \* Liver
- \* Lymph Node, Mediastinal
- \* Pituitary Gland
- \* Seminal Vesicle
- \* Thymus

MISSING

- \* Mammary Gland

OBSERVATIONS

- \* Adrenal Cortex
  - \* Heart
  - \* Kidney
  - \* Larynx
  - \* Nose
  - \* Skin
    - [ Inflammation TGLs = 4-15 ]
  - \* Testes
  - \* Thyroid Gland
  - Tooth
    - [ Inflammation TGLs = 3-11 ]
- Hyperplasia
  - Cardiomyopathy
  - Nephropathy
  - Metaplasia
  - Accumulation, Hyaline Droplet
  - Inflammation
  - Inflammation
  - Edema
  - Hyperplasia
  - Inflammation
- Mild
  - Minimal
  - Minimal
  - Squamous, Minimal
  - Moderate
  - Chronic Active, Moderate
  - Chronic Active, Marked
  - Mild
  - Minimal
  - Chronic Active, Marked

PRIMARY CAUSE OF DEATH - Tooth Inflammation

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 223

TRT#: 3

SEX: Male

DAY ON TEST: 729

DOSE: 10 mg/m3

DISP: Terminal Sacrifice

HISTO: 57142

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Medulla
- \* Epididymis
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Lung
- \* Lymph Node, Mesenteric
- \* Seminal Vesicle
- \* Testes
- \* Urinary Bladder
- \* Bone
- \* Esophagus
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Lymph Node, Bronchial
- \* Preputial Gland
- \* Spleen
- \* Thymus
- \* Bone Marrow
- \* Eye
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Lymph Node, Mandibular
- \* Prostate
- \* Stomach, Forestomach
- \* Thyroid Gland
- \* Brain
- \* Harderian Gland
- \* Intestine Small, Duodenum
- \* Larynx
- \* Lymph Node, Mediastinal
- \* Salivary Glands
- \* Stomach, Glandular
- \* Trachea

MISSING

- \* Mammary Gland
- \* Parathyroid Gland

OBSERVATIONS

- \* Adrenal Cortex
- \* Heart
- \* Kidney
- \* Liver
- Mesentery
- [ Necrosis TGLs = 3-15 ]
- \* Nose
- \* Pancreas
- \* Pituitary Gland
- \* Skin
- [ Inflammation TGLs = 1-16 ]
- Transit Epithe
- Fat
- Pars Distalis
- Hyperplasia
- Cardiomyopathy
- Hyperplasia
- Inflammation
- Nephropathy
- Basophilic Focus
- Clear Cell Focus
- Necrosis
- Accumulation, Hyaline Droplet
- Atrophy
- Hyperplasia
- Inflammation
- Mild
- Minimal
- Moderate
- Suppurative, Mild
- Minimal
- Mild
- Mild
- Minimal
- Mild
- Chronic Active, Marked

\* PROTOCOL REQUIRED TISSUE



TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 224

TRT#: 3

SEX: Male

DAY ON TEST: 603

DOSE: 10 mg/m3

DISP: Moribund Sacrifice

HISTO: 57143

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                             |                          |                            |                           |
|-----------------------------|--------------------------|----------------------------|---------------------------|
| * Adrenal Cortex            | * Adrenal Medulla        | * Bone                     | * Bone Marrow             |
| * Brain                     | * Epididymis             | * Esophagus                | * Eye                     |
| * Harderian Gland           | * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum |
| * Intestine Small, Duodenum | * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      |
| * Liver                     | * Lung                   | * Lymph Node, Bronchial    | * Lymph Node, Mandibular  |
| * Lymph Node, Mediastinal   | * Lymph Node, Mesenteric | * Pancreas                 | * Parathyroid Gland       |
| * Prostate                  | * Salivary Glands        | * Seminal Vesicle          | * Skin                    |
| * Spleen                    | * Stomach, Forestomach   | * Stomach, Glandular       | * Testes                  |
| * Thymus                    | * Trachea                | * Urinary Bladder          |                           |

MISSING

- \* Mammary Gland

OBSERVATIONS

- |                   |                               |                               |                          |
|-------------------|-------------------------------|-------------------------------|--------------------------|
| * Heart           |                               | Cardiomyopathy                | Minimal                  |
| * Kidney          |                               | Cyst                          | Mild                     |
|                   |                               | Hydronephrosis                | Mild                     |
|                   |                               | Nephropathy                   | Mild                     |
|                   | [ Cyst TGLs = 2,3-15+7 ]      |                               |                          |
|                   | [ Hydronephrosis TGLs = 4-7 ] |                               |                          |
| * Larynx          |                               | Metaplasia                    | Squamous, Minimal        |
| * Nose            |                               | Accumulation, Hyaline Droplet | Moderate                 |
| * Pituitary Gland | Pars Distalis                 | Adenoma                       |                          |
|                   | [ Adenoma TGLs = 5-10 ]       |                               |                          |
| * Preputial Gland |                               | Inflammation                  | Chronic Active, Moderate |
|                   | [ Inflammation TGLs = 1-9 ]   |                               |                          |
| * Thyroid Gland   | C Cell                        | Hyperplasia                   | Minimal                  |

PRIMARY CAUSE OF DEATH - Pituitary Gland Pars Distalis Adenoma

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 225

TRT#: 3

SEX: Male

DAY ON TEST: 717

DOSE: 10 mg/m3

DISP: Moribund Sacrifice

HISTO: 57144

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                          |                            |                           |                             |
|--------------------------|----------------------------|---------------------------|-----------------------------|
| * Adrenal Medulla        | * Bone                     | * Bone Marrow             | * Brain                     |
| * Epididymis             | * Esophagus                | * Eye                     | * Harderian Gland           |
| * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum | * Intestine Small, Duodenum |
| * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      | * Lung                      |
| * Lymph Node, Bronchial  | * Lymph Node, Mandibular   | * Lymph Node, Mediastinal | * Lymph Node, Mesenteric    |
| * Parathyroid Gland      | * Preputial Gland          | * Prostate                | * Salivary Glands           |
| * Seminal Vesicle        | * Skin                     | * Spleen                  | * Stomach, Forestomach      |
| * Stomach, Glandular     | * Testes                   | * Thymus                  | * Trachea                   |
| * Urinary Bladder        |                            |                           |                             |

MISSING

- \* Mammary Gland

OBSERVATIONS

- |                         |               |                               |                   |
|-------------------------|---------------|-------------------------------|-------------------|
| * Adrenal Cortex        |               | Hyperplasia                   | Mild              |
| * Heart                 |               | Cardiomyopathy                | Minimal           |
| * Kidney                |               | Nephropathy                   | Mild              |
| * Larynx                |               | Metaplasia                    | Squamous, Minimal |
| * Liver                 |               | Clear Cell Focus              |                   |
| * Nose                  |               | Accumulation, Hyaline Droplet | Mild              |
| * Pancreas              |               | Atrophy                       | Mild              |
| * Pituitary Gland       | Pars Distalis | Adenoma                       |                   |
| [ Adenoma TGLs = 1-10 ] |               |                               |                   |
| * Thyroid Gland         | C Cell        | Adenoma                       |                   |

PRIMARY CAUSE OF DEATH - Pituitary Gland Pars Distalis Adenoma

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 226

TRT#: 3

SEX: Male

DAY ON TEST: 729

DOSE: 10 mg/m3

DISP: Terminal Sacrifice

HISTO: 57145

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Medulla
- \* Epididymis
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Lymph Node, Bronchial
- \* Pancreas
- \* Salivary Glands
- \* Stomach, Forestomach
- \* Urinary Bladder
- \* Bone
- \* Esophagus
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Lymph Node, Mandibular
- \* Parathyroid Gland
- \* Seminal Vesicle
- \* Stomach, Glandular
- \* Bone Marrow
- \* Eye
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Lymph Node, Mediastinal
- \* Preputial Gland
- \* Skin
- \* Testes
- \* Brain
- \* Harderian Gland
- \* Intestine Small, Duodenum
- \* Lung
- \* Lymph Node, Mesenteric
- \* Prostate
- \* Spleen
- \* Trachea

MISSING

- \* Mammary Gland
- \* Thymus

OBSERVATIONS

- \* Adrenal Cortex
  - Hyperplasia
  - Mild
- \* Heart
  - Hypertrophy
  - Mild
- \* Kidney
  - Cardiomyopathy
  - Minimal
- \* Larynx
  - Nephropathy
  - Minimal
- \* Liver
  - Metaplasia
  - Squamous, Minimal
- Mesentery
  - Basophilic Focus
  - Clear Cell Focus
  - Necrosis
  - Mild
- [ Necrosis TGLs = 1-15 ]
- \* Nose
  - Fat
  - Accumulation, Hyaline Droplet
  - Mild
- \* Pituitary Gland
  - Glands, Olfactory Epi
  - Hyperplasia
  - Minimal
- \* Thyroid Gland
  - Pars Distalis
  - Adenoma
  - Hyperplasia
  - Minimal

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 227

TRT#: 3

SEX: Male

DAY ON TEST: 439

DOSE: 10 mg/m3

DISP: Moribund Sacrifice

HISTO: 57146

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                             |                          |                            |                           |
|-----------------------------|--------------------------|----------------------------|---------------------------|
| * Adrenal Cortex            | * Adrenal Medulla        | * Bone                     | * Bone Marrow             |
| * Brain                     | * Epididymis             | * Esophagus                | * Eye                     |
| * Harderian Gland           | * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum |
| * Intestine Small, Duodenum | * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      |
| * Kidney                    | * Liver                  | * Lung                     | * Lymph Node, Bronchial   |
| * Lymph Node, Mandibular    | * Lymph Node, Mesenteric | * Pancreas                 | * Parathyroid Gland       |
| * Pituitary Gland           | * Preputial Gland        | * Prostate                 | * Salivary Glands         |
| * Seminal Vesicle           | * Spleen                 | * Stomach, Forestomach     | * Stomach, Glandular      |
| * Testes                    | * Thymus                 | * Thyroid Gland            | * Trachea                 |
| * Urinary Bladder           |                          |                            |                           |

MISSING

- |                           |                 |
|---------------------------|-----------------|
| * Lymph Node, Mediastinal | * Mammary Gland |
|---------------------------|-----------------|

OBSERVATIONS

- |          |                                      |                               |                    |
|----------|--------------------------------------|-------------------------------|--------------------|
| * Heart  |                                      | Cardiomyopathy                | Minimal            |
| * Larynx |                                      | Metaplasia                    | Squamous, Moderate |
| * Nose   |                                      | Accumulation, Hyaline Droplet | Moderate           |
|          | Glands, Olfactory Epi                | Hyperplasia                   | Minimal            |
| * Skin   | Subcut Tiss                          | Schwannoma Malignant          |                    |
|          | [ Schwannoma Malignant TGLs = 1-15 ] |                               |                    |

PRIMARY CAUSE OF DEATH - Skin Subcut Tiss Schwannoma Malignant

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 228

TRT#: 3

SEX: Male

DAY ON TEST: 730

DOSE: 10 mg/m3

DISP: Terminal Sacrifice

HISTO: 57147

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Medulla
- \* Epididymis
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Lymph Node, Mesenteric
- \* Prostate
- \* Stomach, Forestomach
- \* Urinary Bladder
- \* Bone
- \* Esophagus
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Pancreas
- \* Salivary Glands
- \* Stomach, Glandular
- \* Bone Marrow
- \* Eye
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Parathyroid Gland
- \* Seminal Vesicle
- \* Testes
- \* Brain
- \* Harderian Gland
- \* Intestine Small, Duodenum
- \* Lymph Node, Mandibular
- \* Preputial Gland
- \* Spleen
- \* Trachea

MISSING

- \* Lymph Node, Bronchial
- \* Lymph Node, Mediastinal
- \* Mammary Gland
- \* Thymus

OBSERVATIONS

- \* Adrenal Cortex
- \* Heart
- \* Kidney
- \* Larynx
- \* Liver
- [ Congestion TGLs = 2-16 ]
- \* Lung
- Lymph Node
- [ Ectasia TGLs = 3-17 ]
- \* Nose
- \* Pituitary Gland
- \* Skin
- [ Inflammation TGLs = 1-15 ]
- \* Thyroid Gland
- Renal
- Glands, Olfactory Epi
- Pars Distalis
- C Cell
- Hypertrophy
- Cardiomyopathy
- Nephropathy
- Metaplasia
- Clear Cell Focus
- Congestion
- Inflammation
- Ectasia
- Accumulation, Hyaline Droplet
- Hyperplasia
- Hyperplasia
- Inflammation
- Hyperplasia
- Mild
- Minimal
- Mild
- Squamous, Mild
- Minimal
- Granulomatous, Minimal
- Minimal
- Moderate
- Minimal
- Mild
- Chronic Active, Moderate
- Minimal

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 229

TRT#: 3

SEX: Male

DAY ON TEST: 730

DOSE: 10 mg/m3

DISP: Terminal Sacrifice

HISTO: 57148

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Medulla
- \* Epididymis
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Lymph Node, Mediastinal
- \* Salivary Glands
- \* Stomach, Forestomach
- \* Urinary Bladder
- \* Bone
- \* Esophagus
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Lymph Node, Mesenteric
- \* Seminal Vesicle
- \* Stomach, Glandular
- \* Bone Marrow
- \* Eye
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Preputial Gland
- \* Skin
- \* Thymus
- \* Brain
- \* Harderian Gland
- \* Intestine Small, Duodenum
- \* Lymph Node, Mandibular
- \* Prostate
- \* Spleen
- \* Trachea

MISSING

- \* Lymph Node, Bronchial
- \* Mammary Gland
- \* Parathyroid Gland

OBSERVATIONS

- \* Adrenal Cortex
  - Hyperplasia
  - Mild
- \* Heart
  - Hypertrophy
  - Mild
- \* Kidney
  - Cardiomyopathy
  - Mild
- \* Larynx
  - Nephropathy
  - Moderate
- \* Liver
  - Metaplasia
  - Squamous, Minimal
- \* Lung
  - Clear Cell Focus
- \* Nose
  - Alveolar Epith
    - Hyperplasia
    - Mild
  - Accumulation, Hyaline Droplet
    - Mild
  - Glands, Olfactory Epi
    - Hyperplasia
    - Minimal
- \* Pancreas
  - Basophilic Focus
  - Mild
- \* Pituitary Gland
  - Pars Distalis
    - Adenoma
  - Pars Intermed
    - Hyperplasia
    - Mild
- [ Adenoma TGLs = 1-10 ]
- \* Testes
  - Atrophy
  - Moderate
- \* Thyroid Gland
  - C Cell
    - Adenoma

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 230

TRT#: 3

SEX: Male

DAY ON TEST: 731

DOSE: 10 mg/m3

DISP: Terminal Sacrifice

HISTO: 57149

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                             |                          |                            |                           |
|-----------------------------|--------------------------|----------------------------|---------------------------|
| * Adrenal Cortex            | * Adrenal Medulla        | * Bone                     | * Bone Marrow             |
| * Brain                     | * Epididymis             | * Esophagus                | * Eye                     |
| * Harderian Gland           | * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum |
| * Intestine Small, Duodenum | * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      |
| * Lung                      | * Lymph Node, Bronchial  | * Lymph Node, Mandibular   | * Lymph Node, Mediastinal |
| * Lymph Node, Mesenteric    | * Pancreas               | * Parathyroid Gland        | * Preputial Gland         |
| * Prostate                  | * Salivary Glands        | * Seminal Vesicle          | * Spleen                  |
| * Stomach, Forestomach      | * Stomach, Glandular     | * Testes                   | * Thymus                  |
| * Thyroid Gland             | * Trachea                | * Urinary Bladder          |                           |

MISSING

- \* Mammary Gland

OBSERVATIONS

- |                   |                              |                               |                        |
|-------------------|------------------------------|-------------------------------|------------------------|
| * Heart           |                              | Cardiomyopathy                | Minimal                |
| * Kidney          |                              | Nephropathy                   | Mild                   |
| * Larynx          |                              | Metaplasia                    | Squamous, Mild         |
| * Liver           |                              | Angiectasis                   | Minimal                |
|                   | [ Angiectasis TGLs = 3-6 ]   |                               |                        |
| Mesentery         | Fat                          | Necrosis                      | Mild                   |
|                   | [ Necrosis TGLs = 2-16 ]     |                               |                        |
| * Nose            |                              | Accumulation, Hyaline Droplet | Moderate               |
|                   | Glands, Olfactory Epi        | Hyperplasia                   | Mild                   |
| * Pituitary Gland | Pars Distalis                | Hyperplasia                   | Mild                   |
| * Skin            |                              | Inflammation                  | Chronic Active, Marked |
|                   | [ Inflammation TGLs = 1-15 ] |                               |                        |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 231

TRT#: 3

SEX: Male

DAY ON TEST: 730

DOSE: 10 mg/m3

DISP: Terminal Sacrifice

HISTO: 57150

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                          |                            |                           |                             |
|--------------------------|----------------------------|---------------------------|-----------------------------|
| * Adrenal Medulla        | * Bone                     | * Bone Marrow             | * Brain                     |
| * Epididymis             | * Esophagus                | * Eye                     | * Harderian Gland           |
| * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum | * Intestine Small, Duodenum |
| * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      | * Lymph Node, Bronchial     |
| * Lymph Node, Mandibular | * Lymph Node, Mediastinal  | * Lymph Node, Mesenteric  | * Pancreas                  |
| * Parathyroid Gland      | * Preputial Gland          | * Salivary Glands         | * Seminal Vesicle           |
| * Spleen                 | * Stomach, Forestomach     | * Stomach, Glandular      | * Testes                    |
| * Thymus                 | * Thyroid Gland            | * Trachea                 | * Urinary Bladder           |

MISSING

- \* Mammary Gland

OBSERVATIONS

- |                   |               |                               |                        |
|-------------------|---------------|-------------------------------|------------------------|
| * Adrenal Cortex  |               | Hyperplasia                   | Mild                   |
|                   |               | Hypertrophy                   | Mild                   |
| * Heart           |               | Cardiomyopathy                | Minimal                |
| * Kidney          |               | Nephropathy                   | Moderate               |
| * Larynx          |               | Metaplasia                    | Squamous, Minimal      |
| * Liver           |               | Basophilic Focus              |                        |
|                   |               | Clear Cell Focus              |                        |
| * Lung            | Bronchiole    | Hyperplasia                   | Minimal                |
|                   |               | Inflammation                  | Acute, Mild            |
| * Nose            |               | Accumulation, Hyaline Droplet | Moderate               |
| * Pituitary Gland | Pars Distalis | Hyperplasia                   | Minimal                |
| * Prostate        |               | Hyperplasia                   | Moderate               |
| * Skin            |               | Inflammation                  | Chronic Active, Marked |

[ Inflammation TGLs = 1-15 ]



TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 232

TRT#: 3

SEX: Male

DAY ON TEST: 730

DOSE: 10 mg/m3

DISP: Terminal Sacrifice

HISTO: 57151

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Bone
- \* Esophagus
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Lymph Node, Bronchial
- \* Pancreas
- \* Salivary Glands
- \* Stomach, Glandular
- \* Urinary Bladder
- \* Bone Marrow
- \* Eye
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Lymph Node, Mandibular
- \* Parathyroid Gland
- \* Seminal Vesicle
- \* Thymus
- \* Brain
- \* Heart
- \* Intestine Small, Duodenum
- \* Liver
- \* Lymph Node, Mediastinal
- \* Preputial Gland
- \* Spleen
- \* Thyroid Gland
- \* Epididymis
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Lung
- \* Lymph Node, Mesenteric
- \* Prostate
- \* Stomach, Forestomach
- \* Trachea

MISSING

- \* Adrenal Medulla
- \* Mammary Gland

OBSERVATIONS

- \* Adrenal Cortex
- \* Harderian Gland
- \* Kidney
- \* Larynx
- \* Nose
- \* Pituitary Gland
- \* Skin
- \* Testes
- Hypertrophy
- Hypertrophy
- Nephropathy
- Metaplasia
- Accumulation, Hyaline Droplet
- Glands, Olfactory Epi
- Pars Distalis
- Hyperplasia
- Hyperplasia
- Inflammation
- Edema
- Mild
- Mild
- Minimal
- Squamous, Minimal
- Moderate
- Mild
- Mild
- Chronic Active, Marked
- Mild

[ Inflammation TGLs = 1-15 ]

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 233

TRT#: 3

SEX: Male

DAY ON TEST: 704

DOSE: 10 mg/m3

DISP: Moribund Sacrifice

HISTO: 57152

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Cortex
- \* Brain
- \* Harderian Gland
- \* Intestine Small, Duodenum
- \* Lymph Node, Mandibular
- Peripheral Nerve
- \* Seminal Vesicle
- \* Stomach, Glandular
- \* Urinary Bladder
- \* Adrenal Medulla
- \* Epididymis
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Lymph Node, Mediastinal
- \* Preputial Gland
- Spinal Cord
- \* Testes
- \* Bone
- \* Esophagus
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Pancreas
- \* Prostate
- \* Spleen
- \* Thymus
- \* Bone Marrow
- \* Eye
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Parathyroid Gland
- \* Salivary Glands
- \* Stomach, Forestomach
- \* Trachea

MISSING

- \* Lymph Node, Bronchial
- \* Mammary Gland

OBSERVATIONS

- \* Heart
  - \* Kidney
  - \* Larynx
  - \* Liver
  - \* Lung
  - \* Lymph Node, Mesenteric
  - \* Nose
  - \* Pituitary Gland
  - \* Skin
  - \* Thyroid Gland
- [ Inflammation TGLs = 2-16 ]
- [ Carcinoma TGLs = 1-3 ]

- Cardiomyopathy
- Nephropathy
- Metaplasia
- Basophilic Focus
- Bile Duct
- Hyperplasia
- Inflammation
- Hemangiosarcoma
- Accumulation, Hyaline Droplet
- Glands, Olfactory Epi
- Pars Distalis
- Hyperplasia
- Inflammation
- Follicular Cel
- Carcinoma
- Minimal
- Minimal
- Squamous, Mild
- Mild
- Granulomatous, Minimal
- Moderate
- Moderate
- Mild
- Chronic Active, Marked

PRIMARY CAUSE OF DEATH - Thyroid Gland Follicular Cel Carcinoma

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 234

TRT#: 3

SEX: Male

DAY ON TEST: 730

DOSE: 10 mg/m3

DISP: Terminal Sacrifice

HISTO: 57153

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                            |                           |                             |                          |
|----------------------------|---------------------------|-----------------------------|--------------------------|
| * Adrenal Medulla          | * Bone                    | * Bone Marrow               | * Brain                  |
| * Epididymis               | * Esophagus               | * Eye                       | * Intestine Large, Cecum |
| * Intestine Large, Colon   | * Intestine Large, Rectum | * Intestine Small, Duodenum | * Intestine Small, Ileum |
| * Intestine Small, Jejunum | * Islets, Pancreatic      | * Lymph Node, Bronchial     | * Lymph Node, Mandibular |
| * Lymph Node, Mediastinal  | * Lymph Node, Mesenteric  | * Pancreas                  | * Parathyroid Gland      |
| * Preputial Gland          | * Salivary Glands         | * Seminal Vesicle           | * Skin                   |
| * Spleen                   | * Stomach, Forestomach    | * Stomach, Glandular        | * Testes                 |
| * Thymus                   | * Trachea                 | * Urinary Bladder           |                          |

MISSING

- \* Mammary Gland

OBSERVATIONS

- |                   |                         |                               |                        |
|-------------------|-------------------------|-------------------------------|------------------------|
| * Adrenal Cortex  |                         | Hyperplasia                   | Mild                   |
| * Harderian Gland |                         | Hypertrophy                   | Minimal                |
| * Heart           |                         | Cardiomyopathy                | Minimal                |
| * Kidney          |                         | Nephropathy                   | Mild                   |
| * Larynx          |                         | Metaplasia                    | Squamous, Minimal      |
| * Liver           |                         | Basophilic Focus              |                        |
|                   |                         | Clear Cell Focus              |                        |
| * Lung            | Bronchiole              | Hyperplasia                   | Minimal                |
|                   |                         | Inflammation                  | Granulomatous, Minimal |
| * Nose            |                         | Accumulation, Hyaline Droplet | Marked                 |
|                   | Glands, Olfactory Epi   | Hyperplasia                   | Mild                   |
| * Pituitary Gland | Pars Distalis           | Hyperplasia                   | Mild                   |
| * Prostate        |                         | Hyperplasia                   | Mild                   |
| Skeletal Muscle   |                         | Sarcoma                       |                        |
|                   | [ Sarcoma TGLs = 1-15 ] |                               |                        |
| * Thyroid Gland   | C Cell                  | Hyperplasia                   | Mild                   |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 235

TRT#: 3

SEX: Male

DAY ON TEST: 704

DOSE: 10 mg/m3

DISP: Moribund Sacrifice

HISTO: 57154

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                            |                           |                             |                          |
|----------------------------|---------------------------|-----------------------------|--------------------------|
| * Adrenal Medulla          | * Bone                    | * Bone Marrow               | * Epididymis             |
| * Esophagus                | * Eye                     | * Harderian Gland           | * Intestine Large, Cecum |
| * Intestine Large, Colon   | * Intestine Large, Rectum | * Intestine Small, Duodenum | * Intestine Small, Ileum |
| * Intestine Small, Jejunum | * Islets, Pancreatic      | * Lung                      | * Lymph Node, Bronchial  |
| * Lymph Node, Mandibular   | * Lymph Node, Mediastinal | * Lymph Node, Mesenteric    | * Pancreas               |
| * Parathyroid Gland        | Peripheral Nerve          | * Preputial Gland           | * Prostate               |
| * Salivary Glands          | * Seminal Vesicle         | Spinal Cord                 | * Spleen                 |
| * Stomach, Forestomach     | * Stomach, Glandular      | * Testes                    | * Thymus                 |
| * Thyroid Gland            | * Trachea                 | * Urinary Bladder           |                          |

MISSING

- \* Mammary Gland

OBSERVATIONS

- |                   |                       |                               |                        |
|-------------------|-----------------------|-------------------------------|------------------------|
| * Adrenal Cortex  |                       | Hyperplasia                   | Mild                   |
|                   |                       | Hypertrophy                   | Mild                   |
| * Brain           |                       | Granular Cell Tumor Benign    |                        |
| * Heart           |                       | Cardiomyopathy                | Mild                   |
| * Kidney          |                       | Nephropathy                   | Mild                   |
| * Larynx          |                       | Metaplasia                    | Squamous, Minimal      |
| * Liver           |                       | Basophilic Focus              |                        |
| * Nose            |                       | Accumulation, Hyaline Droplet | Moderate               |
|                   | Glands, Olfactory Epi | Hyperplasia                   | Minimal                |
| * Pituitary Gland | Pars Intermed         | Adenoma                       |                        |
|                   | Pars Distalis         | Hyperplasia                   | Mild                   |
| * Skin            |                       | Inflammation                  | Chronic Active, Marked |

[ Inflammation TGLs = 1,2-15 ]

PRIMARY CAUSE OF DEATH - Skin Inflammation

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 236

TRT#: 3

SEX: Male

DAY ON TEST: 730

DOSE: 10 mg/m3

DISP: Terminal Sacrifice

HISTO: 57155

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Medulla
- \* Epididymis
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Lymph Node, Mandibular
- \* Parathyroid Gland
- \* Spleen
- \* Trachea
- \* Bone
- \* Esophagus
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Lymph Node, Mediastinal
- \* Preputial Gland
- \* Stomach, Forestomach
- \* Urinary Bladder
- \* Bone Marrow
- \* Eye
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Lymph Node, Mesenteric
- \* Salivary Glands
- \* Stomach, Glandular
- \* Brain
- \* Harderian Gland
- \* Intestine Small, Duodenum
- \* Kidney
- \* Pancreas
- \* Seminal Vesicle
- \* Testes

MISSING

- \* Lymph Node, Bronchial
- \* Mammary Gland
- \* Thymus

OBSERVATIONS

- \* Adrenal Cortex
- \* Heart
- \* Larynx
- \* Liver
- \* Lung
- \* Nose
- \* Pituitary Gland
- \* Prostate
- \* Skin
- \* Thyroid Gland
- Hyperplasia
- Cardiomyopathy
- Metaplasia
- Angiectasis
- Basophilic Focus
- Clear Cell Focus
- Dilatation
- Inflammation
- Accumulation, Hyaline Droplet
- Hyperplasia
- Hyperplasia
- Hyperplasia
- Inflammation
- Hyperplasia
- Mild
- Minimal
- Squamous, Minimal
- Minimal
- Mild
- Granulomatous, Minimal
- Mild
- Moderate
- Mild
- Mild
- Chronic Active, Marked
- Minimal

[ Angiectasis TGLs = 4-6 ]

[ Dilatation TGLs = 2-17 ]

[ Inflammation TGLs = 5-4+5 ]

[ Inflammation TGLs = 1-16 ]

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 237

TRT#: 3

SEX: Male

DAY ON TEST: 730

DOSE: 10 mg/m3

DISP: Terminal Sacrifice

HISTO: 57156

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Medulla
- \* Epididymis
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Lymph Node, Mesenteric
- \* Salivary Glands
- \* Stomach, Forestomach
- \* Trachea
- \* Bone
- \* Esophagus
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Pancreas
- \* Seminal Vesicle
- \* Stomach, Glandular
- \* Urinary Bladder
- \* Bone Marrow
- \* Eye
- \* Intestine Small, Duodenum
- \* Lung
- \* Preputial Gland
- \* Skin
- \* Testes
- \* Brain
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Lymph Node, Mediastinal
- \* Prostate
- \* Spleen
- \* Thymus

MISSING

- \* Lymph Node, Bronchial
- \* Mammary Gland
- \* Parathyroid Gland

OBSERVATIONS

- \* Adrenal Cortex
  - Degeneration
  - Hyperplasia
  - Cystic, Minimal
- \* Harderian Gland
  - Hyperplasia
  - Minimal
- \* Heart
  - Cardiomyopathy
  - Minimal
- \* Kidney
  - Nephropathy
  - Mild
- \* Larynx
  - Metaplasia
  - Squamous, Mild
- \* Liver
  - Angiectasis
  - Minimal
- [ Angiectasis TGLs = 4-16 ]
- \* Lymph Node, Mandibular
  - Infiltration Cellular
  - Plasma Cell, Mild
- [ Infiltration Cellular TGLs = 1-17 ]
- \* Nose
  - Accumulation, Hyaline Droplet
  - Moderate
- Glands, Olfactory Epi
  - Hyperplasia
  - Minimal
- \* Pituitary Gland
  - Pars Distalis
  - Adenoma
- [ Adenoma TGLs = 2-10 ]
- \* Thyroid Gland
  - C Cell
  - Adenoma

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 238

TRT#: 3

SEX: Male

DAY ON TEST: 637

DOSE: 10 mg/m3

DISP: Natural Death

HISTO: 57157

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                           |                             |                          |                            |
|---------------------------|-----------------------------|--------------------------|----------------------------|
| * Adrenal Medulla         | * Bone                      | * Bone Marrow            | * Brain                    |
| * Epididymis              | * Esophagus                 | * Eye                    | * Harderian Gland          |
| * Intestine Large, Rectum | * Intestine Small, Duodenum | * Intestine Small, Ileum | * Intestine Small, Jejunum |
| * Islets, Pancreatic      | * Lung                      | * Lymph Node, Bronchial  | * Lymph Node, Mandibular   |
| * Lymph Node, Mediastinal | * Lymph Node, Mesenteric    | * Parathyroid Gland      | * Pituitary Gland          |
| * Preputial Gland         | * Prostate                  | * Salivary Glands        | * Seminal Vesicle          |
| * Skin                    | * Spleen                    | * Stomach, Forestomach   | * Stomach, Glandular       |
| * Testes                  | * Thymus                    | * Thyroid Gland          | * Trachea                  |
| * Urinary Bladder         |                             |                          |                            |

MISSING

- \* Mammary Gland

OBSERVATIONS

- |                          |                          |                               |                 |
|--------------------------|--------------------------|-------------------------------|-----------------|
| * Adrenal Cortex         |                          | Hypertrophy                   | Mild            |
| * Heart                  |                          | Cardiomyopathy                | Minimal         |
| * Intestine Large, Cecum |                          | Inflammation                  | Acute, Mild     |
|                          |                          | Necrosis                      | Moderate        |
| * Intestine Large, Colon |                          | Inflammation                  | Acute, Moderate |
|                          |                          | Necrosis                      | Moderate        |
| * Kidney                 |                          | Nephropathy                   | Mild            |
| * Larynx                 |                          | Metaplasia                    | Squamous, Mild  |
| * Liver                  |                          | Necrosis                      | Mild            |
|                          | [ Necrosis TGLs = 2-6 ]  |                               |                 |
| Mesentery                | Fat                      | Necrosis                      | Mild            |
|                          | [ Necrosis TGLs = 1-16 ] |                               |                 |
| * Nose                   |                          | Accumulation, Hyaline Droplet | Mild            |
|                          | Glands, Olfactory Epi    | Hyperplasia                   | Mild            |
| * Pancreas               |                          | Inflammation                  | Acute, Mild     |
| Skeletal Muscle          |                          | Necrosis                      | Moderate        |
|                          | [ Necrosis TGLs = 3-15 ] |                               |                 |

PRIMARY CAUSE OF DEATH - Intestine Large, Colon Necrosis

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 239

TRT#: 3

SEX: Male

DAY ON TEST: 729

DOSE: 10 mg/m3

DISP: Terminal Sacrifice

HISTO: 57158

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Medulla
- \* Epididymis
- \* Intestine Large, Cecum
- \* Intestine Small, Jejunum
- \* Lymph Node, Mesenteric
- \* Seminal Vesicle
- \* Thymus
- \* Bone
- \* Esophagus
- \* Intestine Large, Colon
- \* Islets, Pancreatic
- \* Preputial Gland
- \* Spleen
- \* Trachea
- \* Bone Marrow
- \* Eye
- \* Intestine Small, Duodenum
- \* Lymph Node, Bronchial
- \* Prostate
- \* Stomach, Forestomach
- \* Urinary Bladder
- \* Brain
- \* Harderian Gland
- \* Intestine Small, Ileum
- \* Lymph Node, Mediastinal
- \* Salivary Glands
- \* Stomach, Glandular

MISSING

- \* Mammary Gland
- \* Parathyroid Gland

INSUFFICIENT TISSUE

- \* Intestine Large, Rectum

OBSERVATIONS

- |                          |                              |                               |                        |
|--------------------------|------------------------------|-------------------------------|------------------------|
| * Adrenal Cortex         |                              | Hyperplasia                   | Mild                   |
|                          |                              | Hypertrophy                   | Mild                   |
| * Heart                  |                              | Cardiomyopathy                | Minimal                |
| * Kidney                 |                              | Nephropathy                   | Mild                   |
| * Larynx                 |                              | Metaplasia                    | Squamous, Minimal      |
| * Liver                  |                              | Basophilic Focus              |                        |
|                          |                              | Clear Cell Focus              |                        |
| * Lung                   | Alveolar Epith               | Hyperplasia                   | Minimal                |
| * Lymph Node, Mandibular |                              | Ectasia                       | Mild                   |
|                          | [ Ectasia TGLs = 2-14 ]      |                               |                        |
| * Nose                   |                              | Accumulation, Hyaline Droplet | Marked                 |
| * Pancreas               |                              | Atrophy                       | Minimal                |
| * Pituitary Gland        | Pars Distalis                | Adenoma                       |                        |
|                          | [ Adenoma TGLs = 3-10 ]      |                               |                        |
| * Skin                   |                              | Inflammation                  | Chronic Active, Marked |
|                          | [ Inflammation TGLs = 1-15 ] |                               |                        |
| * Testes                 | Artery                       | Inflammation                  | Chronic Active, Mild   |

\* PROTOCOL REQUIRED TISSUE



**TDMS No.** 20515 - 03

**Test Type:** CHRONIC

**Route:** RESPIRATORY EXPOSURE WHOLE BODY

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

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Metal working fluids (CIMSTAR 3800)

**CAS Number:** CIMSTAR3800

**Date Report Requested:** 01/21/2011

**Time Report Requested:** 07:49:51

**First Dose M/F:** 04/14/08 / 04/14/08

**Lab:** BNW

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**ANIMAL ID:** 239

**TRT#:** 3

**SEX:** Male

**DAY ON TEST:** 729

**DOSE:** 10 mg/m3

**DISP:** Terminal Sacrifice

**HISTO:** 57158

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**ORGAN AND ACCOUNTABLE SITE STATUS**

---

\* Thyroid Gland

C Cell

Hyperplasia

Minimal

---

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 240

TRT#: 3

SEX: Male

DAY ON TEST: 653

DOSE: 10 mg/m3

DISP: Moribund Sacrifice

HISTO: 57159

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                          |                            |                           |                             |
|--------------------------|----------------------------|---------------------------|-----------------------------|
| * Adrenal Medulla        | * Bone                     | * Bone Marrow             | * Brain                     |
| * Epididymis             | * Esophagus                | * Eye                     | * Harderian Gland           |
| * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum | * Intestine Small, Duodenum |
| * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      | * Liver                     |
| * Lymph Node, Bronchial  | * Lymph Node, Mediastinal  | * Lymph Node, Mesenteric  | * Pancreas                  |
| * Parathyroid Gland      | * Prostate                 | * Salivary Glands         | * Seminal Vesicle           |
| * Skin                   | * Spleen                   | * Stomach, Forestomach    | * Stomach, Glandular        |
| * Testes                 | * Thymus                   | * Trachea                 | * Urinary Bladder           |

MISSING

- \* Mammary Gland

OBSERVATIONS

- |                          |                |                               |                             |
|--------------------------|----------------|-------------------------------|-----------------------------|
| * Adrenal Cortex         |                | Hyperplasia                   | Mild                        |
| * Heart                  |                | Cardiomyopathy                | Minimal                     |
| * Kidney                 |                | Nephropathy                   | Minimal                     |
| * Larynx                 |                | Metaplasia                    | Squamous, Mild              |
| * Lung                   | Alveolar Epith | Hyperplasia                   | Mild                        |
| * Lymph Node, Mandibular |                | Carcinoma                     | Metastatic (Zymbal'S Gland) |
| * Nose                   |                | Accumulation, Hyaline Droplet | Mild                        |
| * Pituitary Gland        | Pars Distalis  | Hyperplasia                   | Moderate                    |
| * Preputial Gland        |                | Inflammation                  | Chronic Active, Moderate    |
| * Thyroid Gland          | C Cell         | Hyperplasia                   | Mild                        |
| Zymbal's Gland           |                | Carcinoma                     |                             |

[ Carcinoma TGLs = 1-15 ]

PRIMARY CAUSE OF DEATH

- Zymbal's Gland Carcinoma

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 241

TRT#: 3

SEX: Male

DAY ON TEST: 730

DOSE: 10 mg/m3

DISP: Terminal Sacrifice

HISTO: 57160

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Medulla
- \* Epididymis
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Pancreas
- \* Salivary Glands
- \* Stomach, Glandular
- \* Urinary Bladder
- \* Bone
- \* Esophagus
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Parathyroid Gland
- \* Seminal Vesicle
- \* Thymus
- \* Bone Marrow
- \* Harderian Gland
- \* Intestine Small, Duodenum
- \* Lymph Node, Mandibular
- \* Preputial Gland
- \* Spleen
- \* Thyroid Gland
- \* Brain
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Lymph Node, Mesenteric
- \* Prostate
- \* Stomach, Forestomach
- \* Trachea

MISSING

- \* Lymph Node, Bronchial
- \* Lymph Node, Mediastinal
- \* Mammary Gland

OBSERVATIONS

- \* Adrenal Cortex
- \* Eye
- \* Heart
- \* Kidney
- \* Larynx
- \* Liver
- \* Lung
- \* Nose
- \* Pituitary Gland
- \* Skin
- \* Testes
- Retina
- Bronchiole
- Glands, Olfactory Epi
- Pars Distalis
- [ Inflammation TGLs = 1-15 ]
- Hyperplasia
- Atrophy
- Cardiomyopathy
- Nephropathy
- Metaplasia
- Basophilic Focus
- Clear Cell Focus
- Hyperplasia
- Accumulation, Hyaline Droplet
- Hyperplasia
- Adenoma
- Inflammation
- Edema
- Mild
- Mild
- Minimal
- Minimal
- Squamous, Mild
- Minimal
- Moderate
- Minimal
- Chronic Active, Marked
- Mild

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 242

TRT#: 3

SEX: Male

DAY ON TEST: 730

DOSE: 10 mg/m3

DISP: Terminal Sacrifice

HISTO: 57161

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                          |                            |                           |                             |
|--------------------------|----------------------------|---------------------------|-----------------------------|
| * Adrenal Medulla        | * Bone                     | * Bone Marrow             | * Brain                     |
| * Epididymis             | * Esophagus                | * Eye                     | * Harderian Gland           |
| * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum | * Intestine Small, Duodenum |
| * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      | * Kidney                    |
| * Lymph Node, Mandibular | * Lymph Node, Mediastinal  | * Lymph Node, Mesenteric  | * Pancreas                  |
| * Parathyroid Gland      | * Preputial Gland          | * Salivary Glands         | * Seminal Vesicle           |
| * Skin                   | * Spleen                   | * Stomach, Forestomach    | * Stomach, Glandular        |
| * Testes                 | * Thymus                   | * Trachea                 | * Urinary Bladder           |

MISSING

- |                         |                 |
|-------------------------|-----------------|
| * Lymph Node, Bronchial | * Mammary Gland |
|-------------------------|-----------------|

OBSERVATIONS

- |                   |                       |                               |                        |
|-------------------|-----------------------|-------------------------------|------------------------|
| * Adrenal Cortex  |                       | Hypertrophy                   | Mild                   |
| * Heart           |                       | Cardiomyopathy                | Minimal                |
| * Larynx          |                       | Metaplasia                    | Squamous, Minimal      |
| * Liver           |                       | Clear Cell Focus              |                        |
| * Lung            |                       | Inflammation                  | Granulomatous, Minimal |
| * Nose            |                       | Accumulation, Hyaline Droplet | Marked                 |
|                   | Glands, Olfactory Epi | Hyperplasia                   | Minimal                |
| * Pituitary Gland | Pars Distalis         | Hyperplasia                   | Mild                   |
| * Prostate        |                       | Hyperplasia                   | Mild                   |
| * Thyroid Gland   | C Cell                | Hyperplasia                   | Minimal                |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 243

TRT#: 3

SEX: Male

DAY ON TEST: 729

DOSE: 10 mg/m3

DISP: Terminal Sacrifice

HISTO: 57162

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Medulla
- \* Epididymis
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Lymph Node, Mandibular
- \* Preputial Gland
- \* Stomach, Glandular
- \* Bone
- \* Esophagus
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Lymph Node, Mesenteric
- \* Salivary Glands
- \* Thymus
- \* Bone Marrow
- \* Eye
- \* Intestine Small, Duodenum
- \* Lung
- \* Pancreas
- \* Seminal Vesicle
- \* Trachea
- \* Brain
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Lymph Node, Bronchial
- \* Parathyroid Gland
- \* Stomach, Forestomach
- \* Urinary Bladder

MISSING

- \* Lymph Node, Mediastinal
- \* Mammary Gland

OBSERVATIONS

- \* Adrenal Cortex
  - Hyperplasia
  - Hypertrophy
- \* Harderian Gland
  - Hyperplasia
- \* Heart
  - Cardiomyopathy
- \* Kidney
  - Nephropathy
- \* Larynx
  - Metaplasia
- \* Liver
  - Inflammation
- Lymph Node
  - Lumbar
    - Ectasia
- \* Nose
  - Accumulation, Hyaline Droplet
  - Glands, Olfactory Epi
    - Hyperplasia
- \* Pituitary Gland
  - Pars Distalis
    - Adenoma
- \* Prostate
  - Hyperplasia
- \* Skin
  - Inflammation
- \* Spleen
  - Inflammation
- \* Testes
  - Edema
- \* Thyroid Gland
  - C Cell
    - Hyperplasia

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 244

TRT#: 3

SEX: Male

DAY ON TEST: 731

DOSE: 10 mg/m3

DISP: Terminal Sacrifice

HISTO: 57163

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Medulla
- \* Esophagus
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Lymph Node, Mediastinal
- \* Preputial Gland
- \* Spleen
- \* Trachea
- \* Bone
- \* Eye
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Lymph Node, Mesenteric
- \* Prostate
- \* Stomach, Forestomach
- \* Urinary Bladder
- \* Bone Marrow
- \* Harderian Gland
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Pancreas
- \* Salivary Glands
- \* Stomach, Glandular
- \* Epididymis
- \* Heart
- \* Intestine Small, Duodenum
- \* Lymph Node, Bronchial
- \* Parathyroid Gland
- \* Seminal Vesicle
- \* Thymus

MISSING

- \* Lymph Node, Mandibular
- \* Mammary Gland

OBSERVATIONS

- \* Adrenal Cortex Hyperplasia Mild
- \* Brain Granular Cell Tumor Malignant  
  - [ Granular Cell Tumor Malignant TGLs = 3,4-1 ]
- \* Kidney Nephropathy Minimal
- \* Larynx Metaplasia Squamous, Minimal
- \* Liver Basophilic Focus  
  - Clear Cell Focus
  - Inflammation Granulomatous, Minimal
- \* Lung Inflammation Granulomatous, Minimal  
  - [ Inflammation TGLs = 2-4+5 ]
- Mesentery Fat Necrosis Mild  
  - [ Necrosis TGLs = 5-15 ]
- \* Nose Accumulation, Hyaline Droplet Marked
- \* Pituitary Gland Glands, Olfactory Epi Hyperplasia Minimal  
  - Pars Distalis Hyperplasia Mild
- \* Skin Inflammation Chronic Active, Marked  
  - [ Inflammation TGLs = 1-16 ]
- \* Testes Edema Mild
- \* Thyroid Gland C Cell Hyperplasia Minimal

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 245

TRT#: 3

SEX: Male

DAY ON TEST: 730

DOSE: 10 mg/m3

DISP: Terminal Sacrifice

HISTO: 57164

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Medulla
- \* Epididymis
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Lymph Node, Mandibular
- \* Parathyroid Gland
- \* Seminal Vesicle
- \* Stomach, Glandular
- \* Bone
- \* Esophagus
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Lymph Node, Mediastinal
- \* Preputial Gland
- \* Skin
- \* Thymus
- \* Bone Marrow
- \* Eye
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Lymph Node, Mesenteric
- \* Prostate
- \* Spleen
- \* Trachea
- \* Brain
- \* Harderian Gland
- \* Intestine Small, Duodenum
- \* Liver
- \* Pancreas
- \* Salivary Glands
- \* Stomach, Forestomach
- \* Urinary Bladder

MISSING

- \* Lymph Node, Bronchial
- \* Mammary Gland

OBSERVATIONS

- \* Adrenal Cortex
- \* Heart
- \* Kidney
- \* Larynx
- \* Lung
  - [ Metaplasia TGLs = 2-15 ]
- \* Nose
  - Glands, Olfactory Epi
- \* Pituitary Gland
  - Pars Distalis
- \* Testes
  - [ Edema TGLs = 1-9 ]
- \* Thyroid Gland
  - C Cell

- Hypertrophy
- Cardiomyopathy
- Nephropathy
- Metaplasia
- Metaplasia
- Accumulation, Hyaline Droplet
- Hyperplasia
- Hyperplasia
- Atrophy
- Edema
- Hyperplasia

- Mild
- Minimal
- Minimal
- Squamous, Mild
- Squamous, Minimal
- Marked
- Minimal
- Mild
- Moderate
- Mild
- Mild

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 246

TRT#: 3

SEX: Male

DAY ON TEST: 730

DOSE: 10 mg/m3

DISP: Terminal Sacrifice

HISTO: 57165

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                          |                            |                           |                             |
|--------------------------|----------------------------|---------------------------|-----------------------------|
| * Adrenal Medulla        | * Bone                     | * Bone Marrow             | * Brain                     |
| * Epididymis             | * Esophagus                | * Eye                     | * Harderian Gland           |
| * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum | * Intestine Small, Duodenum |
| * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      | * Liver                     |
| * Lymph Node, Mandibular | * Lymph Node, Mediastinal  | * Lymph Node, Mesenteric  | * Mammary Gland             |
| * Pancreas               | * Parathyroid Gland        | * Preputial Gland         | * Salivary Glands           |
| * Seminal Vesicle        | * Skin                     | * Spleen                  | * Stomach, Forestomach      |
| * Stomach, Glandular     | * Thymus                   | * Trachea                 | * Urinary Bladder           |

MISSING

- \* Lymph Node, Bronchial

OBSERVATIONS

- |                   |                       |                               |                        |
|-------------------|-----------------------|-------------------------------|------------------------|
| * Adrenal Cortex  |                       | Hyperplasia                   | Mild                   |
| * Heart           |                       | Cardiomyopathy                | Minimal                |
| * Kidney          |                       | Nephropathy                   | Mild                   |
| * Larynx          |                       | Metaplasia                    | Squamous, Mild         |
| * Lung            | Alveolar Epith        | Hyperplasia                   | Moderate               |
|                   |                       | Inflammation                  | Granulomatous, Minimal |
| * Nose            |                       | Accumulation, Hyaline Droplet | Moderate               |
|                   | Glands, Olfactory Epi | Hyperplasia                   | Mild                   |
| * Pituitary Gland | Pars Distalis         | Hyperplasia                   | Mild                   |
| * Prostate        |                       | Hyperplasia                   | Minimal                |
| * Testes          |                       | Edema                         | Mild                   |
| * Thyroid Gland   | C Cell                | Hyperplasia                   | Minimal                |

\* PROTOCOL REQUIRED TISSUE



TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 247

TRT#: 3

SEX: Male

DAY ON TEST: 505

DOSE: 10 mg/m3

DISP: Moribund Sacrifice

HISTO: 57166

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Cortex
- \* Epididymis
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Lung
- \* Pancreas
- \* Seminal Vesicle
- \* Stomach, Glandular
- \* Urinary Bladder
- \* Adrenal Medulla
- \* Esophagus
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Lymph Node, Bronchial
- \* Preputial Gland
- \* Skin
- \* Testes
- \* Bone
- \* Harderian Gland
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Lymph Node, Mandibular
- \* Prostate
- \* Spleen
- \* Thymus
- \* Bone Marrow
- \* Heart
- \* Intestine Small, Duodenum
- \* Liver
- \* Lymph Node, Mesenteric
- \* Salivary Glands
- \* Stomach, Forestomach
- \* Trachea

MISSING

- \* Lymph Node, Mediastinal
- \* Mammary Gland
- \* Parathyroid Gland

OBSERVATIONS

- \* Brain [ Carcinoma TGLs = 4-1 ] Carcinoma Metastatic (Zymbal'S Gland)
- \* Eye [ Inflammation TGLs = 1-13 ] Cornea Inflammation Chronic Active, Moderate
- \* Kidney Inflammation Suppurative, Minimal
- \* Larynx Metaplasia Squamous, Mild
- \* Nose Accumulation, Hyaline Droplet Mild
- \* Pituitary Gland Glands, Olfactory Epi Hyperplasia Minimal
- Pars Distalis Adenoma
- \* Thyroid Gland C Cell Hyperplasia Minimal
- Zymbal's Gland Carcinoma
- [ Carcinoma TGLs = 3-15+17 ]

PRIMARY CAUSE OF DEATH - Zymbal's Gland Carcinoma

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 248

TRT#: 3

SEX: Male

DAY ON TEST: 730

DOSE: 10 mg/m3

DISP: Terminal Sacrifice

HISTO: 57167

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                            |                           |                             |                          |
|----------------------------|---------------------------|-----------------------------|--------------------------|
| * Adrenal Medulla          | * Bone                    | * Bone Marrow               | * Brain                  |
| * Epididymis               | * Esophagus               | * Eye                       | * Intestine Large, Cecum |
| * Intestine Large, Colon   | * Intestine Large, Rectum | * Intestine Small, Duodenum | * Intestine Small, Ileum |
| * Intestine Small, Jejunum | * Islets, Pancreatic      | * Lymph Node, Bronchial     | * Lymph Node, Mandibular |
| * Lymph Node, Mediastinal  | * Lymph Node, Mesenteric  | * Pancreas                  | * Parathyroid Gland      |
| * Pituitary Gland          | * Preputial Gland         | * Salivary Glands           | * Seminal Vesicle        |
| * Spleen                   | * Stomach, Forestomach    | * Stomach, Glandular        | * Testes                 |
| * Thymus                   | * Thyroid Gland           | * Trachea                   | * Urinary Bladder        |

MISSING

- \* Mammary Gland

OBSERVATIONS

- |                   |   |                               |                        |
|-------------------|---|-------------------------------|------------------------|
| * Adrenal Cortex  |   | Hyperplasia                   | Mild                   |
| * Harderian Gland |   | Hypertrophy                   | Minimal                |
| * Heart           |   | Cardiomyopathy                | Mild                   |
| * Kidney          |   | Nephropathy                   | Mild                   |
| * Larynx          |   | Metaplasia                    | Squamous, Minimal      |
| * Liver           |   | Basophilic Focus              |                        |
|                   |   | Clear Cell Focus              |                        |
|                   |   | Hepatocellular Carcinoma      |                        |
| * Lung            | [ Hepatocellular Carcinoma TGLs = 3-18+19 ] |                               |                        |
|                   | Bronchiole                                  | Hyperplasia                   | Minimal                |
|                   |   | Inflammation                  | Granulomatous, Minimal |
|                   | [ Inflammation TGLs = 5-4+5 ]               |                               |                        |
| * Nose            |   | Accumulation, Hyaline Droplet | Mild                   |
| * Prostate        |   | Hyperplasia                   | Minimal                |
| * Skin            |   | Cyst Epithelial Inclusion     |                        |
|                   | Subcut Tiss                                 | Fibroma                       |                        |
|                   |   | Inflammation                  | Chronic Active, Mild   |
|                   | [ Cyst Epithelial Inclusion TGLs = 2-16 ]   |                               |                        |
|                   | [ Fibroma TGLs = 4-17 ]                     |                               |                        |

\* PROTOCOL REQUIRED TISSUE

**TDMS No.** 20515 - 03

**Test Type:** CHRONIC

**Route:** RESPIRATORY EXPOSURE WHOLE BODY

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

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Metal working fluids (CIMSTAR 3800)

**CAS Number:** CIMSTAR3800

**Date Report Requested:** 01/21/2011

**Time Report Requested:** 07:49:51

**First Dose M/F:** 04/14/08 / 04/14/08

**Lab:** BNW

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**ANIMAL ID:** 248

**TRT#:** 3

**SEX:** Male

**DAY ON TEST:** 730

**DOSE:** 10 mg/m3

**DISP:** Terminal Sacrifice

**HISTO:** 57167

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**ORGAN AND ACCOUNTABLE SITE STATUS**

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[ Inflammation TGLs = 1-15 ]

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TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 249

TRT#: 3

SEX: Male

DAY ON TEST: 729

DOSE: 10 mg/m3

DISP: Terminal Sacrifice

HISTO: 57168

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                             |                          |                            |                           |
|-----------------------------|--------------------------|----------------------------|---------------------------|
| * Adrenal Medulla           | * Bone                   | * Bone Marrow              | * Brain                   |
| * Epididymis                | * Esophagus              | * Eye                      | * Harderian Gland         |
| * Heart                     | * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum |
| * Intestine Small, Duodenum | * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      |
| * Lung                      | * Lymph Node, Bronchial  | * Lymph Node, Mandibular   | * Lymph Node, Mediastinal |
| * Lymph Node, Mesenteric    | * Pancreas               | * Parathyroid Gland        | * Pituitary Gland         |
| * Preputial Gland           | * Salivary Glands        | * Seminal Vesicle          | * Skin                    |
| * Spleen                    | * Stomach, Forestomach   | * Stomach, Glandular       | * Thymus                  |
| * Thyroid Gland             | * Trachea                | * Urinary Bladder          |                           |

MISSING

- \* Mammary Gland

OBSERVATIONS

- |                  |                       |                               |                   |
|------------------|-----------------------|-------------------------------|-------------------|
| * Adrenal Cortex |                       | Hypertrophy                   | Mild              |
| * Kidney         |                       | Nephropathy                   | Mild              |
| * Larynx         |                       | Metaplasia                    | Squamous, Minimal |
| * Liver          |                       | Basophilic Focus              |                   |
|                  |                       | Clear Cell Focus              |                   |
| * Nose           |                       | Accumulation, Hyaline Droplet | Moderate          |
|                  | Glands, Olfactory Epi | Hyperplasia                   | Mild              |
| * Prostate       |                       | Hyperplasia                   | Mild              |
| * Testes         |                       | Edema                         | Mild              |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 250

TRT#: 3

SEX: Male

DAY ON TEST: 620

DOSE: 10 mg/m3

DISP: Moribund Sacrifice

HISTO: 57169

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

- |                          |                            |                           |                             |
|--------------------------|----------------------------|---------------------------|-----------------------------|
| * Adrenal Medulla        | * Bone                     | * Bone Marrow             | * Brain                     |
| * Epididymis             | * Esophagus                | * Eye                     | * Harderian Gland           |
| * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum | * Intestine Small, Duodenum |
| * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      | * Lung                      |
| * Lymph Node, Bronchial  | * Lymph Node, Mandibular   | * Lymph Node, Mediastinal | * Lymph Node, Mesenteric    |
| * Mammary Gland          | * Pancreas                 | * Parathyroid Gland       | * Preputial Gland           |
| * Salivary Glands        | * Seminal Vesicle          | * Skin                    | * Spleen                    |
| * Stomach, Glandular     | * Testes                   | * Thymus                  | * Thyroid Gland             |
| * Trachea                | * Urinary Bladder          |                           |                             |

**OBSERVATIONS**

- |                        |                             |                               |                      |
|------------------------|-----------------------------|-------------------------------|----------------------|
| * Adrenal Cortex       |                             | Hypertrophy                   | Mild                 |
| * Heart                |                             | Cardiomyopathy                | Minimal              |
| * Kidney               |                             | Nephropathy                   | Minimal              |
| * Larynx               |                             | Metaplasia                    | Squamous, Mild       |
| * Liver                |                             | Angiectasis                   | Minimal              |
|                        | [ Angiectasis TGLs = 5-15 ] |                               |                      |
| * Nose                 |                             | Accumulation, Hyaline Droplet | Marked               |
|                        | Glands, Olfactory Epi       | Hyperplasia                   | Mild                 |
| * Pituitary Gland      | Pars Distalis               | Adenoma                       |                      |
|                        | [ Adenoma TGLs = 4-10 ]     |                               |                      |
| * Prostate             |                             | Inflammation                  | Chronic Active, Mild |
| * Stomach, Forestomach |                             | Ulcer                         | Mild                 |

PRIMARY CAUSE OF DEATH - Pituitary Gland Pars Distalis Adenoma

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 401

TRT#: 5

SEX: Male

DAY ON TEST: 731

DOSE: 30 mg/m3

DISP: Terminal Sacrifice

HISTO: 57020

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Medulla
- \* Epididymis
- \* Heart
- \* Intestine Small, Duodenum
- \* Kidney
- \* Pancreas
- \* Seminal Vesicle
- \* Testes
- \* Bone
- \* Esophagus
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Lymph Node, Bronchial
- \* Preputial Gland
- \* Spleen
- \* Thymus
- \* Bone Marrow
- \* Eye
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Lymph Node, Mediastinal
- \* Prostate
- \* Stomach, Forestomach
- \* Trachea
- \* Brain
- \* Harderian Gland
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Lymph Node, Mesenteric
- \* Salivary Glands
- \* Stomach, Glandular
- \* Urinary Bladder

MISSING

- \* Lymph Node, Mandibular
- \* Mammary Gland
- \* Parathyroid Gland

OBSERVATIONS

- \* Adrenal Cortex
  - Hyperplasia
  - Hypertrophy
 Mild
- \* Larynx
  - Metaplasia
 Mild
- \* Liver
  - Angiectasis
  - Basophilic Focus
  - Clear Cell Focus
 Squamous, Mild  
Minimal
- \* Lung
  - [ Angiectasis TGLs = 2,3-6 ]
- \* Nose
  - Bronchiole
 Hyperplasia  
Minimal
- \* Pituitary Gland
  - Glands, Olfactory Epi
 Accumulation, Hyaline Droplet  
Marked
- \* Skin
  - Pars Distalis
 Hyperplasia  
Moderate
- \* Thyroid Gland
  - [ Inflammation TGLs = 1-15 ]
  - C Cell
 Inflammation  
Hyperplasia  
Chronic Active, Marked  
Minimal

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 402

TRT#: 5

SEX: Male

DAY ON TEST: 729

DOSE: 30 mg/m3

DISP: Terminal Sacrifice

HISTO: 57021

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                             |                          |                            |                           |
|-----------------------------|--------------------------|----------------------------|---------------------------|
| * Adrenal Medulla           | * Bone                   | * Bone Marrow              | * Brain                   |
| * Epididymis                | * Esophagus              | * Eye                      | * Harderian Gland         |
| * Heart                     | * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum |
| * Intestine Small, Duodenum | * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      |
| * Kidney                    | * Lymph Node, Bronchial  | * Lymph Node, Mediastinal  | * Lymph Node, Mesenteric  |
| * Pancreas                  | * Parathyroid Gland      | * Preputial Gland          | * Salivary Glands         |
| * Spleen                    | * Stomach, Forestomach   | * Stomach, Glandular       | * Thymus                  |
| * Thyroid Gland             | * Trachea                | * Urinary Bladder          |                           |

MISSING

- |                          |                 |
|--------------------------|-----------------|
| * Lymph Node, Mandibular | * Mammary Gland |
|--------------------------|-----------------|

OBSERVATIONS

- |                   |                              |                               |                          |
|-------------------|------------------------------|-------------------------------|--------------------------|
| * Adrenal Cortex  |                              | Hyperplasia                   | Mild                     |
| * Larynx          |                              | Metaplasia                    | Squamous, Mild           |
| * Liver           |                              | Clear Cell Focus              |                          |
| * Lung            | Alveolar Epith               | Hyperplasia                   | Mild                     |
|                   |                              | Inflammation                  | Granulomatous, Minimal   |
| * Nose            |                              | Accumulation, Hyaline Droplet | Moderate                 |
|                   | Glands, Olfactory Epi        | Hyperplasia                   | Mild                     |
| * Pituitary Gland | Pars Distalis                | Hyperplasia                   | Mild                     |
| * Prostate        |                              | Hyperplasia                   | Moderate                 |
| * Seminal Vesicle |                              | Inflammation                  | Chronic Active, Moderate |
| * Skin            |                              | Inflammation                  | Chronic Active, Marked   |
|                   | [ Inflammation TGLs = 1-15 ] |                               |                          |
| * Testes          |                              | Edema                         | Moderate                 |

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 403

TRT#: 5

SEX: Male

DAY ON TEST: 729

DOSE: 30 mg/m3

DISP: Terminal Sacrifice

HISTO: 57022

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                          |                            |                           |                             |
|--------------------------|----------------------------|---------------------------|-----------------------------|
| * Adrenal Medulla        | * Bone                     | * Bone Marrow             | * Brain                     |
| * Epididymis             | * Esophagus                | * Eye                     | * Harderian Gland           |
| * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum | * Intestine Small, Duodenum |
| * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      | * Kidney                    |
| * Lymph Node, Bronchial  | * Lymph Node, Mediastinal  | * Lymph Node, Mesenteric  | * Pancreas                  |
| * Parathyroid Gland      | * Pituitary Gland          | * Preputial Gland         | * Prostate                  |
| * Salivary Glands        | * Seminal Vesicle          | * Skin                    | * Spleen                    |
| * Stomach, Forestomach   | * Stomach, Glandular       | * Testes                  | * Thymus                    |
| * Trachea                | * Urinary Bladder          |                           |                             |

MISSING

- |                          |                 |
|--------------------------|-----------------|
| * Lymph Node, Mandibular | * Mammary Gland |
|--------------------------|-----------------|

OBSERVATIONS

- |                  |                       |                               |                        |
|------------------|-----------------------|-------------------------------|------------------------|
| * Adrenal Cortex |                       | Hyperplasia                   | Mild                   |
| * Heart          |                       | Cardiomyopathy                | Minimal                |
| * Larynx         |                       | Metaplasia                    | Squamous, Minimal      |
| * Liver          |                       | Basophilic Focus              |                        |
|                  |                       | Clear Cell Focus              |                        |
| * Lung           | Alveolar Epith        | Hyperplasia                   | Mild                   |
|                  | Bronchiole            | Hyperplasia                   | Minimal                |
|                  |                       | Inflammation                  | Granulomatous, Minimal |
| * Nose           |                       | Accumulation, Hyaline Droplet | Marked                 |
|                  | Glands, Olfactory Epi | Hyperplasia                   | Mild                   |
| * Thyroid Gland  | C Cell                | Hyperplasia                   | Minimal                |

\* PROTOCOL REQUIRED TISSUE



TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 404

TRT#: 5

SEX: Male

DAY ON TEST: 731

DOSE: 30 mg/m3

DISP: Terminal Sacrifice

HISTO: 57023

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Medulla
- \* Epididymis
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Lymph Node, Mediastinal
- \* Preputial Gland
- \* Spleen
- \* Thymus
- \* Bone
- \* Esophagus
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Lymph Node, Mesenteric
- \* Prostate
- \* Stomach, Forestomach
- \* Trachea
- \* Bone Marrow
- \* Eye
- \* Intestine Small, Duodenum
- \* Lymph Node, Bronchial
- \* Pancreas
- \* Salivary Glands
- \* Stomach, Glandular
- \* Urinary Bladder
- \* Brain
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Lymph Node, Mandibular
- \* Pituitary Gland
- \* Seminal Vesicle
- \* Testes

MISSING

- \* Mammary Gland
- \* Parathyroid Gland

OBSERVATIONS

- \* Adrenal Cortex
  - Adenoma
  - Hyperplasia
 Mild
- \* Harderian Gland
  - Adenoma
- \* Heart
  - Cardiomyopathy
  - Schwannoma Benign
 Minimal
- \* Kidney
  - [ Schwannoma Benign TGLs = 3-15 ]
  - Nephropathy
 Mild
- \* Larynx
  - Metaplasia
 Squamous, Moderate
- \* Liver
  - Angiectasis
  - Clear Cell Focus
 Minimal
- \* Lung
  - [ Angiectasis TGLs = 2,6-6 ]
  - Alveolar Epith
  - Bronchiole
  - Hyperplasia
  - Hyperplasia
  - Inflammation
 Mild  
Minimal  
Granulomatous, Minimal
- \* Nose
  - [ Inflammation TGLs = 4-4+5 ]
  - Accumulation, Hyaline Droplet
 Moderate
- \* Skin
  - Glands, Olfactory Epi
  - Hyperplasia
  - Inflammation
 Mild  
Chronic Active, Marked
- \* Skin
  - [ Inflammation TGLs = 1-16 ]

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

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**ANIMAL ID:** 404

**TRT#:** 5

**SEX:** Male

**DAY ON TEST:** 731

**DOSE:** 30 mg/m3

**DISP:** Terminal Sacrifice

**HISTO:** 57023

---

**ORGAN AND ACCOUNTABLE SITE STATUS**

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\* Thyroid Gland

C Cell

Adenoma

C Cell

Hyperplasia

Mild

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TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 405

TRT#: 5

SEX: Male

DAY ON TEST: 711

DOSE: 30 mg/m3

DISP: Moribund Sacrifice

HISTO: 57024

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Cortex
- \* Adrenal Medulla
- \* Bone
- \* Bone Marrow
- \* Brain
- \* Epididymis
- \* Esophagus
- \* Eye
- \* Harderian Gland
- \* Intestine Large, Cecum
- \* Intestine Large, Colon
- \* Intestine Large, Rectum
- \* Intestine Small, Duodenum
- \* Intestine Small, Ileum
- \* Intestine Small, Jejunum
- \* Lymph Node, Bronchial
- \* Lymph Node, Mandibular
- \* Lymph Node, Mediastinal
- \* Lymph Node, Mesenteric
- \* Pancreas
- \* Parathyroid Gland
- \* Preputial Gland
- \* Salivary Glands
- \* Seminal Vesicle
- \* Spleen
- \* Stomach, Forestomach
- \* Stomach, Glandular
- \* Thymus
- \* Thyroid Gland
- \* Trachea
- \* Urinary Bladder

MISSING

- \* Mammary Gland

OBSERVATIONS

- \* Heart Cardiomyopathy Mild
- \* Islets, Pancreatic Carcinoma
  - [ Carcinoma TGLs = 2-15 ]
- \* Kidney Nephropathy Moderate
- \* Larynx Metaplasia Squamous, Moderate
- \* Liver Basophilic Focus
- \* Lung Alveolar Epith Hyperplasia Minimal
  - Bronchiole Hyperplasia Minimal
  - Inflammation Granulomatous, Minimal
- \* Nose Accumulation, Hyaline Droplet Moderate
- \* Pituitary Gland Glands, Olfactory Epi Hyperplasia Mild
  - Pars Distalis Carcinoma
- \* Prostate Inflammation Chronic Active, Mild
- \* Skin Inflammation Chronic Active, Marked
  - [ Inflammation TGLs = 3,4-15+16 ]
- \* Testes Edema Mild

PRIMARY CAUSE OF DEATH - Pituitary Gland Pars Distalis Carcinoma

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 406

TRT#: 5

SEX: Male

DAY ON TEST: 564

DOSE: 30 mg/m3

DISP: Moribund Sacrifice

HISTO: 57025

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Cortex
- \* Brain
- \* Harderian Gland
- \* Intestine Small, Duodenum
- \* Liver
- \* Lymph Node, Mesenteric
- \* Pituitary Gland
- \* Skin
- \* Testes
- \* Urinary Bladder
- \* Adrenal Medulla
- \* Epididymis
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Lymph Node, Bronchial
- \* Pancreas
- \* Prostate
- Spinal Cord
- \* Thymus
- \* Bone
- \* Esophagus
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Lymph Node, Mandibular
- \* Parathyroid Gland
- \* Salivary Glands
- \* Stomach, Forestomach
- \* Thyroid Gland
- \* Bone Marrow
- \* Eye
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Lymph Node, Mediastinal
- Peripheral Nerve
- \* Seminal Vesicle
- \* Stomach, Glandular
- \* Trachea

MISSING

- \* Mammary Gland

OBSERVATIONS

- |  |   |  |   |
|--|---|--|---|
| <ul style="list-style-type: none"> <li>* Heart</li> <li>* Kidney</li> <li>* Larynx</li> <li>* Lung</li> <li>* Nose</li> <li>* Preputial Gland</li> <li>Skeletal Muscle</li> <li style="padding-left: 20px;">[ Sarcoma TGLs = 2-17 ]</li> <li>* Spleen</li> <li style="padding-left: 20px;">[ Hematopoietic Cell Proliferation TGLs = 1-16 ]</li> </ul> | <ul style="list-style-type: none"> <li>Alveolar Epith</li> <li>Glands, Olfactory Epi</li> </ul> | <ul style="list-style-type: none"> <li>Cardiomyopathy</li> <li>Inflammation</li> <li>Metaplasia</li> <li>Hyperplasia</li> <li>Inflammation</li> <li>Accumulation, Hyaline Droplet</li> <li>Hyperplasia</li> <li>Inflammation</li> <li>Sarcoma</li> <li>Hematopoietic Cell Proliferation</li> </ul> | <ul style="list-style-type: none"> <li>Minimal</li> <li>Suppurative, Minimal</li> <li>Squamous, Moderate</li> <li>Minimal</li> <li>Granulomatous, Mild</li> <li>Marked</li> <li>Mild</li> <li>Chronic Active, Mild</li> <li>Moderate</li> </ul> |
|--|---|--|---|

PRIMARY CAUSE OF DEATH - Skeletal Muscle Sarcoma

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 407

TRT#: 5

SEX: Male

DAY ON TEST: 704

DOSE: 30 mg/m3

DISP: Moribund Sacrifice

HISTO: 57026

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Cortex
- \* Adrenal Medulla
- \* Bone
- \* Bone Marrow
- \* Brain
- \* Epididymis
- \* Esophagus
- \* Eye
- \* Harderian Gland
- \* Intestine Large, Cecum
- \* Intestine Large, Colon
- \* Intestine Large, Rectum
- \* Intestine Small, Duodenum
- \* Intestine Small, Ileum
- \* Intestine Small, Jejunum
- \* Islets, Pancreatic
- \* Lymph Node, Mandibular
- \* Lymph Node, Mediastinal
- \* Lymph Node, Mesenteric
- \* Pancreas
- \* Parathyroid Gland
- \* Pituitary Gland
- \* Preputial Gland
- \* Prostate
- \* Salivary Glands
- \* Seminal Vesicle
- Spinal Cord
- \* Spleen
- \* Stomach, Forestomach
- \* Stomach, Glandular
- \* Testes
- \* Thymus
- \* Trachea
- \* Urinary Bladder

MISSING

- \* Lymph Node, Bronchial
- \* Mammary Gland
- Peripheral Nerve

OBSERVATIONS

- \* Heart
- Cardiomyopathy
- Mild
- \* Kidney
- Nephropathy
- Minimal
- \* Larynx
- Metaplasia
- Squamous, Mild
- \* Liver
- Basophilic Focus
- \* Lung
- Bronchiole
- Hyperplasia
- Minimal
- Inflammation
- Granulomatous, Minimal
- \* Nose
- Accumulation, Hyaline Droplet
- Moderate
- Glands, Olfactory Epi
- Hyperplasia
- Mild
- \* Skin
- Inflammation
- Chronic Active, Marked
- [ Inflammation TGLs = 1-15 ]
- \* Thyroid Gland
- Follicular Cel
- Hyperplasia
- Moderate

PRIMARY CAUSE OF DEATH - Skin Inflammation

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 408

TRT#: 5

SEX: Male

DAY ON TEST: 653

DOSE: 30 mg/m3

DISP: Moribund Sacrifice

HISTO: 57027

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Cortex
- \* Brain
- \* Heart
- \* Intestine Small, Duodenum
- \* Liver
- \* Lymph Node, Mesenteric
- \* Prostate
- \* Stomach, Forestomach
- \* Trachea
- \* Adrenal Medulla
- \* Epididymis
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Lung
- \* Pancreas
- \* Salivary Glands
- \* Stomach, Glandular
- \* Urinary Bladder
- \* Bone
- \* Esophagus
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Lymph Node, Mandibular
- \* Parathyroid Gland
- \* Seminal Vesicle
- \* Testes
- \* Bone Marrow
- \* Eye
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Lymph Node, Mediastinal
- \* Preputial Gland
- \* Spleen
- \* Thymus

MISSING

- \* Lymph Node, Bronchial
- \* Mammary Gland

OBSERVATIONS

- \* Harderian Gland
- \* Kidney
- \* Larynx
- \* Nose
- \* Pituitary Gland
- [ Adenoma TGLs = 1-10 ]
- \* Skin
- [ Inflammation TGLs = 2,3-15+16 ]
- \* Thyroid Gland
- Glands, Olfactory Epi
- Pars Distalis
- C Cell
- Hyperplasia
- Nephropathy
- Metaplasia
- Accumulation, Hyaline Droplet
- Hyperplasia
- Adenoma
- Inflammation
- Hyperplasia
- Minimal
- Moderate
- Squamous, Mild
- Marked
- Mild
- Chronic Active, Mild
- Minimal

PRIMARY CAUSE OF DEATH - Pituitary Gland Pars Distalis Adenoma

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 409

TRT#: 5

SEX: Male

DAY ON TEST: 704

DOSE: 30 mg/m3

DISP: Moribund Sacrifice

HISTO: 57028

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                           |                            |                           |                             |
|---------------------------|----------------------------|---------------------------|-----------------------------|
| * Adrenal Medulla         | * Bone                     | * Bone Marrow             | * Brain                     |
| * Epididymis              | * Esophagus                | * Eye                     | * Harderian Gland           |
| * Intestine Large, Cecum  | * Intestine Large, Colon   | * Intestine Large, Rectum | * Intestine Small, Duodenum |
| * Intestine Small, Ileum  | * Intestine Small, Jejunum | * Lymph Node, Bronchial   | * Lymph Node, Mandibular    |
| * Lymph Node, Mediastinal | * Lymph Node, Mesenteric   | * Mammary Gland           | * Pancreas                  |
| * Parathyroid Gland       | Peripheral Nerve           | * Pituitary Gland         | * Preputial Gland           |
| * Prostate                | * Salivary Glands          | * Seminal Vesicle         | Spinal Cord                 |
| * Spleen                  | * Stomach, Forestomach     | * Stomach, Glandular      | * Thymus                    |
| * Trachea                 | * Urinary Bladder          |                           |                             |

OBSERVATIONS

- |                              |                       |                               |                                   |
|------------------------------|-----------------------|-------------------------------|-----------------------------------|
| * Adrenal Cortex             |                       | Degeneration<br>Hypertrophy   | Cystic, Minimal<br>Mild           |
| * Heart                      |                       | Schwannoma Benign             |                                   |
| * Islets, Pancreatic         |                       | Adenoma                       |                                   |
| [ Adenoma TGLs = 2-16 ]      |                       |                               |                                   |
| * Kidney                     |                       | Nephropathy                   | Minimal                           |
| * Larynx                     |                       | Metaplasia                    | Squamous, Minimal                 |
| * Liver                      |                       | Basophilic Focus              |                                   |
| * Lung                       | Bronchiole            | Hyperplasia<br>Inflammation   | Minimal<br>Granulomatous, Minimal |
| Lymph Node                   | Iliac                 | Ectasia                       | Mild                              |
| [ Ectasia TGLs = 3-17 ]      |                       |                               |                                   |
| * Nose                       |                       | Accumulation, Hyaline Droplet | Moderate                          |
|                              | Glands, Olfactory Epi | Hyperplasia                   | Minimal                           |
| * Skin                       |                       | Inflammation                  | Chronic Active, Marked            |
| [ Inflammation TGLs = 1-18 ] |                       |                               |                                   |
| * Testes                     |                       | Edema                         | Mild                              |
| * Thyroid Gland              | C Cell                | Adenoma                       |                                   |

PRIMARY CAUSE OF DEATH - Skin Inflammation

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 410

TRT#: 5

SEX: Male

DAY ON TEST: 704

DOSE: 30 mg/m3

DISP: Moribund Sacrifice

HISTO: 57029

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                             |                          |                            |                           |
|-----------------------------|--------------------------|----------------------------|---------------------------|
| * Adrenal Medulla           | * Bone                   | * Bone Marrow              | * Brain                   |
| * Epididymis                | * Esophagus              | * Eye                      | * Harderian Gland         |
| * Heart                     | * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum |
| * Intestine Small, Duodenum | * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      |
| * Lymph Node, Bronchial     | * Lymph Node, Mandibular | * Lymph Node, Mediastinal  | * Lymph Node, Mesenteric  |
| * Pancreas                  | * Parathyroid Gland      | Peripheral Nerve           | * Preputial Gland         |
| * Salivary Glands           | * Seminal Vesicle        | Spinal Cord                | * Spleen                  |
| * Stomach, Forestomach      | * Stomach, Glandular     | * Testes                   | * Thymus                  |
| * Trachea                   | * Urinary Bladder        |                            |                           |

MISSING

- \* Mammary Gland

OBSERVATIONS

- |                              |                       |                               |                          |
|------------------------------|-----------------------|-------------------------------|--------------------------|
| * Adrenal Cortex             |                       | Hypertrophy                   | Mild                     |
| * Kidney                     |                       | Nephropathy                   | Moderate                 |
| * Larynx                     |                       | Metaplasia                    | Squamous, Moderate       |
| * Liver                      |                       | Clear Cell Focus              |                          |
| * Lung                       | Bronchiole            | Hyperplasia                   | Minimal                  |
|                              |                       | Inflammation                  | Granulomatous, Minimal   |
| Lymph Node                   | Iliac                 | Inflammation                  | Chronic Active, Marked   |
| [ Inflammation TGLs = 2-17 ] |                       |                               |                          |
| * Nose                       |                       | Accumulation, Hyaline Droplet | Marked                   |
|                              | Glands, Olfactory Epi | Hyperplasia                   | Mild                     |
| * Pituitary Gland            | Pars Distalis         | Adenoma                       |                          |
| [ Adenoma TGLs = 3-10 ]      |                       |                               |                          |
| * Prostate                   |                       | Inflammation                  | Chronic Active, Moderate |
| * Skin                       |                       | Inflammation                  | Chronic Active, Marked   |
| [ Inflammation TGLs = 1-18 ] |                       |                               |                          |
| * Thyroid Gland              | C Cell                | Hyperplasia                   | Minimal                  |

PRIMARY CAUSE OF DEATH - Pituitary Gland Pars Distalis Adenoma

\* PROTOCOL REQUIRED TISSUE



TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 411

TRT#: 5

SEX: Male

DAY ON TEST: 729

DOSE: 30 mg/m3

DISP: Terminal Sacrifice

HISTO: 57030

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                             |                          |                            |                           |
|-----------------------------|--------------------------|----------------------------|---------------------------|
| * Adrenal Medulla           | * Bone                   | * Bone Marrow              | * Brain                   |
| * Epididymis                | * Esophagus              | * Eye                      | * Harderian Gland         |
| * Heart                     | * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum |
| * Intestine Small, Duodenum | * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      |
| * Liver                     | * Lymph Node, Bronchial  | * Lymph Node, Mediastinal  | * Lymph Node, Mesenteric  |
| * Pancreas                  | * Parathyroid Gland      | * Pituitary Gland          | * Preputial Gland         |
| * Prostate                  | * Salivary Glands        | * Seminal Vesicle          | * Skin                    |
| * Spleen                    | * Stomach, Forestomach   | * Stomach, Glandular       | * Testes                  |
| * Thymus                    | * Thyroid Gland          | * Trachea                  | * Urinary Bladder         |

MISSING

- |                          |                 |
|--------------------------|-----------------|
| * Lymph Node, Mandibular | * Mammary Gland |
|--------------------------|-----------------|

OBSERVATIONS

- |                  |                       |                               |                        |
|------------------|-----------------------|-------------------------------|------------------------|
| * Adrenal Cortex |                       | Hyperplasia                   | Mild                   |
| * Kidney         |                       | Nephropathy                   | Minimal                |
| * Larynx         |                       | Metaplasia                    | Squamous, Mild         |
| * Lung           | Bronchiole            | Hyperplasia                   | Minimal                |
|                  |                       | Inflammation                  | Granulomatous, Minimal |
| * Nose           |                       | Accumulation, Hyaline Droplet | Marked                 |
|                  | Glands, Olfactory Epi | Hyperplasia                   | Moderate               |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 412

TRT#: 5

SEX: Male

DAY ON TEST: 726

DOSE: 30 mg/m3

DISP: Moribund Sacrifice

HISTO: 57031

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                          |                            |                           |                             |
|--------------------------|----------------------------|---------------------------|-----------------------------|
| * Adrenal Medulla        | * Bone                     | * Bone Marrow             | * Brain                     |
| * Epididymis             | * Esophagus                | * Eye                     | * Heart                     |
| * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum | * Intestine Small, Duodenum |
| * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      | * Lymph Node, Bronchial     |
| * Lymph Node, Mandibular | * Lymph Node, Mediastinal  | * Lymph Node, Mesenteric  | * Pancreas                  |
| * Parathyroid Gland      | Peripheral Nerve           | * Preputial Gland         | * Prostate                  |
| * Salivary Glands        | * Seminal Vesicle          | Spinal Cord               | * Stomach, Forestomach      |
| * Stomach, Glandular     | * Thymus                   | * Trachea                 | * Urinary Bladder           |

MISSING

- \* Mammary Gland

OBSERVATIONS

- |                   |                                |                               |                        |
|-------------------|--------------------------------|-------------------------------|------------------------|
| * Adrenal Cortex  |                                | Hypertrophy                   | Mild                   |
| * Harderian Gland |                                | Hyperplasia                   | Mild                   |
| * Kidney          |                                | Nephropathy                   | Mild                   |
| * Larynx          |                                | Metaplasia                    | Squamous, Moderate     |
| * Liver           |                                | Clear Cell Focus              |                        |
| * Lung            |                                | Alveolar/Bronchiolar Adenoma  |                        |
|                   | Bronchiole                     | Hyperplasia                   | Minimal                |
|                   |                                | Inflammation                  | Granulomatous, Minimal |
|                   | [ Alveolar/Bronchiolar Adenoma |                               |                        |
|                   | Lymph Node                     |                               |                        |
|                   | [ Ectasia TGLs = 1-16 ]        |                               |                        |
| * Nose            |                                | Ectasia                       | Moderate               |
|                   |                                | Accumulation, Hyaline Droplet | Marked                 |
|                   | Glands, Olfactory Epi          | Hyperplasia                   | Mild                   |
| * Pituitary Gland | Pars Distalis                  | Hyperplasia                   | Moderate               |
| * Skin            |                                | Inflammation                  | Chronic Active, Marked |
|                   | [ Inflammation TGLs = 2,3-17 ] |                               |                        |
| * Spleen          |                                | Angiectasis                   | Moderate               |
| * Testes          |                                | Edema                         | Mild                   |
| * Thyroid Gland   | C Cell                         | Hyperplasia                   | Mild                   |

\* PROTOCOL REQUIRED TISSUE

**TDMS No.** 20515 - 03

**Test Type:** CHRONIC

**Route:** RESPIRATORY EXPOSURE WHOLE BODY

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

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Metal working fluids (CIMSTAR 3800)

**CAS Number:** CIMSTAR3800

**Date Report Requested:** 01/21/2011

**Time Report Requested:** 07:49:51

**First Dose M/F:** 04/14/08 / 04/14/08

**Lab:** BNW

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**ANIMAL ID:** 412

**TRT#:** 5

**SEX:** Male

**DAY ON TEST:** 726

**DOSE:** 30 mg/m3

**DISP:** Moribund Sacrifice

**HISTO:** 57031

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**ORGAN AND ACCOUNTABLE SITE STATUS**

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PRIMARY CAUSE OF DEATH

- Skin Inflammation

---

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 413

TRT#: 5

SEX: Male

DAY ON TEST: 729

DOSE: 30 mg/m3

DISP: Terminal Sacrifice

HISTO: 57032

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                           |                             |                          |                            |
|---------------------------|-----------------------------|--------------------------|----------------------------|
| * Adrenal Cortex          | * Adrenal Medulla           | * Bone                   | * Bone Marrow              |
| * Brain                   | * Epididymis                | * Esophagus              | * Eye                      |
| * Harderian Gland         | * Heart                     | * Intestine Large, Cecum | * Intestine Large, Colon   |
| * Intestine Large, Rectum | * Intestine Small, Duodenum | * Intestine Small, Ileum | * Intestine Small, Jejunum |
| * Islets, Pancreatic      | * Lymph Node, Bronchial     | * Lymph Node, Mandibular | * Lymph Node, Mediastinal  |
| * Lymph Node, Mesenteric  | * Mammary Gland             | * Pancreas               | * Parathyroid Gland        |
| * Preputial Gland         | * Salivary Glands           | * Seminal Vesicle        | * Spleen                   |
| * Stomach, Forestomach    | * Stomach, Glandular        | * Testes                 | * Thymus                   |
| * Trachea                 | * Urinary Bladder           |                          |                            |

OBSERVATIONS

- |                   |                              |                               |                        |
|-------------------|------------------------------|-------------------------------|------------------------|
| * Kidney          |                              | Nephropathy                   | Mild                   |
| * Larynx          |                              | Metaplasia                    | Squamous, Mild         |
| * Liver           |                              | Basophilic Focus              |                        |
| * Lung            | Bronchiole                   | Hyperplasia                   | Minimal                |
|                   |                              | Inflammation                  | Granulomatous, Minimal |
| * Nose            |                              | Accumulation, Hyaline Droplet | Mild                   |
| * Pituitary Gland | Pars Distalis                | Adenoma                       |                        |
| * Prostate        |                              | Hyperplasia                   | Moderate               |
| * Skin            |                              | Inflammation                  | Chronic Active, Marked |
|                   | [ Inflammation TGLs = 1-15 ] |                               |                        |
| * Thyroid Gland   | Follicular Cel               | Hyperplasia                   | Minimal                |
|                   | C Cell                       | Hyperplasia                   | Minimal                |

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 414

TRT#: 5

SEX: Male

DAY ON TEST: 730

DOSE: 30 mg/m3

DISP: Terminal Sacrifice

HISTO: 57033

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Medulla
- \* Epididymis
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Lymph Node, Mandibular
- \* Preputial Gland
- \* Spleen
- \* Trachea
- \* Bone
- \* Esophagus
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Lymph Node, Mediastinal
- \* Prostate
- \* Stomach, Forestomach
- \* Urinary Bladder
- \* Bone Marrow
- \* Eye
- \* Intestine Small, Duodenum
- \* Liver
- \* Lymph Node, Mesenteric
- \* Salivary Glands
- \* Stomach, Glandular
- \* Brain
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Lymph Node, Bronchial
- \* Parathyroid Gland
- \* Seminal Vesicle
- \* Thymus

MISSING

- \* Mammary Gland

OBSERVATIONS

- |  |  |   |  |
|--|--|---|--|
| <ul style="list-style-type: none"> <li>* Adrenal Cortex</li> <li>* Harderian Gland</li> <li>* Heart</li> <li>* Kidney</li> <li>* Larynx</li> <li>* Lung</li> <li>* Nose</li> <br/> <li>* Pancreas</li> <li>* Pituitary Gland</li> <li>* Skin</li> <br/> <li>* Testes</li> <li>* Thyroid Gland</li> </ul> | <ul style="list-style-type: none"> <li>Bronchiole</li> <br/> <li>Glands, Olfactory Epi</li> <br/> <li>Pars Distalis</li> <br/> <li>C Cell</li> </ul> | <ul style="list-style-type: none"> <li>Hyperplasia</li> <li>Hyperplasia</li> <li>Cardiomyopathy</li> <li>Nephropathy</li> <li>Metaplasia</li> <li>Hyperplasia</li> <li>Accumulation, Hyaline Droplet</li> <li>Hyperplasia</li> <li>Basophilic Focus</li> <li>Hyperplasia</li> <li>Inflammation</li> <br/> <li>Edema</li> <li>Adenoma</li> </ul> | <ul style="list-style-type: none"> <li>Mild</li> <li>Mild</li> <li>Minimal</li> <li>Moderate</li> <li>Squamous, Mild</li> <li>Minimal</li> <li>Marked</li> <li>Moderate</li> <br/> <li>Mild</li> <li>Chronic Active, Marked</li> <br/> <li>Mild</li> </ul> |
|--|--|---|--|

[ Inflammation TGLs = 1-15 ]

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 415

TRT#: 5

SEX: Male

DAY ON TEST: 564

DOSE: 30 mg/m3

DISP: Moribund Sacrifice

HISTO: 57034

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                             |                           |                            |                           |
|-----------------------------|---------------------------|----------------------------|---------------------------|
| * Adrenal Medulla           | * Bone                    | * Bone Marrow              | * Brain                   |
| * Epididymis                | * Esophagus               | * Eye                      | * Harderian Gland         |
| * Heart                     | * Intestine Large, Cecum  | * Intestine Large, Colon   | * Intestine Large, Rectum |
| * Intestine Small, Duodenum | * Intestine Small, Ileum  | * Intestine Small, Jejunum | * Islets, Pancreatic      |
| * Lymph Node, Mandibular    | * Lymph Node, Mediastinal | * Lymph Node, Mesenteric   | * Pancreas                |
| Peripheral Nerve            | * Pituitary Gland         | * Preputial Gland          | * Prostate                |
| * Salivary Glands           | * Seminal Vesicle         | Spinal Cord                | * Stomach, Forestomach    |
| * Stomach, Glandular        | * Thyroid Gland           | * Trachea                  | * Urinary Bladder         |

MISSING

- |                         |                 |                     |          |
|-------------------------|-----------------|---------------------|----------|
| * Lymph Node, Bronchial | * Mammary Gland | * Parathyroid Gland | * Thymus |
|-------------------------|-----------------|---------------------|----------|

OBSERVATIONS

- |                               |                                  |                        |
|-------------------------------|----------------------------------|------------------------|
| * Adrenal Cortex              | Degeneration                     | Cystic, Minimal        |
|                               | Hyperplasia                      | Mild                   |
| * Kidney                      | Hydronephrosis                   | Minimal                |
|                               | Nephropathy                      | Minimal                |
| [ Hydronephrosis TGLs = 2-7 ] |                                  |                        |
| * Larynx                      | Metaplasia                       | Squamous, Moderate     |
| * Liver                       | Basophilic Focus                 |                        |
| * Lung                        | Inflammation                     | Granulomatous, Minimal |
| * Nose                        | Accumulation, Hyaline Droplet    | Moderate               |
| * Skin                        | Inflammation                     | Chronic Active, Marked |
| [ Inflammation TGLs = 1-15 ]  |                                  |                        |
| * Spleen                      | Hematopoietic Cell Proliferation | Mild                   |
| * Testes                      | Edema                            | Mild                   |

PRIMARY CAUSE OF DEATH - Skin Inflammation

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 416

TRT#: 5

SEX: Male

DAY ON TEST: 730

DOSE: 30 mg/m3

DISP: Terminal Sacrifice

HISTO: 57035

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Medulla
- \* Epididymis
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Lymph Node, Mediastinal
- \* Pituitary Gland
- \* Seminal Vesicle
- \* Stomach, Glandular
- \* Bone
- \* Esophagus
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Lymph Node, Mesenteric
- \* Preputial Gland
- \* Skin
- \* Thymus
- \* Bone Marrow
- \* Eye
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Pancreas
- \* Prostate
- \* Spleen
- \* Trachea
- \* Brain
- \* Harderian Gland
- \* Intestine Small, Duodenum
- \* Lymph Node, Mandibular
- \* Parathyroid Gland
- \* Salivary Glands
- \* Stomach, Forestomach
- \* Urinary Bladder

MISSING

- \* Lymph Node, Bronchial
- \* Mammary Gland

OBSERVATIONS

- \* Adrenal Cortex
  - \* Heart
  - \* Kidney
  - \* Larynx
  - \* Liver
    - [ Clear Cell Focus TGLs = 2-15 ]
  - \* Lung
  - \* Nose
  - \* Testes
  - \* Thyroid Gland
    - [ Adenoma TGLs = 1-9 ]
- Alveolar Epith
  - Glands, Olfactory Epi
  - Interstit Cell
  - C Cell
- Hyperplasia
  - Cardiomyopathy
  - Nephropathy
  - Metaplasia
  - Clear Cell Focus
  - Hyperplasia
  - Accumulation, Hyaline Droplet
  - Hyperplasia
  - Adenoma
  - Edema
  - Hyperplasia
- Mild
  - Minimal
  - Minimal
  - Squamous, Moderate
  - Mild
  - Moderate
  - Mild
  - Mild
  - Minimal

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 417

TRT#: 5

SEX: Male

DAY ON TEST: 730

DOSE: 30 mg/m3

DISP: Terminal Sacrifice

HISTO: 57036

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Medulla
- \* Epididymis
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Lymph Node, Bronchial
- \* Pancreas
- \* Seminal Vesicle
- \* Stomach, Glandular
- \* Urinary Bladder
- \* Bone
- \* Esophagus
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Lymph Node, Mandibular
- \* Parathyroid Gland
- \* Skin
- \* Thymus
- \* Bone Marrow
- \* Eye
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Lymph Node, Mediastinal
- \* Preputial Gland
- \* Spleen
- \* Thyroid Gland
- \* Brain
- \* Harderian Gland
- \* Intestine Small, Duodenum
- \* Lung
- \* Lymph Node, Mesenteric
- \* Salivary Glands
- \* Stomach, Forestomach
- \* Trachea

MISSING

- \* Mammary Gland

OBSERVATIONS

- \* Adrenal Cortex
    - Hyperplasia
    - Hypertrophy
    - Cardiomyopathy
    - Nephropathy
    - Metaplasia
    - Angiectasis
    - Basophilic Focus
    - Clear Cell Focus
  - \* Heart
  - \* Kidney
  - \* Larynx
  - \* Liver
  - \* Nose
    - Accumulation, Hyaline Droplet
    - Hyperplasia
    - Hyperplasia
    - Hyperplasia
    - Edema
  - \* Pituitary Gland
    - Hyperplasia
  - \* Prostate
    - Hyperplasia
  - \* Testes
    - Edema
- [ Angiectasis TGLs = 1-15 ]

- Mild
- Minimal
- Minimal
- Mild
- Squamous, Mild
- Minimal
- Marked
- Minimal
- Mild
- Minimal
- Mild

\* PROTOCOL REQUIRED TISSUE



TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 418

TRT#: 5

SEX: Male

DAY ON TEST: 730

DOSE: 30 mg/m3

DISP: Terminal Sacrifice

HISTO: 57037

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                          |                            |                           |                             |
|--------------------------|----------------------------|---------------------------|-----------------------------|
| * Adrenal Medulla        | * Bone                     | * Bone Marrow             | * Brain                     |
| * Epididymis             | * Esophagus                | * Eye                     | * Harderian Gland           |
| * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum | * Intestine Small, Duodenum |
| * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      | * Liver                     |
| * Lymph Node, Mandibular | * Lymph Node, Mediastinal  | * Lymph Node, Mesenteric  | * Pancreas                  |
| * Parathyroid Gland      | * Preputial Gland          | * Prostate                | * Salivary Glands           |
| * Seminal Vesicle        | * Spleen                   | * Stomach, Forestomach    | * Stomach, Glandular        |
| * Testes                 | * Thymus                   | * Trachea                 | * Urinary Bladder           |

MISSING

- |                         |                 |
|-------------------------|-----------------|
| * Lymph Node, Bronchial | * Mammary Gland |
|-------------------------|-----------------|

OBSERVATIONS

- |                   |                                      |                               |                     |
|-------------------|--------------------------------------|-------------------------------|---------------------|
| * Adrenal Cortex  |                                      | Degeneration                  | Cystic, Mild        |
|                   |                                      | Hyperplasia                   | Moderate            |
| * Heart           |                                      | Cardiomyopathy                | Minimal             |
| * Kidney          |                                      | Nephropathy                   | Moderate            |
| * Larynx          |                                      | Metaplasia                    | Squamous, Mild      |
| * Lung            | Bronchiole                           | Hyperplasia                   | Minimal             |
|                   |                                      | Inflammation                  | Granulomatous, Mild |
|                   | [ Inflammation TGLs = 2,3,5,4-4+15 ] |                               |                     |
| * Nose            |                                      | Accumulation, Hyaline Droplet | Moderate            |
|                   | Glands, Olfactory Epi                | Hyperplasia                   | Mild                |
| * Pituitary Gland | Pars Distalis                        | Adenoma                       |                     |
|                   | [ Adenoma TGLs = 6-10 ]              |                               |                     |
| * Skin            |                                      | Basal Cell Carcinoma          |                     |
|                   | [ Basal Cell Carcinoma TGLs = 1-16 ] |                               |                     |
| * Thyroid Gland   | C Cell                               | Hyperplasia                   | Minimal             |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 419

TRT#: 5

SEX: Male

DAY ON TEST: 730

DOSE: 30 mg/m3

DISP: Terminal Sacrifice

HISTO: 57038

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Medulla
- \* Epididymis
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Lymph Node, Mesenteric
- \* Prostate
- \* Spleen
- \* Thymus
- \* Bone
- \* Esophagus
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Parathyroid Gland
- \* Salivary Glands
- \* Stomach, Forestomach
- \* Trachea
- \* Bone Marrow
- \* Harderian Gland
- \* Intestine Small, Duodenum
- \* Liver
- \* Pituitary Gland
- \* Seminal Vesicle
- \* Stomach, Glandular
- \* Urinary Bladder
- \* Brain
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Lymph Node, Mediastinal
- \* Preputial Gland
- \* Skin
- \* Testes

MISSING

- \* Lymph Node, Bronchial
- \* Lymph Node, Mandibular
- \* Mammary Gland

OBSERVATIONS

- \* Adrenal Cortex
  - Hyperplasia
  - Hypertrophy
  - Mild
- \* Eye
  - [ Cataract TGLs = 1-13 ]
  - Cataract
  - Marked
- \* Heart
  - Cardiomyopathy
  - Minimal
- \* Kidney
  - Nephropathy
  - Mild
- \* Larynx
  - Metaplasia
  - Squamous, Mild
- \* Lung
  - Bronchiole
  - Hyperplasia
  - Inflammation
  - Minimal
  - Granulomatous, Minimal
- \* Nose
  - [ Inflammation TGLs = 2,3-15+16 ]
  - Accumulation, Hyaline Droplet
  - Marked
  - Glands, Olfactory Epi
  - Hyperplasia
  - Mild
- \* Pancreas
  - Atrophy
  - Minimal
- \* Thyroid Gland
  - Follicular Cel
  - Hyperplasia
  - Mild
  - C Cell
  - Hyperplasia
  - Minimal

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 420

TRT#: 5

SEX: Male

DAY ON TEST: 729

DOSE: 30 mg/m3

DISP: Terminal Sacrifice

HISTO: 57039

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Medulla
- \* Esophagus
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Lymph Node, Mediastinal
- \* Pituitary Gland
- \* Seminal Vesicle
- \* Testes
- \* Urinary Bladder
- \* Bone
- \* Eye
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Lymph Node, Mesenteric
- \* Preputial Gland
- \* Spleen
- \* Thymus
- \* Bone Marrow
- \* Harderian Gland
- \* Intestine Small, Duodenum
- \* Lymph Node, Bronchial
- \* Pancreas
- \* Prostate
- \* Stomach, Forestomach
- \* Thyroid Gland
- \* Epididymis
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Lymph Node, Mandibular
- \* Parathyroid Gland
- \* Salivary Glands
- \* Stomach, Glandular
- \* Trachea

MISSING

- \* Mammary Gland

OBSERVATIONS

- |   |  |   |
|---|--|---|
| <ul style="list-style-type: none"> <li>* Adrenal Cortex</li> <li>* Brain</li> <li>* Heart</li> <li>* Kidney</li> <li>* Larynx</li> <li>* Liver</li> <li>* Lung</li> </ul> | <ul style="list-style-type: none"> <li>Hyperplasia</li> <li>Astrocytoma Malignant</li> <li>Cardiomyopathy</li> <li>Nephropathy</li> <li>Metaplasia</li> <li>Clear Cell Focus</li> <li>Bronchiole</li> <li>Hyperplasia</li> <li>Inflammation</li> </ul> | <ul style="list-style-type: none"> <li>Mild</li> </ul>  |
| <ul style="list-style-type: none"> <li>* Nose</li> </ul>  | <ul style="list-style-type: none"> <li>Accumulation, Hyaline Droplet</li> </ul>  | <ul style="list-style-type: none"> <li>Minimal</li> <li>Granulomatous, Minimal</li> </ul>                   |
| <ul style="list-style-type: none"> <li>* Skin</li> </ul>  | <ul style="list-style-type: none"> <li>Glands, Olfactory Epi</li> <li>Hyperplasia</li> <li>Inflammation</li> </ul>   | <ul style="list-style-type: none"> <li>Moderate</li> <li>Minimal</li> <li>Chronic Active, Marked</li> </ul> |

[ Inflammation TGLs = 2-15 ]

[ Inflammation TGLs = 1-16 ]

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 421

TRT#: 5

SEX: Male

DAY ON TEST: 722

DOSE: 30 mg/m3

DISP: Moribund Sacrifice

HISTO: 57040

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                           |                             |                           |                            |
|---------------------------|-----------------------------|---------------------------|----------------------------|
| * Bone                    | * Bone Marrow               | * Brain                   | * Epididymis               |
| * Esophagus               | * Eye                       | * Intestine Large, Cecum  | * Intestine Large, Colon   |
| * Intestine Large, Rectum | * Intestine Small, Duodenum | * Intestine Small, Ileum  | * Intestine Small, Jejunum |
| * Islets, Pancreatic      | * Lymph Node, Mandibular    | * Lymph Node, Mediastinal | * Lymph Node, Mesenteric   |
| * Pancreas                | * Parathyroid Gland         | * Pituitary Gland         | * Preputial Gland          |
| * Prostate                | * Salivary Glands           | * Seminal Vesicle         | * Stomach, Forestomach     |
| * Stomach, Glandular      | * Thyroid Gland             | * Trachea                 | * Urinary Bladder          |

MISSING

- |                         |                 |
|-------------------------|-----------------|
| * Lymph Node, Bronchial | * Mammary Gland |
|-------------------------|-----------------|

OBSERVATIONS

- |                   |  |                                  |                        |
|-------------------|--|----------------------------------|------------------------|
| * Adrenal Cortex  |  | Hypertrophy                      | Mild                   |
| * Adrenal Medulla |  | Hyperplasia                      | Moderate               |
| * Harderian Gland |  | Hyperplasia                      | Mild                   |
| * Heart           |  | Cardiomyopathy                   | Mild                   |
| * Kidney          |  | Cyst                             | Mild                   |
|                   |  | Nephropathy                      | Minimal                |
|                   | [ Cyst TGLs = 2-15 ]                             |                                  |                        |
| * Larynx          |  | Metaplasia                       | Squamous, Mild         |
| * Liver           |  | Basophilic Focus                 |                        |
|                   |  | Clear Cell Focus                 |                        |
| * Lung            | Bronchiole                                       | Hyperplasia                      | Minimal                |
|                   |  | Inflammation                     | Granulomatous, Minimal |
| * Nose            |  | Accumulation, Hyaline Droplet    | Moderate               |
|                   | Glands, Olfactory Epi                            | Hyperplasia                      | Minimal                |
| * Skin            |  | Inflammation                     | Chronic Active, Marked |
|                   | [ Inflammation TGLs = 3,4-17 ]                   |                                  |                        |
| * Spleen          |  | Hematopoietic Cell Proliferation | Moderate               |
|                   | [ Hematopoietic Cell Proliferation TGLs = 1-16 ] |                                  |                        |
| * Testes          |  | Atrophy                          | Moderate               |
|                   |  | Edema                            | Moderate               |

\* PROTOCOL REQUIRED TISSUE

**TDMS No.** 20515 - 03

**Test Type:** CHRONIC

**Route:** RESPIRATORY EXPOSURE WHOLE BODY

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

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Metal working fluids (CIMSTAR 3800)

**CAS Number:** CIMSTAR3800

**Date Report Requested:** 01/21/2011

**Time Report Requested:** 07:49:51

**First Dose M/F:** 04/14/08 / 04/14/08

**Lab:** BNW

---

**ANIMAL ID:** 421

**TRT#:** 5

**SEX:** Male

**DAY ON TEST:** 722

**DOSE:** 30 mg/m3

**DISP:** Moribund Sacrifice

**HISTO:** 57040

---

**ORGAN AND ACCOUNTABLE SITE STATUS**

---

\* Thymus

Thymoma Benign

---

PRIMARY CAUSE OF DEATH

- Skin Inflammation

---

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 422

TRT#: 5

SEX: Male

DAY ON TEST: 620

DOSE: 30 mg/m3

DISP: Moribund Sacrifice

HISTO: 57041

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Medulla
- \* Epididymis
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Lymph Node, Bronchial
- \* Pancreas
- \* Salivary Glands
- \* Stomach, Forestomach
- \* Trachea
- \* Bone
- \* Esophagus
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Lymph Node, Mandibular
- Peripheral Nerve
- \* Seminal Vesicle
- \* Stomach, Glandular
- \* Urinary Bladder
- \* Bone Marrow
- \* Eye
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Lymph Node, Mediastinal
- \* Preputial Gland
- Spinal Cord
- \* Testes
- \* Brain
- \* Harderian Gland
- \* Intestine Small, Duodenum
- \* Liver
- \* Lymph Node, Mesenteric
- \* Prostate
- \* Spleen
- \* Thymus

MISSING

- \* Mammary Gland
- \* Parathyroid Gland

OBSERVATIONS

- \* Adrenal Cortex
- \* Heart
- \* Kidney
- [ Cyst TGLs = 3-7 ]
- \* Larynx
- \* Lung
- [ Inflammation TGLs = 4-4+5 ]
- \* Nose
- \* Pituitary Gland
- [ Adenoma TGLs = 2-10 ]
- \* Skin
- [ Inflammation TGLs = 1-15 ]
- \* Thyroid Gland
- Hyperplasia
- Cardiomyopathy
- Cyst
- Nephropathy
- Metaplasia
- Hyperplasia
- Inflammation
- Accumulation, Hyaline Droplet
- Hyperplasia
- Adenoma
- Inflammation
- Carcinoma
- Hyperplasia
- Mild
- Minimal
- Mild
- Minimal
- Squamous, Moderate
- Minimal
- Granulomatous, Mild
- Marked
- Minimal
- Chronic Active, Marked
- Minimal

PRIMARY CAUSE OF DEATH - Pituitary Gland Pars Distalis Adenoma

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 423

TRT#: 5

SEX: Male

DAY ON TEST: 729

DOSE: 30 mg/m3

DISP: Terminal Sacrifice

HISTO: 57042

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                          |                            |                           |                             |
|--------------------------|----------------------------|---------------------------|-----------------------------|
| * Adrenal Cortex         | * Adrenal Medulla          | * Bone                    | * Bone Marrow               |
| * Brain                  | * Epididymis               | * Esophagus               | * Eye                       |
| * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum | * Intestine Small, Duodenum |
| * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      | * Kidney                    |
| * Lymph Node, Bronchial  | * Lymph Node, Mandibular   | * Lymph Node, Mediastinal | * Lymph Node, Mesenteric    |
| * Parathyroid Gland      | * Pituitary Gland          | * Preputial Gland         | * Salivary Glands           |
| * Seminal Vesicle        | * Spleen                   | * Stomach, Forestomach    | * Stomach, Glandular        |
| * Testes                 | * Thymus                   | * Thyroid Gland           | * Trachea                   |
| * Urinary Bladder        |                            |                           |                             |

MISSING

- \* Mammary Gland

OBSERVATIONS

- |                   |                       |                               |                        |
|-------------------|-----------------------|-------------------------------|------------------------|
| * Harderian Gland |                       | Hyperplasia                   | Minimal                |
| * Heart           |                       | Cardiomyopathy                | Minimal                |
| * Larynx          |                       | Metaplasia                    | Squamous, Minimal      |
| * Liver           |                       | Clear Cell Focus              |                        |
| * Lung            |                       | Inflammation                  | Granulomatous, Mild    |
| * Nose            |                       | Accumulation, Hyaline Droplet | Moderate               |
|                   | Glands, Olfactory Epi | Hyperplasia                   | Minimal                |
| * Pancreas        |                       | Basophilic Focus              |                        |
| * Prostate        |                       | Hyperplasia                   | Mild                   |
| * Skin            |                       | Inflammation                  | Chronic Active, Marked |

[ Inflammation TGLs = 1-15 ]

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 424

TRT#: 5

SEX: Male

DAY ON TEST: 731

DOSE: 30 mg/m3

DISP: Terminal Sacrifice

HISTO: 57043

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                            |                           |                             |                          |
|----------------------------|---------------------------|-----------------------------|--------------------------|
| * Bone                     | * Bone Marrow             | * Brain                     | * Epididymis             |
| * Esophagus                | * Eye                     | * Harderian Gland           | * Intestine Large, Cecum |
| * Intestine Large, Colon   | * Intestine Large, Rectum | * Intestine Small, Duodenum | * Intestine Small, Ileum |
| * Intestine Small, Jejunum | * Islets, Pancreatic      | * Lung                      | * Lymph Node, Bronchial  |
| * Lymph Node, Mandibular   | * Lymph Node, Mediastinal | * Lymph Node, Mesenteric    | * Pancreas               |
| * Parathyroid Gland        | * Preputial Gland         | * Prostate                  | * Salivary Glands        |
| * Seminal Vesicle          | * Spleen                  | * Stomach, Forestomach      | * Stomach, Glandular     |
| * Testes                   | * Trachea                 | * Urinary Bladder           |                          |

MISSING

- \* Mammary Gland

OBSERVATIONS

- |                              |                       |                               |                        |
|------------------------------|-----------------------|-------------------------------|------------------------|
| * Adrenal Cortex             |                       | Hyperplasia                   | Mild                   |
|                              |                       | Hypertrophy                   | Mild                   |
| * Adrenal Medulla            |                       | Hyperplasia                   | Mild                   |
| * Heart                      |                       | Cardiomyopathy                | Minimal                |
| * Kidney                     |                       | Nephropathy                   | Mild                   |
| * Larynx                     |                       | Metaplasia                    | Squamous, Mild         |
| * Liver                      |                       | Basophilic Focus              |                        |
| Mesentery                    | Fat                   | Necrosis                      | Mild                   |
| [ Necrosis TGLs = 3-15 ]     |                       |                               |                        |
| * Nose                       |                       | Accumulation, Hyaline Droplet | Marked                 |
|                              | Glands, Olfactory Epi | Hyperplasia                   | Moderate               |
| * Pituitary Gland            | Pars Distalis         | Adenoma                       |                        |
| [ Adenoma TGLs = 2-10 ]      |                       |                               |                        |
| * Skin                       |                       | Inflammation                  | Chronic Active, Marked |
| [ Inflammation TGLs = 1-16 ] |                       |                               |                        |
| * Thymus                     |                       | Cyst                          | Moderate               |
| * Thyroid Gland              | C Cell                | Carcinoma                     |                        |

\* PROTOCOL REQUIRED TISSUE



TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 425

TRT#: 5

SEX: Male

DAY ON TEST: 729

DOSE: 30 mg/m3

DISP: Terminal Sacrifice

HISTO: 57044

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                          |                            |                           |                             |
|--------------------------|----------------------------|---------------------------|-----------------------------|
| * Adrenal Medulla        | * Bone                     | * Bone Marrow             | * Brain                     |
| * Epididymis             | * Esophagus                | * Eye                     | * Harderian Gland           |
| * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum | * Intestine Small, Duodenum |
| * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      | * Lymph Node, Bronchial     |
| * Lymph Node, Mandibular | * Lymph Node, Mediastinal  | * Lymph Node, Mesenteric  | * Pancreas                  |
| * Parathyroid Gland      | * Pituitary Gland          | * Preputial Gland         | * Prostate                  |
| * Salivary Glands        | * Seminal Vesicle          | * Spleen                  | * Stomach, Forestomach      |
| * Stomach, Glandular     | * Thymus                   | * Trachea                 | * Urinary Bladder           |

MISSING

- \* Mammary Gland

OBSERVATIONS

- |                  |                                       |                               |                        |
|------------------|---------------------------------------|-------------------------------|------------------------|
| * Adrenal Cortex |                                       | Hyperplasia                   | Mild                   |
| * Heart          |                                       | Cardiomyopathy                | Minimal                |
| * Kidney         |                                       | Nephropathy                   | Minimal                |
| * Larynx         |                                       | Metaplasia                    | Squamous, Minimal      |
| * Liver          | Bile Duct                             | Dilatation                    | Mild                   |
|                  |                                       | Eosinophilic Focus            |                        |
|                  | [ Dilatation TGLs = 2-15 ]            |                               |                        |
| * Lung           | Bronchiole                            | Hyperplasia                   | Minimal                |
|                  |                                       | Inflammation                  | Granulomatous, Minimal |
|                  | Lymph Node                            | Infiltration Cellular         | Plasma Cell, Moderate  |
|                  | [ Infiltration Cellular TGLs = 3-17 ] |                               |                        |
| * Nose           |                                       | Accumulation, Hyaline Droplet | Moderate               |
|                  | Glands, Olfactory Epi                 | Hyperplasia                   | Minimal                |
| * Skin           | Subcut Tiss                           | Fibroma                       |                        |
|                  |                                       | Inflammation                  | Chronic Active, Marked |
|                  | [ Fibroma TGLs = 4-18 ]               |                               |                        |
|                  | [ Inflammation TGLs = 1-16 ]          |                               |                        |
| * Testes         |                                       | Edema                         | Moderate               |
| * Thyroid Gland  | C Cell                                | Hyperplasia                   | Mild                   |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 426

TRT#: 5

SEX: Male

DAY ON TEST: 729

DOSE: 30 mg/m3

DISP: Terminal Sacrifice

HISTO: 57045

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Medulla
- \* Epididymis
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Lymph Node, Mediastinal
- \* Preputial Gland
- \* Spleen
- \* Trachea
- \* Bone
- \* Esophagus
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Lymph Node, Mesenteric
- \* Prostate
- \* Stomach, Forestomach
- \* Urinary Bladder
- \* Bone Marrow
- \* Eye
- \* Intestine Small, Duodenum
- \* Lymph Node, Bronchial
- \* Pancreas
- \* Salivary Glands
- \* Stomach, Glandular
- \* Brain
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Lymph Node, Mandibular
- \* Parathyroid Gland
- \* Seminal Vesicle
- \* Testes

MISSING

- \* Mammary Gland
- \* Thymus

OBSERVATIONS

- \* Adrenal Cortex
  - Hyperplasia
  - Hypertrophy
- \* Harderian Gland
  - Hyperplasia
- \* Heart
  - Cardiomyopathy
- \* Kidney
  - Nephropathy
- \* Larynx
  - Metaplasia
- \* Liver
  - Angiectasis
  - Basophilic Focus
- \* Lung
  - [ Angiectasis TGLs = 3,4-15+16 ]
  - Bronchiole
    - Hyperplasia
    - Inflammation
- \* Nose
  - Accumulation, Hyaline Droplet
- \* Pituitary Gland
  - Glands, Olfactory Epi
  - Pars Distalis
    - Hyperplasia
    - Hyperplasia
    - Inflammation
    - Squamous Cell Papilloma
- \* Skin
  - [ Inflammation TGLs = 2-18 ]
  - [ Squamous Cell Papilloma TGLs = 1-17 ]
- \* Thyroid Gland
  - C Cell
    - Hyperplasia

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 427

TRT#: 5

SEX: Male

DAY ON TEST: 730

DOSE: 30 mg/m3

DISP: Terminal Sacrifice

HISTO: 57046

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Cortex
- \* Epididymis
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Lymph Node, Bronchial
- \* Pancreas
- \* Salivary Glands
- \* Stomach, Glandular
- \* Urinary Bladder
- \* Bone
- \* Esophagus
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Lymph Node, Mandibular
- \* Parathyroid Gland
- \* Seminal Vesicle
- \* Testes
- \* Bone Marrow
- \* Eye
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Lymph Node, Mediastinal
- \* Preputial Gland
- \* Spleen
- \* Thymus
- \* Brain
- \* Harderian Gland
- \* Intestine Small, Duodenum
- \* Kidney
- \* Lymph Node, Mesenteric
- \* Prostate
- \* Stomach, Forestomach
- \* Trachea

MISSING

- \* Mammary Gland

OBSERVATIONS

- \* Adrenal Medulla Hyperplasia  
Pheochromocytoma Benign  
Mild
- \* Heart Cardiomyopathy  
Minimal
- \* Larynx Metaplasia  
Squamous, Mild
- \* Liver Angiectasis  
Minimal  
Clear Cell Focus
- [ Angiectasis TGLs = 2,3-6+15 ]
- \* Lung Alveolar Epith  
Hyperplasia  
Moderate  
Bronchiole  
Hyperplasia  
Minimal  
Inflammation  
Granulomatous, Minimal
- \* Nose Accumulation, Hyaline Droplet  
Marked
- Glands, Olfactory Epi
- \* Pituitary Gland Hyperplasia  
Moderate
- Pars Distalis
- \* Skin Adenoma  
Inflammation  
Chronic Active, Moderate
- [ Inflammation TGLs = 1-16 ]
- \* Thyroid Gland C Cell  
Hyperplasia  
Minimal

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 428

TRT#: 5

SEX: Male

DAY ON TEST: 729

DOSE: 30 mg/m3

DISP: Terminal Sacrifice

HISTO: 57047

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                          |                            |                           |                             |
|--------------------------|----------------------------|---------------------------|-----------------------------|
| * Adrenal Cortex         | * Adrenal Medulla          | * Bone                    | * Bone Marrow               |
| * Brain                  | * Epididymis               | * Esophagus               | * Eye                       |
| * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum | * Intestine Small, Duodenum |
| * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      | * Kidney                    |
| * Lymph Node, Bronchial  | * Lymph Node, Mandibular   | * Lymph Node, Mediastinal | * Lymph Node, Mesenteric    |
| * Preputial Gland        | * Prostate                 | * Salivary Glands         | * Seminal Vesicle           |
| * Spleen                 | * Stomach, Forestomach     | * Stomach, Glandular      | * Testes                    |
| * Thymus                 | * Trachea                  | * Urinary Bladder         |                             |

MISSING

- |                 |                     |
|-----------------|---------------------|
| * Mammary Gland | * Parathyroid Gland |
|-----------------|---------------------|

OBSERVATIONS

- |                   |                                   |                               |                        |
|-------------------|-----------------------------------|-------------------------------|------------------------|
| * Harderian Gland |                                   | Hyperplasia                   | Minimal                |
| * Heart           |                                   | Cardiomyopathy                | Minimal                |
| * Larynx          |                                   | Metaplasia                    | Squamous, Mild         |
| * Liver           |                                   | Angiectasis                   | Minimal                |
|                   | [ Angiectasis TGLs = 2,4,3-6+15 ] |                               |                        |
| * Lung            | Bronchiole                        | Hyperplasia                   | Minimal                |
|                   | Alveolar Epith                    | Hyperplasia                   | Mild                   |
|                   |                                   | Inflammation                  | Granulomatous, Mild    |
| Lymph Node        | Lumbar                            | Ectasia                       | Minimal                |
|                   | [ Ectasia TGLs = 5-16 ]           |                               |                        |
| * Nose            |                                   | Accumulation, Hyaline Droplet | Marked                 |
|                   | Glands, Olfactory Epi             | Hyperplasia                   | Moderate               |
| * Pancreas        |                                   | Atrophy                       | Mild                   |
| * Pituitary Gland | Pars Distalis                     | Hyperplasia                   | Mild                   |
| * Skin            |                                   | Inflammation                  | Chronic Active, Marked |
|                   | [ Inflammation TGLs = 1-16 ]      |                               |                        |
| * Thyroid Gland   | C Cell                            | Hyperplasia                   | Moderate               |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 429

TRT#: 5

SEX: Male

DAY ON TEST: 729

DOSE: 30 mg/m3

DISP: Terminal Sacrifice

HISTO: 57048

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                           |                             |                          |                            |
|---------------------------|-----------------------------|--------------------------|----------------------------|
| * Adrenal Cortex          | * Adrenal Medulla           | * Bone                   | * Bone Marrow              |
| * Brain                   | * Epididymis                | * Esophagus              | * Eye                      |
| * Harderian Gland         | * Heart                     | * Intestine Large, Cecum | * Intestine Large, Colon   |
| * Intestine Large, Rectum | * Intestine Small, Duodenum | * Intestine Small, Ileum | * Intestine Small, Jejunum |
| * Islets, Pancreatic      | * Kidney                    | * Lung                   | * Lymph Node, Bronchial    |
| * Lymph Node, Mandibular  | * Lymph Node, Mediastinal   | * Lymph Node, Mesenteric | * Pancreas                 |
| * Parathyroid Gland       | * Pituitary Gland           | * Preputial Gland        | * Prostate                 |
| * Salivary Glands         | * Seminal Vesicle           | * Skin                   | * Spleen                   |
| * Stomach, Forestomach    | * Stomach, Glandular        | * Thymus                 | * Thyroid Gland            |
| * Trachea                 | * Urinary Bladder           |                          |                            |

MISSING

- \* Mammary Gland

OBSERVATIONS

- |          |                       |                               |                |
|----------|-----------------------|-------------------------------|----------------|
| * Larynx |                       | Metaplasia                    | Squamous, Mild |
| * Liver  |                       | Clear Cell Focus              |                |
| * Nose   |                       | Accumulation, Hyaline Droplet | Moderate       |
|          | Glands, Olfactory Epi | Hyperplasia                   | Mild           |
| * Testes |                       | Atrophy                       | Moderate       |
|          |                       | Edema                         | Moderate       |

[ Edema TGLs = 1-9 ]

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 430

TRT#: 5

SEX: Male

DAY ON TEST: 730

DOSE: 30 mg/m3

DISP: Terminal Sacrifice

HISTO: 57049

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                            |                           |                             |                          |
|----------------------------|---------------------------|-----------------------------|--------------------------|
| * Adrenal Medulla          | * Bone                    | * Bone Marrow               | * Brain                  |
| * Epididymis               | * Esophagus               | * Eye                       | * Intestine Large, Cecum |
| * Intestine Large, Colon   | * Intestine Large, Rectum | * Intestine Small, Duodenum | * Intestine Small, Ileum |
| * Intestine Small, Jejunum | * Islets, Pancreatic      | * Lymph Node, Bronchial     | * Lymph Node, Mandibular |
| * Lymph Node, Mediastinal  | * Lymph Node, Mesenteric  | * Pancreas                  | * Parathyroid Gland      |
| * Preputial Gland          | * Salivary Glands         | * Seminal Vesicle           | * Skin                   |
| * Spleen                   | * Stomach, Forestomach    | * Stomach, Glandular        | * Thymus                 |
| * Trachea                  | * Urinary Bladder         |                             |                          |

MISSING

- \* Mammary Gland

OBSERVATIONS

- |                   |                                 |                       |                               |
|-------------------|---------------------------------|-----------------------|-------------------------------|
| * Adrenal Cortex  |                                 | Hyperplasia           | Mild                          |
| * Harderian Gland |                                 | Hyperplasia           | Minimal                       |
| * Heart           |                                 | Cardiomyopathy        | Minimal                       |
| * Kidney          |                                 | Nephropathy           | Minimal                       |
| * Larynx          |                                 | Metaplasia            | Squamous, Moderate            |
| * Liver           |                                 | Angiectasis           | Minimal                       |
|                   |                                 | Clear Cell Focus      |                               |
| * Lung            | [ Angiectasis TGLs = 2-6 ]      | Bronchiole            | Hyperplasia                   |
|                   |                                 |                       | Inflammation                  |
|                   | [ Inflammation TGLs = 4,5-5+4 ] |                       | Minimal                       |
| * Nose            |                                 | Glands, Olfactory Epi | Accumulation, Hyaline Droplet |
|                   |                                 | Pars Distalis         | Hyperplasia                   |
| * Pituitary Gland |                                 |                       | Hyperplasia                   |
| * Prostate        |                                 |                       | Hyperplasia                   |
| * Testes          |                                 |                       | Edema                         |
|                   | [ Edema TGLs = 1-9 ]            |                       | Moderate                      |
| * Thyroid Gland   |                                 | C Cell                | Hyperplasia                   |
|                   |                                 |                       | Minimal                       |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 431

TRT#: 5

SEX: Male

DAY ON TEST: 729

DOSE: 30 mg/m3

DISP: Terminal Sacrifice

HISTO: 57050

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                          |                            |                           |                             |
|--------------------------|----------------------------|---------------------------|-----------------------------|
| * Adrenal Medulla        | * Bone                     | * Bone Marrow             | * Brain                     |
| * Epididymis             | * Esophagus                | * Eye                     | * Harderian Gland           |
| * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum | * Intestine Small, Duodenum |
| * Intestine Small, Ileum | * Intestine Small, Jejunum | Lymph Node                | * Lymph Node, Bronchial     |
| * Lymph Node, Mandibular | * Lymph Node, Mesenteric   | * Pancreas                | * Parathyroid Gland         |
| * Pituitary Gland        | * Preputial Gland          | * Prostate                | * Salivary Glands           |
| * Seminal Vesicle        | * Spleen                   | * Stomach, Forestomach    | * Stomach, Glandular        |
| * Testes                 | * Thymus                   | * Trachea                 | * Urinary Bladder           |

MISSING

- |                           |                 |
|---------------------------|-----------------|
| * Lymph Node, Mediastinal | * Mammary Gland |
|---------------------------|-----------------|

OBSERVATIONS

- |                              |                       |                               |                        |
|------------------------------|-----------------------|-------------------------------|------------------------|
| * Adrenal Cortex             |                       | Hyperplasia                   | Mild                   |
|                              |                       | Hypertrophy                   | Mild                   |
| * Heart                      |                       | Cardiomyopathy                | Mild                   |
| * Islets, Pancreatic         |                       | Adenoma                       |                        |
| [ Adenoma TGLs = 5-17 ]      |                       |                               |                        |
| * Kidney                     |                       | Nephropathy                   | Minimal                |
| * Larynx                     |                       | Metaplasia                    | Squamous, Mild         |
| * Liver                      |                       | Clear Cell Focus              |                        |
| * Lung                       | Alveolar Epith        | Hyperplasia                   | Minimal                |
|                              | Bronchiole            | Hyperplasia                   | Minimal                |
|                              |                       | Inflammation                  | Granulomatous, Minimal |
| * Nose                       |                       | Accumulation, Hyaline Droplet | Marked                 |
|                              | Glands, Olfactory Epi | Hyperplasia                   | Minimal                |
| * Skin                       |                       | Inflammation                  | Chronic Active, Marked |
| [ Inflammation TGLs = 1-15 ] |                       |                               |                        |
| * Thyroid Gland              | C Cell                | Hyperplasia                   | Minimal                |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 432

TRT#: 5

SEX: Male

DAY ON TEST: 730

DOSE: 30 mg/m3

DISP: Terminal Sacrifice

HISTO: 57051

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                          |                            |                           |                             |
|--------------------------|----------------------------|---------------------------|-----------------------------|
| * Adrenal Cortex         | * Adrenal Medulla          | * Bone                    | * Bone Marrow               |
| * Brain                  | * Epididymis               | * Esophagus               | * Harderian Gland           |
| * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum | * Intestine Small, Duodenum |
| * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      | * Lymph Node, Bronchial     |
| * Lymph Node, Mandibular | * Lymph Node, Mediastinal  | * Lymph Node, Mesenteric  | * Preputial Gland           |
| * Prostate               | * Salivary Glands          | * Seminal Vesicle         | * Skin                      |
| * Spleen                 | * Stomach, Forestomach     | * Stomach, Glandular      | * Testes                    |
| * Thymus                 | * Trachea                  | * Urinary Bladder         |                             |

MISSING

- |                 |                     |
|-----------------|---------------------|
| * Mammary Gland | * Parathyroid Gland |
|-----------------|---------------------|

OBSERVATIONS

- |                   |                            |                               |                        |
|-------------------|----------------------------|-------------------------------|------------------------|
| * Eye             | Retina                     | Atrophy                       | Mild                   |
| * Heart           |                            | Cardiomyopathy                | Minimal                |
| * Kidney          |                            | Nephropathy                   | Moderate               |
| * Larynx          |                            | Metaplasia                    | Squamous, Minimal      |
| * Liver           |                            | Clear Cell Focus              |                        |
|                   | Bile Duct                  | Dilatation                    | Moderate               |
|                   | [ Dilatation TGLs = 1-15 ] |                               |                        |
| * Lung            | Bronchiole                 | Hyperplasia                   | Minimal                |
|                   |                            | Inflammation                  | Granulomatous, Minimal |
| * Nose            |                            | Accumulation, Hyaline Droplet | Moderate               |
|                   | Glands, Olfactory Epi      | Hyperplasia                   | Minimal                |
| * Pancreas        |                            | Atrophy                       | Mild                   |
| * Pituitary Gland | Pars Intermed              | Hyperplasia                   | Mild                   |
| * Thyroid Gland   | C Cell                     | Hyperplasia                   | Minimal                |
|                   | Follicular Cel             | Hyperplasia                   | Minimal                |

\* PROTOCOL REQUIRED TISSUE



TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 433

TRT#: 5

SEX: Male

DAY ON TEST: 730

DOSE: 30 mg/m3

DISP: Terminal Sacrifice

HISTO: 57052

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                             |                           |                            |                           |
|-----------------------------|---------------------------|----------------------------|---------------------------|
| * Adrenal Cortex            | * Adrenal Medulla         | * Bone                     | * Bone Marrow             |
| * Brain                     | * Epididymis              | * Esophagus                | * Eye                     |
| * Harderian Gland           | * Intestine Large, Cecum  | * Intestine Large, Colon   | * Intestine Large, Rectum |
| * Intestine Small, Duodenum | * Intestine Small, Ileum  | * Intestine Small, Jejunum | * Islets, Pancreatic      |
| * Lymph Node, Mandibular    | * Lymph Node, Mediastinal | * Lymph Node, Mesenteric   | * Pancreas                |
| * Parathyroid Gland         | * Preputial Gland         | * Prostate                 | * Salivary Glands         |
| * Seminal Vesicle           | * Spleen                  | * Stomach, Forestomach     | * Stomach, Glandular      |
| * Thymus                    | * Trachea                 | * Urinary Bladder          |                           |

MISSING

- |                         |                 |
|-------------------------|-----------------|
| * Lymph Node, Bronchial | * Mammary Gland |
|-------------------------|-----------------|

OBSERVATIONS

- |                   |                                |                               |                        |
|-------------------|--------------------------------|-------------------------------|------------------------|
| * Heart           |                                | Cardiomyopathy                | Minimal                |
| * Kidney          |                                | Nephropathy                   | Moderate               |
| * Larynx          |                                | Metaplasia                    | Squamous, Mild         |
| * Liver           |                                | Basophilic Focus              |                        |
| * Lung            | Bronchiole                     | Hyperplasia                   | Minimal                |
|                   |                                | Inflammation                  | Granulomatous, Minimal |
| * Nose            |                                | Accumulation, Hyaline Droplet | Mild                   |
|                   | Glands, Olfactory Epi          | Hyperplasia                   | Mild                   |
| * Pituitary Gland | Pars Distalis                  | Adenoma                       |                        |
| * Skin            |                                | Inflammation                  | Chronic Active, Marked |
|                   | [ Inflammation TGLs = 1,2-15 ] |                               |                        |
| * Testes          | Interstit Cell                 | Adenoma                       |                        |
| * Thyroid Gland   | C Cell                         | Hyperplasia                   | Mild                   |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 434

TRT#: 5

SEX: Male

DAY ON TEST: 729

DOSE: 30 mg/m3

DISP: Terminal Sacrifice

HISTO: 57053

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                             |                          |                            |                           |
|-----------------------------|--------------------------|----------------------------|---------------------------|
| * Adrenal Medulla           | * Bone                   | * Bone Marrow              | * Brain                   |
| * Epididymis                | * Esophagus              | * Eye                      | * Harderian Gland         |
| * Heart                     | * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum |
| * Intestine Small, Duodenum | * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      |
| * Liver                     | * Lung                   | * Lymph Node, Bronchial    | * Lymph Node, Mediastinal |
| * Lymph Node, Mesenteric    | * Pancreas               | * Parathyroid Gland        | * Preputial Gland         |
| * Salivary Glands           | * Seminal Vesicle        | * Skin                     | * Spleen                  |
| * Stomach, Forestomach      | * Stomach, Glandular     | * Trachea                  | * Urinary Bladder         |

MISSING

- |                          |                 |          |
|--------------------------|-----------------|----------|
| * Lymph Node, Mandibular | * Mammary Gland | * Thymus |
|--------------------------|-----------------|----------|

OBSERVATIONS

- |                   |                         |                               |                      |
|-------------------|-------------------------|-------------------------------|----------------------|
| * Adrenal Cortex  |                         | Hyperplasia                   | Mild                 |
| * Kidney          |                         | Nephropathy                   | Minimal              |
| * Larynx          |                         | Metaplasia                    | Squamous, Mild       |
| * Nose            |                         | Accumulation, Hyaline Droplet | Moderate             |
| * Pituitary Gland | Glands, Olfactory Epi   | Hyperplasia                   | Moderate             |
|                   | Pars Distalis           | Adenoma                       |                      |
|                   | [ Adenoma TGLs = 1-10 ] |                               |                      |
| * Prostate        |                         | Inflammation                  | Chronic Active, Mild |
| * Testes          |                         | Edema                         | Minimal              |
| * Thyroid Gland   | C Cell                  | Hyperplasia                   | Mild                 |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 435

TRT#: 5

SEX: Male

DAY ON TEST: 729

DOSE: 30 mg/m3

DISP: Terminal Sacrifice

HISTO: 57054

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                           |                            |                           |                             |
|---------------------------|----------------------------|---------------------------|-----------------------------|
| * Adrenal Medulla         | * Bone                     | * Bone Marrow             | * Brain                     |
| * Epididymis              | * Esophagus                | * Eye                     | * Heart                     |
| * Intestine Large, Cecum  | * Intestine Large, Colon   | * Intestine Large, Rectum | * Intestine Small, Duodenum |
| * Intestine Small, Ileum  | * Intestine Small, Jejunum | * Islets, Pancreatic      | * Lymph Node, Mandibular    |
| * Lymph Node, Mediastinal | * Lymph Node, Mesenteric   | * Pancreas                | * Parathyroid Gland         |
| * Preputial Gland         | * Prostate                 | * Salivary Glands         | * Seminal Vesicle           |
| * Spleen                  | * Stomach, Forestomach     | * Stomach, Glandular      | * Thymus                    |
| * Trachea                 | * Urinary Bladder          |                           |                             |

MISSING

- |                         |                 |
|-------------------------|-----------------|
| * Lymph Node, Bronchial | * Mammary Gland |
|-------------------------|-----------------|

OBSERVATIONS

- |                   |                                   |                               |                        |
|-------------------|-----------------------------------|-------------------------------|------------------------|
| * Adrenal Cortex  |                                   | Hyperplasia                   | Mild                   |
| * Harderian Gland |                                   | Hyperplasia                   | Mild                   |
| * Kidney          | Transit Epithe                    | Hyperplasia                   | Mild                   |
|                   |                                   | Inflammation                  | Suppurative, Mild      |
| * Larynx          |                                   | Metaplasia                    | Squamous, Mild         |
| * Liver           |                                   | Basophilic Focus              |                        |
| * Lung            | Bronchiole                        | Hyperplasia                   | Minimal                |
|                   |                                   | Inflammation                  | Granulomatous, Minimal |
| * Nose            |                                   | Accumulation, Hyaline Droplet | Moderate               |
|                   | Glands, Olfactory Epi             | Hyperplasia                   | Mild                   |
| * Pituitary Gland | Pars Distalis                     | Adenoma                       |                        |
| * Skin            |                                   | Inflammation                  | Chronic Active, Marked |
|                   | [ Inflammation TGLs = 1,2-15+16 ] |                               |                        |
| * Testes          |                                   | Edema                         | Moderate               |
| * Thyroid Gland   | C Cell                            | Hyperplasia                   | Mild                   |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 436

TRT#: 5

SEX: Male

DAY ON TEST: 730

DOSE: 30 mg/m3

DISP: Terminal Sacrifice

HISTO: 57055

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Medulla
- \* Epididymis
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Lymph Node, Mediastinal
- \* Salivary Glands
- \* Stomach, Glandular
- \* Trachea
- \* Bone
- \* Esophagus
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Lymph Node, Mesenteric
- \* Seminal Vesicle
- \* Testes
- \* Urinary Bladder
- \* Bone Marrow
- \* Eye
- \* Intestine Small, Duodenum
- \* Lymph Node, Bronchial
- \* Pancreas
- \* Spleen
- \* Thymus
- \* Brain
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Lymph Node, Mandibular
- \* Preputial Gland
- \* Stomach, Forestomach
- \* Thyroid Gland

MISSING

- \* Mammary Gland

OBSERVATIONS

- |   |   |  |   |
|---|---|--|---|
| <ul style="list-style-type: none"> <li>* Adrenal Cortex</li> <li>* Harderian Gland</li> <li>* Heart</li> <li>* Kidney</li> <li>* Larynx</li> <li>* Liver</li> <li>* Lung</li> <li>* Nose</li> </ul> | <ul style="list-style-type: none"> <li>Glands, Olfactory Epi</li> </ul>   | <ul style="list-style-type: none"> <li>Hyperplasia</li> <li>Hyperplasia</li> <li>Cardiomyopathy</li> <li>Nephropathy</li> <li>Metaplasia</li> <li>Basophilic Focus</li> <li>Inflammation</li> <li>Accumulation, Hyaline Droplet</li> <li>Hyperplasia</li> <li>Hyperplasia</li> <li>Hyperplasia</li> <li>Hyperplasia</li> <li>Inflammation</li> </ul> | <ul style="list-style-type: none"> <li>Mild</li> <li>Mild</li> <li>Minimal</li> <li>Minimal</li> <li>Squamous, Mild</li> <li>Granulomatous, Minimal</li> <li>Moderate</li> <li>Mild</li> <li>Mild</li> <li>Minimal</li> <li>Marked</li> <li>Chronic Active, Moderate</li> </ul> |
| <ul style="list-style-type: none"> <li>* Parathyroid Gland</li> <li>* Pituitary Gland</li> <li>* Prostate</li> </ul>  | <ul style="list-style-type: none"> <li>Pars Distalis</li> </ul>   | <ul style="list-style-type: none"> <li>Hyperplasia</li> <li>Hyperplasia</li> <li>Inflammation</li> </ul>   | <ul style="list-style-type: none"> <li>Chronic Active, Moderate</li> </ul>  |
| <ul style="list-style-type: none"> <li>* Skin</li> </ul>  | <ul style="list-style-type: none"> <li>[ Hyperplasia TGLs = 2-14 ]</li> <li>[ Inflammation TGLs = 1-15 ]</li> </ul> | <ul style="list-style-type: none"> <li>Inflammation</li> </ul>   | <ul style="list-style-type: none"> <li>Chronic Active, Moderate</li> </ul>  |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 437

TRT#: 5

SEX: Male

DAY ON TEST: 700

DOSE: 30 mg/m3

DISP: Natural Death

HISTO: 57056

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Bone
- \* Harderian Gland
- \* Lymph Node, Mandibular
- \* Parathyroid Gland
- \* Skin
- \* Testes
- \* Brain
- \* Islets, Pancreatic
- \* Lymph Node, Mediastinal
- \* Preputial Gland
- \* Spleen
- \* Thymus
- \* Epididymis
- \* Liver
- \* Lymph Node, Mesenteric
- \* Prostate
- \* Stomach, Forestomach
- \* Trachea
- \* Esophagus
- \* Lymph Node, Bronchial
- \* Pancreas
- \* Salivary Glands
- \* Stomach, Glandular

MISSING

- \* Mammary Gland

AUTO PRECLUDES DIAG.

- \* Adrenal Cortex
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Urinary Bladder
- \* Adrenal Medulla
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Bone Marrow
- \* Intestine Large, Rectum
- \* Seminal Vesicle
- \* Eye
- \* Intestine Small, Duodenum
- \* Thyroid Gland

OBSERVATIONS

- \* Heart
- \* Kidney
- \* Larynx
- \* Lung
- [ Inflammation TGLs = 1-4+5 ]
- \* Nose
- \* Pituitary Gland
- [ Adenoma TGLs = 2-10 ]
- Cardiomyopathy
- Nephropathy
- Metaplasia
- Inflammation
- Accumulation, Hyaline Droplet
- Hyperplasia
- Adenoma
- Mild
- Minimal
- Squamous, Moderate
- Granulomatous, Minimal
- Marked
- Mild

PRIMARY CAUSE OF DEATH - Pituitary Gland Pars Distalis Adenoma

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 438

TRT#: 5

SEX: Male

DAY ON TEST: 729

DOSE: 30 mg/m3

DISP: Terminal Sacrifice

HISTO: 57057

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Medulla
- \* Epididymis
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Lymph Node, Mandibular
- \* Parathyroid Gland
- \* Seminal Vesicle
- \* Stomach, Glandular
- \* Trachea
- \* Bone
- \* Esophagus
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Lymph Node, Mediastinal
- \* Preputial Gland
- \* Skin
- \* Testes
- \* Urinary Bladder
- \* Bone Marrow
- \* Eye
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Lymph Node, Mesenteric
- \* Prostate
- \* Spleen
- \* Thymus
- \* Brain
- \* Harderian Gland
- \* Intestine Small, Duodenum
- \* Lymph Node, Bronchial
- \* Pancreas
- \* Salivary Glands
- \* Stomach, Forestomach
- \* Thyroid Gland

MISSING

- \* Mammary Gland

OBSERVATIONS

- |  |   |   |
|--|---|---|
| <ul style="list-style-type: none"> <li>* Adrenal Cortex</li> <li>* Heart</li> <li>* Kidney</li> <li style="padding-left: 20px;">[ Cyst TGLs = 3-7 ]</li> <li>* Larynx</li> <li>* Liver</li> <li style="padding-left: 20px;">[ Angiectasis TGLs = 2-15 ]</li> <li>* Lung</li> <li>* Nose</li> <li>* Pituitary Gland</li> <li style="padding-left: 20px;">[ Adenoma TGLs = 1-10 ]</li> </ul> | <ul style="list-style-type: none"> <li>Hyperplasia</li> <li>Cardiomyopathy</li> <li>Cyst</li> <li>Nephropathy</li> <li>Metaplasia</li> <li>Angiectasis</li> <li>Basophilic Focus</li> <li>Hyperplasia</li> <li>Inflammation</li> <li>Accumulation, Hyaline Droplet</li> <li>Hyperplasia</li> <li>Adenoma</li> </ul> | <ul style="list-style-type: none"> <li>Mild</li> <li>Minimal</li> <li>Mild</li> <li>Moderate</li> <li>Squamous, Mild</li> <li>Minimal</li> <li>Minimal</li> <li>Granulomatous, Minimal</li> <li>Moderate</li> <li>Mild</li> </ul> |
|--|---|---|

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 439

TRT#: 5

SEX: Male

DAY ON TEST: 730

DOSE: 30 mg/m3

DISP: Terminal Sacrifice

HISTO: 57058

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                             |                          |                            |                           |
|-----------------------------|--------------------------|----------------------------|---------------------------|
| * Adrenal Medulla           | * Bone                   | * Bone Marrow              | * Brain                   |
| * Epididymis                | * Esophagus              | * Eye                      | * Harderian Gland         |
| * Heart                     | * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum |
| * Intestine Small, Duodenum | * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      |
| * Liver                     | * Lymph Node, Mandibular | * Lymph Node, Mediastinal  | * Lymph Node, Mesenteric  |
| * Pancreas                  | * Parathyroid Gland      | * Pituitary Gland          | * Preputial Gland         |
| * Prostate                  | * Salivary Glands        | * Seminal Vesicle          | * Skin                    |
| * Spleen                    | * Stomach, Forestomach   | * Stomach, Glandular       | * Trachea                 |
| * Urinary Bladder           |                          |                            |                           |

MISSING

- |                         |                 |          |
|-------------------------|-----------------|----------|
| * Lymph Node, Bronchial | * Mammary Gland | * Thymus |
|-------------------------|-----------------|----------|

OBSERVATIONS

- |                  |                       |                               |                        |
|------------------|-----------------------|-------------------------------|------------------------|
| * Adrenal Cortex |                       | Hyperplasia                   | Mild                   |
| * Kidney         |                       | Nephropathy                   | Mild                   |
| * Larynx         |                       | Metaplasia                    | Squamous, Mild         |
| * Lung           | Bronchiole            | Hyperplasia                   | Minimal                |
|                  |                       | Inflammation                  | Granulomatous, Minimal |
| * Nose           |                       | Accumulation, Hyaline Droplet | Moderate               |
|                  | Glands, Olfactory Epi | Hyperplasia                   | Minimal                |
| * Testes         |                       | Edema                         | Mild                   |
| * Thyroid Gland  | C Cell                | Hyperplasia                   | Minimal                |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 440

TRT#: 5

SEX: Male

DAY ON TEST: 729

DOSE: 30 mg/m3

DISP: Terminal Sacrifice

HISTO: 57059

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                            |                           |                             |                          |
|----------------------------|---------------------------|-----------------------------|--------------------------|
| * Adrenal Medulla          | * Bone                    | * Bone Marrow               | * Brain                  |
| * Epididymis               | * Esophagus               | * Eye                       | * Intestine Large, Cecum |
| * Intestine Large, Colon   | * Intestine Large, Rectum | * Intestine Small, Duodenum | * Intestine Small, Ileum |
| * Intestine Small, Jejunum | * Islets, Pancreatic      | * Liver                     | * Lymph Node, Bronchial  |
| * Lymph Node, Mandibular   | * Lymph Node, Mediastinal | * Lymph Node, Mesenteric    | * Pancreas               |
| * Parathyroid Gland        | * Pituitary Gland         | * Skin                      | * Spleen                 |
| * Stomach, Forestomach     | * Stomach, Glandular      | * Testes                    | * Thymus                 |
| * Trachea                  | * Urinary Bladder         |                             |                          |

MISSING

- \* Mammary Gland

OBSERVATIONS

- |                   |                       |                               |                          |
|-------------------|-----------------------|-------------------------------|--------------------------|
| * Adrenal Cortex  |                       | Hypertrophy                   | Mild                     |
| * Harderian Gland |                       | Hyperplasia                   | Mild                     |
| * Heart           |                       | Cardiomyopathy                | Minimal                  |
| * Kidney          |                       | Nephropathy                   | Moderate                 |
| * Larynx          |                       | Metaplasia                    | Squamous, Minimal        |
| * Lung            | Bronchiole            | Hyperplasia                   | Minimal                  |
|                   |                       | Inflammation                  | Granulomatous, Minimal   |
| * Nose            |                       | Accumulation, Hyaline Droplet | Moderate                 |
|                   | Glands, Olfactory Epi | Hyperplasia                   | Moderate                 |
| * Preputial Gland |                       | Inflammation                  | Chronic Active, Moderate |
| * Prostate        |                       | Hyperplasia                   | Moderate                 |
| * Salivary Glands |                       | Atrophy                       | Minimal                  |
| * Seminal Vesicle |                       | Inflammation                  | Chronic Active, Mild     |
| * Thyroid Gland   | C Cell                | Hyperplasia                   | Mild                     |



TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 441

TRT#: 5

SEX: Male

DAY ON TEST: 730

DOSE: 30 mg/m3

DISP: Terminal Sacrifice

HISTO: 57060

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                          |                            |                           |                             |
|--------------------------|----------------------------|---------------------------|-----------------------------|
| * Adrenal Medulla        | * Bone                     | * Bone Marrow             | * Brain                     |
| * Epididymis             | * Esophagus                | * Eye                     | * Harderian Gland           |
| * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum | * Intestine Small, Duodenum |
| * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      | * Lymph Node, Bronchial     |
| * Lymph Node, Mandibular | * Lymph Node, Mediastinal  | * Lymph Node, Mesenteric  | * Pancreas                  |
| * Parathyroid Gland      | * Preputial Gland          | * Prostate                | * Salivary Glands           |
| * Seminal Vesicle        | * Skin                     | * Spleen                  | * Stomach, Forestomach      |
| * Stomach, Glandular     | * Testes                   | * Thymus                  | * Trachea                   |
| * Urinary Bladder        |                            |                           |                             |

MISSING

- \* Mammary Gland

OBSERVATIONS

- |                   |                       |                               |                        |
|-------------------|-----------------------|-------------------------------|------------------------|
| * Adrenal Cortex  |                       | Hyperplasia                   | Mild                   |
|                   |                       | Hypertrophy                   | Mild                   |
| * Heart           |                       | Cardiomyopathy                | Mild                   |
| * Kidney          |                       | Nephropathy                   | Minimal                |
| * Larynx          |                       | Metaplasia                    | Squamous, Moderate     |
| * Liver           |                       | Basophilic Focus              |                        |
| * Lung            |                       | Inflammation                  | Granulomatous, Minimal |
| * Nose            |                       | Accumulation, Hyaline Droplet | Marked                 |
|                   | Glands, Olfactory Epi | Hyperplasia                   | Minimal                |
| * Pituitary Gland | Pars Distalis         | Hyperplasia                   | Moderate               |
| * Thyroid Gland   | C Cell                | Hyperplasia                   | Minimal                |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 442

TRT#: 5

SEX: Male

DAY ON TEST: 639

DOSE: 30 mg/m3

DISP: Moribund Sacrifice

HISTO: 57061

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                            |                           |                             |                          |
|----------------------------|---------------------------|-----------------------------|--------------------------|
| * Adrenal Medulla          | * Bone Marrow             | * Brain                     | * Epididymis             |
| * Esophagus                | * Eye                     | * Harderian Gland           | * Intestine Large, Cecum |
| * Intestine Large, Colon   | * Intestine Large, Rectum | * Intestine Small, Duodenum | * Intestine Small, Ileum |
| * Intestine Small, Jejunum | * Islets, Pancreatic      | * Kidney                    | * Liver                  |
| * Lymph Node, Bronchial    | * Lymph Node, Mediastinal | * Lymph Node, Mesenteric    | * Pancreas               |
| * Parathyroid Gland        | * Pituitary Gland         | * Preputial Gland           | * Prostate               |
| * Salivary Glands          | * Seminal Vesicle         | * Skin                      | * Spleen                 |
| * Stomach, Forestomach     | * Stomach, Glandular      | * Testes                    | * Thymus                 |
| * Trachea                  | * Urinary Bladder         |                             |                          |

MISSING

- \* Mammary Gland

OBSERVATIONS

- |                          |                                       |                               |                        |
|--------------------------|---------------------------------------|-------------------------------|------------------------|
| * Adrenal Cortex         |                                       | Hypertrophy                   | Minimal                |
| * Bone                   |                                       | Inflammation                  | Chronic Active, Marked |
|                          | [ Inflammation TGLs = 2-15 ]          |                               |                        |
| * Heart                  |                                       | Cardiomyopathy                | Minimal                |
| * Larynx                 |                                       | Metaplasia                    | Squamous, Mild         |
| * Lung                   | Bronchiole                            | Hyperplasia                   | Minimal                |
|                          |                                       | Inflammation                  | Granulomatous, Minimal |
| * Lymph Node, Mandibular |                                       | Infiltration Cellular         | Plasma Cell, Marked    |
|                          | [ Infiltration Cellular TGLs = 1-14 ] |                               |                        |
| * Nose                   |                                       | Accumulation, Hyaline Droplet | Moderate               |
|                          |                                       | Foreign Body                  |                        |
|                          | Glands, Olfactory Epi                 | Hyperplasia                   | Minimal                |
|                          |                                       | Inflammation                  | Chronic Active, Marked |
| * Thyroid Gland          | C Cell                                | Hyperplasia                   | Minimal                |

PRIMARY CAUSE OF DEATH - Bone Inflammation

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 443

TRT#: 5

SEX: Male

DAY ON TEST: 731

DOSE: 30 mg/m3

DISP: Terminal Sacrifice

HISTO: 57062

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                             |                          |                            |                           |
|-----------------------------|--------------------------|----------------------------|---------------------------|
| * Adrenal Medulla           | * Bone                   | * Bone Marrow              | * Brain                   |
| * Epididymis                | * Esophagus              | * Eye                      | * Harderian Gland         |
| * Heart                     | * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum |
| * Intestine Small, Duodenum | * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      |
| * Liver                     | * Lung                   | * Lymph Node, Mandibular   | * Lymph Node, Mediastinal |
| * Lymph Node, Mesenteric    | * Pancreas               | * Parathyroid Gland        | * Pituitary Gland         |
| * Preputial Gland           | * Prostate               | * Salivary Glands          | * Seminal Vesicle         |
| * Spleen                    | * Stomach, Forestomach   | * Stomach, Glandular       | * Testes                  |
| * Thyroid Gland             | * Trachea                | * Urinary Bladder          |                           |

MISSING

- |                         |                 |
|-------------------------|-----------------|
| * Lymph Node, Bronchial | * Mammary Gland |
|-------------------------|-----------------|

INSUFFICIENT TISSUE

- \* Thymus

OBSERVATIONS

- |                  |                       |                               |                        |
|------------------|-----------------------|-------------------------------|------------------------|
| * Adrenal Cortex |                       | Hypertrophy                   | Mild                   |
| * Kidney         |                       | Nephropathy                   | Moderate               |
| * Larynx         |                       | Metaplasia                    | Squamous, Moderate     |
| * Nose           |                       | Accumulation, Hyaline Droplet | Marked                 |
| * Skin           | Glands, Olfactory Epi | Hyperplasia                   | Mild                   |
|                  |                       | Inflammation                  | Chronic Active, Marked |
- [ Inflammation TGLs = 1,2-15 ]

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 444

TRT#: 5

SEX: Male

DAY ON TEST: 309

DOSE: 30 mg/m3

DISP: Natural Death

HISTO: 57063

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                           |                     |                   |                          |
|---------------------------|---------------------|-------------------|--------------------------|
| * Adrenal Cortex          | * Adrenal Medulla   | * Bone            | * Bone Marrow            |
| * Epididymis              | * Esophagus         | * Harderian Gland | * Lymph Node, Mandibular |
| * Lymph Node, Mediastinal | * Parathyroid Gland | * Pituitary Gland | * Preputial Gland        |
| * Prostate                | * Salivary Glands   | * Skin            | * Stomach, Forestomach   |
| * Testes                  | * Thymus            | * Thyroid Gland   | * Trachea                |

MISSING

- |                         |                          |                 |
|-------------------------|--------------------------|-----------------|
| * Lymph Node, Bronchial | * Lymph Node, Mesenteric | * Mammary Gland |
|-------------------------|--------------------------|-----------------|

AUTO PRECLUDES DIAG.

- |                             |                          |                            |                           |
|-----------------------------|--------------------------|----------------------------|---------------------------|
| * Eye                       | * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum |
| * Intestine Small, Duodenum | * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      |
| * Kidney                    | * Pancreas               | * Seminal Vesicle          | * Stomach, Glandular      |
| * Urinary Bladder           |                          |                            |                           |

OBSERVATIONS

- |          |                               |                        |
|----------|-------------------------------|------------------------|
| * Brain  | Hemorrhage                    | Minimal                |
| * Heart  | Necrosis                      | Minimal                |
| * Larynx | Metaplasia                    | Squamous, Moderate     |
| * Liver  | Necrosis                      | Mild                   |
| * Lung   | Inflammation                  | Granulomatous, Minimal |
| * Nose   | Accumulation, Hyaline Droplet | Moderate               |
| * Spleen | Necrosis                      | Mild                   |

PRIMARY CAUSE OF DEATH

- UNCERTAIN

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 445

TRT#: 5

SEX: Male

DAY ON TEST: 729

DOSE: 30 mg/m3

DISP: Terminal Sacrifice

HISTO: 57064

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                            |                           |                             |                          |
|----------------------------|---------------------------|-----------------------------|--------------------------|
| * Adrenal Cortex           | * Bone                    | * Bone Marrow               | * Brain                  |
| * Epididymis               | * Esophagus               | * Heart                     | * Intestine Large, Cecum |
| * Intestine Large, Colon   | * Intestine Large, Rectum | * Intestine Small, Duodenum | * Intestine Small, Ileum |
| * Intestine Small, Jejunum | * Islets, Pancreatic      | * Lymph Node, Bronchial     | * Lymph Node, Mandibular |
| * Lymph Node, Mediastinal  | * Lymph Node, Mesenteric  | * Pancreas                  | * Parathyroid Gland      |
| * Preputial Gland          | * Prostate                | * Salivary Glands           | * Seminal Vesicle        |
| * Skin                     | * Spleen                  | * Stomach, Forestomach      | * Stomach, Glandular     |
| * Thymus                   | * Trachea                 | * Urinary Bladder           |                          |

MISSING

- \* Mammary Gland

OBSERVATIONS

- |                   |                             |                               |                        |
|-------------------|-----------------------------|-------------------------------|------------------------|
| * Adrenal Medulla |                             | Hyperplasia                   | Mild                   |
| * Eye             | Retina                      | Atrophy                       | Mild                   |
| * Harderian Gland |                             | Hyperplasia                   | Minimal                |
| * Kidney          |                             | Nephropathy                   | Mild                   |
| * Larynx          |                             | Metaplasia                    | Squamous, Mild         |
| * Liver           |                             | Clear Cell Focus              |                        |
| * Lung            | Bronchiole                  | Hyperplasia                   | Minimal                |
|                   |                             | Inflammation                  | Granulomatous, Minimal |
|                   | [ Inflammation TGLs = 1-4 ] |                               |                        |
| * Nose            |                             | Accumulation, Hyaline Droplet | Moderate               |
|                   | Glands, Olfactory Epi       | Hyperplasia                   | Moderate               |
| * Pituitary Gland | Pars Distalis               | Hyperplasia                   | Mild                   |
| * Testes          |                             | Edema                         | Mild                   |
| * Thyroid Gland   | C Cell                      | Hyperplasia                   | Minimal                |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 446

TRT#: 5

SEX: Male

DAY ON TEST: 729

DOSE: 30 mg/m3

DISP: Terminal Sacrifice

HISTO: 57065

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Medulla
- \* Epididymis
- \* Heart
- \* Intestine Small, Duodenum
- \* Liver
- \* Lymph Node, Mesenteric
- \* Prostate
- \* Stomach, Forestomach
- \* Urinary Bladder
- \* Bone
- \* Esophagus
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Lymph Node, Bronchial
- \* Pancreas
- \* Salivary Glands
- \* Stomach, Glandular
- \* Bone Marrow
- \* Eye
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Lymph Node, Mandibular
- \* Parathyroid Gland
- \* Seminal Vesicle
- \* Testes
- \* Brain
- \* Harderian Gland
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Lymph Node, Mediastinal
- \* Preputial Gland
- \* Spleen
- \* Trachea

MISSING

- \* Mammary Gland
- \* Thymus

OBSERVATIONS

- \* Adrenal Cortex
  - [ Carcinoma TGLs = 4-7 ]
- \* Kidney
  - Carcinoma
  - Hyperplasia
- \* Larynx
  - Nephropathy
  - Metaplasia
- \* Lung
  - Bronchiole
  - Hyperplasia
  - Inflammation
- \* Nose
  - Accumulation, Hyaline Droplet
- \* Pituitary Gland
  - Glands, Olfactory Epi
  - Hyperplasia
- \* Skin
  - Pars Distalis
  - Hyperplasia
  - Inflammation
- \* Thyroid Gland
  - [ Inflammation TGLs = 1,2,3-15+16+17 ]
  - Follicular Cel
  - Hyperplasia
  - C Cell
  - Hyperplasia

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 447

TRT#: 5

SEX: Male

DAY ON TEST: 729

DOSE: 30 mg/m3

DISP: Terminal Sacrifice

HISTO: 57066

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                             |                          |                            |                           |
|-----------------------------|--------------------------|----------------------------|---------------------------|
| * Adrenal Medulla           | * Bone                   | * Bone Marrow              | * Brain                   |
| * Epididymis                | * Esophagus              | * Eye                      | * Harderian Gland         |
| * Heart                     | * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum |
| * Intestine Small, Duodenum | * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      |
| * Kidney                    | * Lymph Node, Bronchial  | * Lymph Node, Mandibular   | * Lymph Node, Mediastinal |
| * Lymph Node, Mesenteric    | * Pancreas               | * Parathyroid Gland        | * Pituitary Gland         |
| * Salivary Glands           | * Seminal Vesicle        | * Spleen                   | * Stomach, Forestomach    |
| * Stomach, Glandular        | * Thymus                 | * Trachea                  | * Urinary Bladder         |

MISSING

- \* Mammary Gland

OBSERVATIONS

- |                   |                                  |                               |                          |
|-------------------|----------------------------------|-------------------------------|--------------------------|
| * Adrenal Cortex  |                                  | Hyperplasia                   | Mild                     |
| * Larynx          |                                  | Metaplasia                    | Squamous, Mild           |
| * Liver           |                                  | Basophilic Focus              |                          |
| * Lung            | Alveolar Epith                   | Hyperplasia                   | Mild                     |
| * Nose            |                                  | Accumulation, Hyaline Droplet | Moderate                 |
|                   | Glands, Olfactory Epi            | Hyperplasia                   | Mild                     |
| * Preputial Gland |                                  | Inflammation                  | Chronic Active, Moderate |
|                   | [ Inflammation TGLs = 2-9 ]      |                               |                          |
| * Prostate        |                                  | Hyperplasia                   | Moderate                 |
| * Skin            |                                  | Inflammation                  | Chronic Active, Marked   |
|                   | [ Inflammation TGLs = 1,3-9+15 ] |                               |                          |
| * Testes          |                                  | Edema                         | Mild                     |
| * Thyroid Gland   | C Cell                           | Hyperplasia                   | Minimal                  |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 448

TRT#: 5

SEX: Male

DAY ON TEST: 646

DOSE: 30 mg/m3

DISP: Moribund Sacrifice

HISTO: 57067

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                             |                          |                            |                           |
|-----------------------------|--------------------------|----------------------------|---------------------------|
| * Adrenal Cortex            | * Adrenal Medulla        | * Bone                     | * Bone Marrow             |
| * Brain                     | * Epididymis             | * Esophagus                | * Eye                     |
| * Harderian Gland           | * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum |
| * Intestine Small, Duodenum | * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      |
| * Liver                     | * Lymph Node, Bronchial  | * Lymph Node, Mandibular   | * Lymph Node, Mediastinal |
| * Lymph Node, Mesenteric    | * Mammary Gland          | * Parathyroid Gland        | * Preputial Gland         |
| * Prostate                  | * Salivary Glands        | * Seminal Vesicle          | * Skin                    |
| * Spleen                    | * Stomach, Forestomach   | * Stomach, Glandular       | * Testes                  |
| * Thymus                    | * Trachea                | * Urinary Bladder          |                           |

OBSERVATIONS

- |                   |                         |                               |                        |
|-------------------|-------------------------|-------------------------------|------------------------|
| * Heart           |                         | Cardiomyopathy                | Minimal                |
| * Kidney          |                         | Nephropathy                   | Minimal                |
| * Larynx          |                         | Metaplasia                    | Squamous, Moderate     |
| * Lung            | Bronchiole              | Hyperplasia                   | Minimal                |
|                   |                         | Inflammation                  | Granulomatous, Minimal |
| * Nose            |                         | Accumulation, Hyaline Droplet | Marked                 |
|                   | Glands, Olfactory Epi   | Hyperplasia                   | Moderate               |
| * Pancreas        |                         | Atrophy                       | Minimal                |
| * Pituitary Gland | Pars Distalis           | Adenoma                       |                        |
|                   | [ Adenoma TGLs = 2-10 ] |                               |                        |
| * Thyroid Gland   | C Cell                  | Hyperplasia                   | Mild                   |
| Zymbal's Gland    |                         | Adenoma                       |                        |
|                   | [ Adenoma TGLs = 3-15 ] |                               |                        |

PRIMARY CAUSE OF DEATH - Pituitary Gland Pars Distalis Adenoma

\* PROTOCOL REQUIRED TISSUE



TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 449

TRT#: 5

SEX: Male

DAY ON TEST: 684

DOSE: 30 mg/m3

DISP: Natural Death

HISTO: 57068

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                         |                          |                           |                          |
|-------------------------|--------------------------|---------------------------|--------------------------|
| * Adrenal Medulla       | * Bone                   | * Bone Marrow             | * Epididymis             |
| * Esophagus             | * Eye                    | * Harderian Gland         | * Islets, Pancreatic     |
| * Lymph Node, Bronchial | * Lymph Node, Mandibular | * Lymph Node, Mediastinal | * Lymph Node, Mesenteric |
| * Pancreas              | * Parathyroid Gland      | * Pituitary Gland         | * Preputial Gland        |
| * Salivary Glands       | * Seminal Vesicle        | * Spleen                  | * Stomach, Forestomach   |
| * Testes                | * Thymus                 | * Thyroid Gland           | * Trachea                |
| * Urinary Bladder       |                          |                           |                          |

MISSING

- \* Mammary Gland

AUTO PRECLUDES DIAG.

- |                          |                            |                           |                             |
|--------------------------|----------------------------|---------------------------|-----------------------------|
| * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum | * Intestine Small, Duodenum |
| * Intestine Small, Ileum | * Intestine Small, Jejunum |                           |                             |

OBSERVATIONS

- |                  |  |                               |                          |
|------------------|--|-------------------------------|--------------------------|
| * Adrenal Cortex |  | Hyperplasia                   | Mild                     |
| * Brain          |  | Granular Cell Tumor Malignant |                          |
|                  | [ Granular Cell Tumor Malignant TGLs = 8-1 ] |                               |                          |
| * Heart          |  | Cardiomyopathy                | Mild                     |
| * Kidney         |  | Hydronephrosis                | Marked                   |
|                  | [ Hydronephrosis TGLs = 3,4,9-7+15 ]         | Nephropathy                   | Marked                   |
|                  | [ Nephropathy TGLs = 3,4,9-7+15 ]            |                               |                          |
| * Larynx         |  | Metaplasia                    | Squamous, Moderate       |
| * Liver          |  | Basophilic Focus              |                          |
| * Lung           |  | Inflammation                  | Granulomatous, Minimal   |
| * Nose           |  | Accumulation, Hyaline Droplet | Marked                   |
|                  | Glands, Olfactory Epi                        | Hyperplasia                   | Moderate                 |
| * Prostate       |  | Carcinoma                     |                          |
|                  | [ Carcinoma TGLs = 6-16 ]                    |                               |                          |
| * Skin           |  | Inflammation                  | Chronic Active, Moderate |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

---

ANIMAL ID: 449

TRT#: 5

SEX: Male

DAY ON TEST: 684

DOSE: 30 mg/m3

DISP: Natural Death

HISTO: 57068

---

**ORGAN AND ACCOUNTABLE SITE STATUS**

---

[ Inflammation TGLs = 7-9 ]

\* Stomach, Glandular

Necrosis

Minimal

[ Necrosis TGLs = 10-10 ]

---

PRIMARY CAUSE OF DEATH

- Prostate Carcinoma

---

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 450

TRT#: 5

SEX: Male

DAY ON TEST: 722

DOSE: 30 mg/m3

DISP: Moribund Sacrifice

HISTO: 57069

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Medulla
- \* Epididymis
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Lymph Node, Mandibular
- \* Preputial Gland
- \* Stomach, Forestomach
- \* Trachea
- \* Bone
- \* Esophagus
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Lymph Node, Mediastinal
- \* Prostate
- \* Stomach, Glandular
- \* Urinary Bladder
- \* Bone Marrow
- \* Eye
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Pancreas
- \* Salivary Glands
- \* Thymus
- \* Brain
- \* Harderian Gland
- \* Intestine Small, Duodenum
- \* Liver
- \* Parathyroid Gland
- \* Seminal Vesicle
- \* Thyroid Gland

MISSING

- \* Lymph Node, Bronchial
- \* Mammary Gland

OBSERVATIONS

- \* Adrenal Cortex
  - Adenoma
  - Hyperplasia
- \* Heart
  - Cardiomyopathy
- \* Kidney
  - Nephropathy
- \* Larynx
  - Metaplasia
- \* Lung
  - Bronchiole
    - Hyperplasia
    - Inflammation
  - Lymph Node
    - Lumbar
      - Infiltration Cellular TGLs = 4-16 ]
- \* Lymph Node, Mesenteric
  - Hemangioma TGLs = 6-18 ]
- \* Nose
  - Accumulation, Hyaline Droplet
- \* Pituitary Gland
  - Glands, Olfactory Epi
    - Hyperplasia
  - Pars Distalis
    - Hyperplasia
- \* Skin
  - Inflammation TGLs = 1,5-15+17 ]
- \* Spleen
  - Hematopoietic Cell Proliferation TGLs = 3-16 ]
- \* Testes
  - Atrophy

- Mild
- Minimal
- Mild
- Squamous, Mild
- Minimal
- Granulomatous, Minimal
- Plasma Cell, Moderate

- Marked
- Mild
- Mild
- Chronic Active, Marked

Moderate

Marked

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

---

ANIMAL ID: 450

TRT#: 5

SEX: Male

DAY ON TEST: 722

DOSE: 30 mg/m3

DISP: Moribund Sacrifice

HISTO: 57069

---

**ORGAN AND ACCOUNTABLE SITE STATUS**

---

Edema

Mild

[ Atrophy TGLs = 2-9 ]

---

PRIMARY CAUSE OF DEATH

- Skin Inflammation

---

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 601

TRT#: 7

SEX: Male

DAY ON TEST: 704

DOSE: 100 mg/m3

DISP: Moribund Sacrifice

HISTO: 56920

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                             |                          |                            |                           |
|-----------------------------|--------------------------|----------------------------|---------------------------|
| * Adrenal Cortex            | * Adrenal Medulla        | * Bone                     | * Bone Marrow             |
| * Brain                     | * Epididymis             | * Esophagus                | * Eye                     |
| * Harderian Gland           | * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum |
| * Intestine Small, Duodenum | * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      |
| * Lymph Node, Bronchial     | * Lymph Node, Mandibular | * Lymph Node, Mediastinal  | * Lymph Node, Mesenteric  |
| * Mammary Gland             | * Parathyroid Gland      | Peripheral Nerve           | * Preputial Gland         |
| * Prostate                  | * Salivary Glands        | * Seminal Vesicle          | Spinal Cord               |
| * Spleen                    | * Stomach, Forestomach   | * Stomach, Glandular       | * Thymus                  |
| * Thyroid Gland             | * Trachea                | * Urinary Bladder          |                           |

OBSERVATIONS

- |                   |                              |                               |                        |
|-------------------|------------------------------|-------------------------------|------------------------|
| * Heart           |                              | Cardiomyopathy                | Minimal                |
| * Kidney          |                              | Nephropathy                   | Mild                   |
| * Larynx          |                              | Metaplasia                    | Squamous, Moderate     |
| * Liver           |                              | Basophilic Focus              |                        |
|                   |                              | Clear Cell Focus              |                        |
| * Lung            | Bronchiole                   | Hyperplasia                   | Minimal                |
|                   |                              | Inflammation                  | Granulomatous, Mild    |
| * Nose            |                              | Accumulation, Hyaline Droplet | Mild                   |
|                   | Glands, Olfactory Epi        | Hyperplasia                   | Mild                   |
| * Pancreas        |                              | Atrophy                       | Minimal                |
| * Pituitary Gland | Pars Distalis                | Hyperplasia                   | Moderate               |
|                   | [ Hyperplasia TGLs = 2-10 ]  |                               |                        |
| * Skin            |                              | Inflammation                  | Chronic Active, Marked |
|                   | [ Inflammation TGLs = 1-16 ] |                               |                        |
| * Testes          | Interstit Cell               | Adenoma                       |                        |

PRIMARY CAUSE OF DEATH - Skin Inflammation

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 602

TRT#: 7

SEX: Male

DAY ON TEST: 704

DOSE: 100 mg/m3

DISP: Moribund Sacrifice

HISTO: 56921

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Bone
- \* Eye
- \* Intestine Small, Duodenum
- \* Pancreas
- \* Testes
- \* Brain
- \* Harderian Gland
- \* Intestine Small, Ileum
- \* Parathyroid Gland
- \* Trachea
- \* Epididymis
- \* Intestine Large, Cecum
- \* Intestine Small, Jejunum
- \* Preputial Gland
- \* Esophagus
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Salivary Glands

MISSING

- \* Mammary Gland

OBSERVATIONS

- \* Adrenal Cortex Hyperplasia Mild
- \* Adrenal Medulla Leukemia Mononuclear
- \* Bone Marrow Leukemia Mononuclear
- \* Heart Leukemia Mononuclear
- \* Intestine Large, Colon Cardiomyopathy Minimal
- \* Kidney Leukemia Mononuclear
- \* Larynx Nephropathy Mild
- \* Liver Metaplasia Squamous, Moderate
- \* Lung Leukemia Mononuclear
- Bronchiole Hyperplasia Minimal
- Inflammation Granulomatous, Minimal
- Leukemia Mononuclear
- Leukemia Mononuclear
- Lymph Node Leukemia Mononuclear
- Renal Leukemia Mononuclear
- [ Leukemia Mononuclear TGLs = 5-16 ] Leukemia Mononuclear
- \* Lymph Node, Bronchial Leukemia Mononuclear
- \* Lymph Node, Mandibular Leukemia Mononuclear
- \* Lymph Node, Mediastinal Leukemia Mononuclear
- \* Lymph Node, Mesenteric Leukemia Mononuclear
- Mesentery Leukemia Mononuclear
- [ Leukemia Mononuclear TGLs = 4-15 ]
- \* Nose Accumulation, Hyaline Droplet Marked

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 602

TRT#: 7

SEX: Male

DAY ON TEST: 704

DOSE: 100 mg/m3

DISP: Moribund Sacrifice

HISTO: 56921

ORGAN AND ACCOUNTABLE SITE STATUS

* Pituitary Gland	Glands, Olfactory Epi Pars Distalis	Hyperplasia Adenoma	Moderate
[ Adenoma TGLs = 1-10 ]			
* Prostate		Leukemia Mononuclear	
* Seminal Vesicle		Leukemia Mononuclear	
* Skin		Angiectasis Inflammation	Moderate Chronic Active, Moderate
[ Angiectasis TGLs = 6-16 ]			
* Spleen		Leukemia Mononuclear	
[ Leukemia Mononuclear TGLs = 2,3-15 ]			
* Stomach, Forestomach		Leukemia Mononuclear	
* Stomach, Glandular		Leukemia Mononuclear	
* Thymus		Leukemia Mononuclear	
* Thyroid Gland	C Cell	Hyperplasia	Minimal
* Urinary Bladder		Leukemia Mononuclear	

PRIMARY CAUSE OF DEATH - Pituitary Gland Pars Distalis Adenoma

CONTRIBUTORY CAUSE OF DEATH - Spleen Leukemia Mononuclear

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 603

TRT#: 7

SEX: Male

DAY ON TEST: 595

DOSE: 100 mg/m3

DISP: Moribund Sacrifice

HISTO: 56922

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                             |                          |                            |                           |
|-----------------------------|--------------------------|----------------------------|---------------------------|
| * Adrenal Cortex            | * Adrenal Medulla        | * Bone                     | * Bone Marrow             |
| * Brain                     | * Epididymis             | * Esophagus                | * Eye                     |
| * Harderian Gland           | * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum |
| * Intestine Small, Duodenum | * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      |
| * Kidney                    | * Liver                  | * Lymph Node, Mandibular   | * Lymph Node, Mediastinal |
| * Lymph Node, Mesenteric    | * Pancreas               | * Parathyroid Gland        | * Preputial Gland         |
| * Prostate                  | * Salivary Glands        | * Seminal Vesicle          | * Skin                    |
| * Spleen                    | * Stomach, Forestomach   | * Stomach, Glandular       | * Testes                  |
| * Thymus                    | * Thyroid Gland          | * Trachea                  | * Urinary Bladder         |

MISSING

- |                         |                 |
|-------------------------|-----------------|
| * Lymph Node, Bronchial | * Mammary Gland |
|-------------------------|-----------------|

OBSERVATIONS

- |                   |                         |                               |                     |
|-------------------|-------------------------|-------------------------------|---------------------|
| * Heart           |                         | Cardiomyopathy                | Minimal             |
| * Larynx          |                         | Metaplasia                    | Squamous, Mild      |
| * Lung            | Bronchiole              | Hyperplasia                   | Minimal             |
|                   |                         | Inflammation                  | Granulomatous, Mild |
| * Nose            |                         | Accumulation, Hyaline Droplet | Marked              |
|                   | Glands, Olfactory Epi   | Hyperplasia                   | Mild                |
| * Pituitary Gland | Pars Distalis           | Adenoma                       |                     |
|                   | [ Adenoma TGLs = 1-10 ] |                               |                     |

PRIMARY CAUSE OF DEATH - Pituitary Gland Pars Distalis Adenoma

\* PROTOCOL REQUIRED TISSUE



TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 604

TRT#: 7

SEX: Male

DAY ON TEST: 504

DOSE: 100 mg/m3

DISP: Natural Death

HISTO: 56923

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                          |                         |                          |                           |
|--------------------------|-------------------------|--------------------------|---------------------------|
| * Adrenal Cortex         | * Adrenal Medulla       | * Bone                   | * Bone Marrow             |
| * Brain                  | * Epididymis            | * Esophagus              | * Eye                     |
| * Harderian Gland        | * Islets, Pancreatic    | * Kidney                 | * Liver                   |
| * Lung                   | * Lymph Node, Bronchial | * Lymph Node, Mandibular | * Lymph Node, Mediastinal |
| * Lymph Node, Mesenteric | * Pancreas              | * Parathyroid Gland      | * Preputial Gland         |
| * Prostate               | * Salivary Glands       | * Seminal Vesicle        | * Skin                    |
| * Spleen                 | * Stomach, Forestomach  | * Stomach, Glandular     | * Testes                  |
| * Thyroid Gland          | * Trachea               | * Urinary Bladder        |                           |

MISSING

- |                 |          |
|-----------------|----------|
| * Mammary Gland | * Thymus |
|-----------------|----------|

AUTO PRECLUDES DIAG.

- |                          |                            |                           |                             |
|--------------------------|----------------------------|---------------------------|-----------------------------|
| * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum | * Intestine Small, Duodenum |
| * Intestine Small, Ileum | * Intestine Small, Jejunum |                           |                             |

OBSERVATIONS

- |                   |                         |                               |                    |
|-------------------|-------------------------|-------------------------------|--------------------|
| * Heart           |                         | Cardiomyopathy                | Mild               |
| * Larynx          |                         | Metaplasia                    | Squamous, Moderate |
| * Nose            |                         | Accumulation, Hyaline Droplet | Moderate           |
|                   | Glands, Olfactory Epi   | Hyperplasia                   | Moderate           |
| * Pituitary Gland | Pars Distalis           | Adenoma                       |                    |
|                   | [ Adenoma TGLs = 1-10 ] |                               |                    |

PRIMARY CAUSE OF DEATH - Pituitary Gland Pars Distalis Adenoma

\* PROTOCOL REQUIRED TISSUE

ANIMAL ID: 605

TRT#: 7

SEX: Male

DAY ON TEST: 731

DOSE: 100 mg/m3

DISP: Terminal Sacrifice

HISTO: 56924

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Medulla
- \* Epididymis
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Lymph Node, Mesenteric
- \* Prostate
- \* Stomach, Fore stomach
- \* Urinary Bladder
- \* Bone
- \* Esophagus
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Pancreas
- \* Salivary Glands
- \* Stomach, Glandular
- \* Bone Marrow
- \* Eye
- \* Intestine Small, Duodenum
- \* Lymph Node, Bronchial
- \* Parathyroid Gland
- \* Seminal Vesicle
- \* Thymus
- \* Brain
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Lymph Node, Mediastinal
- \* Preputial Gland
- \* Spleen
- \* Trachea

MISSING

- \* Lymph Node, Mandibular
- \* Mammary Gland

OBSERVATIONS

- |   |  |  |  |
|---|--|--|--|
| <ul style="list-style-type: none"> <li>* Adrenal Cortex</li> <li>* Harderian Gland</li> <li>* Heart</li> <li>* Kidney</li> <li>* Larynx</li> <li>* Liver</li> </ul> | <ul style="list-style-type: none"> <li>Hyperplasia</li> <li>Hyperplasia</li> <li>Cardiomyopathy</li> <li>Nephropathy</li> <li>Metaplasia</li> <li>Angiectasis</li> <li>Clear Cell Focus</li> </ul> | <ul style="list-style-type: none"> <li>Mild</li> <li>Minimal</li> <li>Minimal</li> <li>Mild</li> <li>Squamous, Moderate</li> <li>Mild</li> </ul> |  |
| <ul style="list-style-type: none"> <li>* Lung<br/>[ Angiectasis TGLs = 2-15 ]</li> </ul>  | <ul style="list-style-type: none"> <li>Bronchiole</li> </ul>   | <ul style="list-style-type: none"> <li>Hyperplasia</li> <li>Inflammation</li> </ul>  | <ul style="list-style-type: none"> <li>Minimal</li> <li>Granulomatous, Mild</li> </ul> |
| <ul style="list-style-type: none"> <li>* Nose</li> </ul>  | <ul style="list-style-type: none"> <li>Glands, Olfactory Epi</li> </ul>  | <ul style="list-style-type: none"> <li>Accumulation, Hyaline Droplet</li> <li>Hyperplasia</li> </ul>   | <ul style="list-style-type: none"> <li>Marked</li> <li>Moderate</li> </ul>             |
| <ul style="list-style-type: none"> <li>* Pituitary Gland<br/>[ Adenoma TGLs = 3-10 ]</li> </ul>   | <ul style="list-style-type: none"> <li>Pars Distalis</li> </ul>  | <ul style="list-style-type: none"> <li>Adenoma</li> </ul>  | <ul style="list-style-type: none"> <li></li> </ul>                                     |
| <ul style="list-style-type: none"> <li>* Skin<br/>[ Inflammation TGLs = 1-16 ]</li> </ul>   | <ul style="list-style-type: none"> <li></li> </ul>   | <ul style="list-style-type: none"> <li>Inflammation</li> </ul>   | <ul style="list-style-type: none"> <li>Chronic Active, Marked</li> </ul>               |
| <ul style="list-style-type: none"> <li>* Testes</li> </ul>  | <ul style="list-style-type: none"> <li></li> </ul>   | <ul style="list-style-type: none"> <li>Edema</li> </ul>  | <ul style="list-style-type: none"> <li>Mild</li> </ul>                                 |
| <ul style="list-style-type: none"> <li>* Thyroid Gland</li> </ul>   | <ul style="list-style-type: none"> <li>C Cell</li> <li>C Cell</li> </ul>   | <ul style="list-style-type: none"> <li>Adenoma</li> <li>Hyperplasia</li> </ul>   | <ul style="list-style-type: none"> <li></li> <li>Minimal</li> </ul>                    |

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 606

TRT#: 7

SEX: Male

DAY ON TEST: 731

DOSE: 100 mg/m3

DISP: Terminal Sacrifice

HISTO: 56925

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Medulla
- \* Epididymis
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Lymph Node, Mandibular
- \* Parathyroid Gland
- \* Salivary Glands
- \* Stomach, Glandular
- \* Urinary Bladder
- \* Bone
- \* Esophagus
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Lymph Node, Mediastinal
- \* Pituitary Gland
- \* Seminal Vesicle
- \* Testes
- \* Bone Marrow
- \* Eye
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Lymph Node, Mesenteric
- \* Preputial Gland
- \* Spleen
- \* Thymus
- \* Brain
- \* Harderian Gland
- \* Intestine Small, Duodenum
- \* Lymph Node, Bronchial
- \* Pancreas
- \* Prostate
- \* Stomach, Forestomach
- \* Trachea

MISSING

- \* Mammary Gland

OBSERVATIONS

- \* Adrenal Cortex
  - \* Heart
  - \* Kidney
  - \* Larynx
  - \* Liver
  - \* Lung
    - [ Angiectasis TGLs = 3,4,5-6+15 ]
    - Alveolar Epith
    - Bronchiole
    - [ Inflammation TGLs = 1-4+5 ]
  - \* Nose
    - Glands, Olfactory Epi
  - \* Skin
    - [ Inflammation TGLs = 2-16 ]
  - \* Thyroid Gland
    - C Cell
- Hypertrophy  
Cardiomyopathy  
Nephropathy  
Metaplasia  
Angiectasis  
Clear Cell Focus  
Hyperplasia  
Hyperplasia  
Inflammation  
Accumulation, Hyaline Droplet  
Hyperplasia  
Inflammation  
Hyperplasia
- Mild  
Minimal  
Mild  
Squamous, Moderate  
Minimal  
Moderate  
Minimal  
Granulomatous, Mild  
Marked  
Moderate  
Chronic Active, Marked  
Minimal

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 607

TRT#: 7

SEX: Male

DAY ON TEST: 730

DOSE: 100 mg/m3

DISP: Terminal Sacrifice

HISTO: 56926

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                            |                           |                             |                          |
|----------------------------|---------------------------|-----------------------------|--------------------------|
| * Bone                     | * Bone Marrow             | * Brain                     | * Epididymis             |
| * Esophagus                | * Eye                     | * Harderian Gland           | * Intestine Large, Cecum |
| * Intestine Large, Colon   | * Intestine Large, Rectum | * Intestine Small, Duodenum | * Intestine Small, Ileum |
| * Intestine Small, Jejunum | * Islets, Pancreatic      | * Lymph Node, Bronchial     | * Lymph Node, Mandibular |
| * Lymph Node, Mediastinal  | * Lymph Node, Mesenteric  | * Pancreas                  | * Parathyroid Gland      |
| * Pituitary Gland          | * Preputial Gland         | * Prostate                  | * Salivary Glands        |
| * Seminal Vesicle          | * Spleen                  | * Stomach, Forestomach      | * Stomach, Glandular     |
| * Thymus                   | * Trachea                 | * Urinary Bladder           |                          |

MISSING

- \* Mammary Gland

OBSERVATIONS

- |                   |   |                               |                     |
|-------------------|---|-------------------------------|---------------------|
| * Adrenal Cortex  |   | Hyperplasia                   | Mild                |
| * Adrenal Medulla |   | Pheochromocytoma Benign       |                     |
| * Heart           |   | Cardiomyopathy                | Minimal             |
| * Kidney          |   | Nephropathy                   | Mild                |
| * Larynx          |   | Metaplasia                    | Squamous, Moderate  |
| * Liver           |   | Clear Cell Focus              |                     |
| * Lung            | Bronchiole                                | Hyperplasia                   | Minimal             |
|                   |   | Inflammation                  | Granulomatous, Mild |
| * Nose            |   | Accumulation, Hyaline Droplet | Marked              |
|                   | Glands, Olfactory Epi                     | Hyperplasia                   | Moderate            |
| * Skin            |   | Cyst Epithelial Inclusion     |                     |
|                   | [ Cyst Epithelial Inclusion TGLs = 1-15 ] |                               |                     |
| * Testes          |   | Edema                         | Mild                |
|                   | Interstit Cell                            | Hyperplasia                   | Moderate            |
|                   | [ Hyperplasia TGLs = 2-9 ]                |                               |                     |
| * Thyroid Gland   | C Cell                                    | Hyperplasia                   | Minimal             |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 608

TRT#: 7

SEX: Male

DAY ON TEST: 731

DOSE: 100 mg/m3

DISP: Terminal Sacrifice

HISTO: 56927

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Medulla
- \* Epididymis
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Liver
- \* Lymph Node, Mesenteric
- \* Prostate
- \* Stomach, Forestomach
- \* Urinary Bladder
- \* Bone
- \* Esophagus
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Lymph Node, Bronchial
- \* Pancreas
- \* Salivary Glands
- \* Stomach, Glandular
- \* Bone Marrow
- \* Eye
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Lymph Node, Mandibular
- \* Parathyroid Gland
- \* Seminal Vesicle
- \* Thymus
- \* Brain
- \* Harderian Gland
- \* Intestine Small, Duodenum
- \* Kidney
- \* Lymph Node, Mediastinal
- \* Preputial Gland
- \* Spleen
- \* Trachea

MISSING

- \* Mammary Gland

OBSERVATIONS

- \* Adrenal Cortex
- \* Heart
- \* Larynx
- \* Lung
  - [ Inflammation TGLs = 1-4+5 ]
- \* Nose
  - [ Inflammation TGLs = 2,3-15+16 ]
- \* Pituitary Gland
- \* Skin
  - [ Inflammation TGLs = 2,3-15+16 ]
- \* Testes
- \* Thyroid Gland
- Bronchiole
- Glands, Olfactory Epi
- Pars Distalis
- Pars Intermed
- C Cell
- Hypertrophy
- Cardiomyopathy
- Metaplasia
- Hyperplasia
- Inflammation
- Accumulation, Hyaline Droplet
- Hyperplasia
- Adenoma
- Hyperplasia
- Inflammation
- Edema
- Hyperplasia
- Mild
- Minimal
- Squamous, Moderate
- Minimal
- Granulomatous, Mild
- Moderate
- Minimal
- Mild
- Chronic Active, Marked
- Mild
- Minimal

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 609

TRT#: 7

SEX: Male

DAY ON TEST: 730

DOSE: 100 mg/m3

DISP: Terminal Sacrifice

HISTO: 56928

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Medulla
- \* Epididymis
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Pancreas
- \* Salivary Glands
- \* Stomach, Forestomach
- \* Trachea
- \* Bone
- \* Esophagus
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Parathyroid Gland
- \* Seminal Vesicle
- \* Stomach, Glandular
- \* Urinary Bladder
- \* Bone Marrow
- \* Eye
- \* Intestine Large, Rectum
- \* Lymph Node, Mediastinal
- \* Preputial Gland
- \* Skin
- \* Testes
- \* Brain
- \* Harderian Gland
- \* Intestine Small, Duodenum
- \* Lymph Node, Mesenteric
- \* Prostate
- \* Spleen
- \* Thyroid Gland

MISSING

- \* Lymph Node, Bronchial
- \* Lymph Node, Mandibular
- \* Mammary Gland

INSUFFICIENT TISSUE

- \* Thymus

OBSERVATIONS

- \* Adrenal Cortex
  - Hyperplasia
  - Hypertrophy
- \* Heart
  - Cardiomyopathy
- \* Islets, Pancreatic
  - Adenoma
- \* Kidney
  - Nephropathy
- \* Larynx
  - Metaplasia
- \* Liver
  - Basophilic Focus
  - Clear Cell Focus
- \* Lung
  - Bronchiole
    - Hyperplasia
    - Inflammation
- [ Inflammation TGLs = 1-4+5 ]
- \* Nose
  - Accumulation, Hyaline Droplet
- \* Pituitary Gland
  - Glands, Olfactory Epi
    - Pars Distalis
    - Pars Intermed
  - Hyperplasia

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 610

TRT#: 7

SEX: Male

DAY ON TEST: 729

DOSE: 100 mg/m3

DISP: Terminal Sacrifice

HISTO: 56929

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                           |                            |                           |                             |
|---------------------------|----------------------------|---------------------------|-----------------------------|
| * Adrenal Medulla         | * Bone                     | * Bone Marrow             | * Brain                     |
| * Epididymis              | * Esophagus                | * Eye                     | * Harderian Gland           |
| * Intestine Large, Cecum  | * Intestine Large, Colon   | * Intestine Large, Rectum | * Intestine Small, Duodenum |
| * Intestine Small, Ileum  | * Intestine Small, Jejunum | * Islets, Pancreatic      | * Lymph Node, Mandibular    |
| * Lymph Node, Mediastinal | * Lymph Node, Mesenteric   | * Pancreas                | * Parathyroid Gland         |
| * Pituitary Gland         | * Preputial Gland          | * Salivary Glands         | * Seminal Vesicle           |
| * Spleen                  | * Stomach, Forestomach     | * Stomach, Glandular      | * Testes                    |
| * Thymus                  | * Trachea                  | * Urinary Bladder         |                             |

MISSING

- |                         |                 |
|-------------------------|-----------------|
| * Lymph Node, Bronchial | * Mammary Gland |
|-------------------------|-----------------|

OBSERVATIONS

- |                  |                               |                               |                        |
|------------------|-------------------------------|-------------------------------|------------------------|
| * Adrenal Cortex |                               | Hypertrophy                   | Mild                   |
| * Heart          |                               | Cardiomyopathy                | Mild                   |
| * Kidney         |                               | Nephropathy                   | Moderate               |
| * Larynx         |                               | Metaplasia                    | Squamous, Mild         |
| * Liver          |                               | Basophilic Focus              |                        |
|                  |                               | Clear Cell Focus              |                        |
| * Lung           | Bronchiole                    | Hyperplasia                   | Minimal                |
|                  |                               | Inflammation                  | Granulomatous, Mild    |
|                  | [ Inflammation TGLs = 2-4+5 ] |                               |                        |
| * Nose           |                               | Accumulation, Hyaline Droplet | Marked                 |
|                  | Glands, Olfactory Epi         | Hyperplasia                   | Minimal                |
| * Prostate       |                               | Adenoma                       | Multiple               |
| * Skin           |                               | Inflammation                  | Chronic Active, Marked |
|                  | [ Inflammation TGLs = 1-15 ]  |                               |                        |
| * Thyroid Gland  | C Cell                        | Hyperplasia                   | Mild                   |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 611

TRT#: 7

SEX: Male

DAY ON TEST: 725

DOSE: 100 mg/m3

DISP: Moribund Sacrifice

HISTO: 56930

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                           |                             |                          |                            |
|---------------------------|-----------------------------|--------------------------|----------------------------|
| * Bone                    | * Bone Marrow               | * Epididymis             | * Esophagus                |
| * Eye                     | * Harderian Gland           | * Intestine Large, Cecum | * Intestine Large, Colon   |
| * Intestine Large, Rectum | * Intestine Small, Duodenum | * Intestine Small, Ileum | * Intestine Small, Jejunum |
| * Islets, Pancreatic      | * Liver                     | * Lymph Node, Bronchial  | * Lymph Node, Mandibular   |
| * Lymph Node, Mediastinal | * Lymph Node, Mesenteric    | * Pancreas               | * Parathyroid Gland        |
| * Preputial Gland         | * Prostate                  | * Salivary Glands        | * Skin                     |
| * Spleen                  | * Stomach, Forestomach      | * Stomach, Glandular     | * Testes                   |
| * Thymus                  | * Trachea                   | * Urinary Bladder        |                            |

MISSING

- \* Mammary Gland

OBSERVATIONS

- |                   |                             |                               |                          |
|-------------------|-----------------------------|-------------------------------|--------------------------|
| * Adrenal Cortex  |                             | Hyperplasia                   | Mild                     |
| * Adrenal Medulla |                             | Pheochromocytoma Benign       |                          |
| * Brain           |                             | Compression                   | Mild                     |
|                   | [ Compression TGLs = 3-1 ]  |                               |                          |
| * Heart           |                             | Cardiomyopathy                | Minimal                  |
| * Kidney          |                             | Nephropathy                   | Mild                     |
| * Larynx          |                             | Metaplasia                    | Squamous, Moderate       |
| * Lung            |                             | Alveolar Epith                | Minimal                  |
|                   |                             | Bronchiole                    | Minimal                  |
|                   |                             | Inflammation                  | Granulomatous, Mild      |
|                   | [ Inflammation TGLs = 2-4 ] |                               |                          |
| * Nose            |                             | Accumulation, Hyaline Droplet | Marked                   |
|                   |                             | Glands, Olfactory Epi         | Mild                     |
| * Pituitary Gland |                             | Pars Distalis                 | Adenoma                  |
|                   | [ Adenoma TGLs = 1-10 ]     |                               |                          |
| * Seminal Vesicle |                             | Inflammation                  | Chronic Active, Moderate |
| * Thyroid Gland   |                             | C Cell                        | Adenoma                  |

PRIMARY CAUSE OF DEATH - Pituitary Gland Pars Distalis Adenoma

\* PROTOCOL REQUIRED TISSUE



TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 612

TRT#: 7

SEX: Male

DAY ON TEST: 202

DOSE: 100 mg/m3

DISP: Moribund Sacrifice

HISTO: 56931

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                           |                             |                          |                            |
|---------------------------|-----------------------------|--------------------------|----------------------------|
| * Adrenal Cortex          | * Adrenal Medulla           | * Bone                   | * Bone Marrow              |
| * Brain                   | * Epididymis                | * Esophagus              | * Eye                      |
| * Harderian Gland         | * Heart                     | * Intestine Large, Cecum | * Intestine Large, Colon   |
| * Intestine Large, Rectum | * Intestine Small, Duodenum | * Intestine Small, Ileum | * Intestine Small, Jejunum |
| * Islets, Pancreatic      | * Liver                     | * Lymph Node, Bronchial  | * Lymph Node, Mandibular   |
| * Lymph Node, Mediastinal | * Lymph Node, Mesenteric    | * Pancreas               | * Parathyroid Gland        |
| * Pituitary Gland         | * Preputial Gland           | * Prostate               | * Salivary Glands          |
| * Seminal Vesicle         | * Skin                      | * Spleen                 | * Stomach, Forestomach     |
| * Stomach, Glandular      | * Testes                    | * Thymus                 | * Thyroid Gland            |
| * Trachea                 | * Urinary Bladder           |                          |                            |

MISSING

- \* Mammary Gland

OBSERVATIONS

- |                         |                       |                               |                       |
|-------------------------|-----------------------|-------------------------------|-----------------------|
| * Kidney                |                       | Inflammation                  | Suppurative, Moderate |
| * Larynx                |                       | Metaplasia                    | Squamous, Moderate    |
| * Lung                  | Bronchiole            | Hyperplasia                   | Minimal               |
| Lymph Node              | Renal                 | Ectasia                       | Marked                |
| [ Ectasia TGLs = 1-15 ] |                       |                               |                       |
| * Nose                  |                       | Accumulation, Hyaline Droplet | Marked                |
|                         | Glands, Olfactory Epi | Hyperplasia                   | Moderate              |

PRIMARY CAUSE OF DEATH

- Kidney Inflammation

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 613

TRT#: 7

SEX: Male

DAY ON TEST: 646

DOSE: 100 mg/m3

DISP: Moribund Sacrifice

HISTO: 56932

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Medulla
- \* Epididymis
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Lymph Node, Mesenteric
- \* Preputial Gland
- Spinal Cord
- \* Testes
- \* Bone
- \* Esophagus
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Parathyroid Gland
- \* Prostate
- \* Spleen
- \* Thymus
- \* Bone Marrow
- \* Eye
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- Peripheral Nerve
- \* Salivary Glands
- \* Stomach, Forestomach
- \* Trachea
- \* Brain
- \* Harderian Gland
- \* Intestine Small, Duodenum
- \* Lymph Node, Mediastinal
- \* Pituitary Gland
- \* Seminal Vesicle
- \* Stomach, Glandular
- \* Urinary Bladder

MISSING

- \* Lymph Node, Bronchial
- \* Lymph Node, Mandibular
- \* Mammary Gland

OBSERVATIONS

- \* Adrenal Cortex
  - Hyperplasia
  - Mild
- \* Heart
  - Hypertrophy
  - Moderate
- \* Kidney
  - Cardiomyopathy
  - Minimal
- \* Larynx
  - Nephropathy
  - Mild
- \* Liver
  - Metaplasia
  - Squamous, Moderate
  - Basophilic Focus
  - Clear Cell Focus
- \* Lung
  - Alveolar Epith
  - Hyperplasia
  - Moderate
  - Bronchiole
  - Hyperplasia
  - Minimal
  - Inflammation
  - Granulomatous, Mild
- \* Nose
  - [ Inflammation TGLs = 3-4+5 ]
  - Accumulation, Hyaline Droplet
  - Marked
  - Glands, Olfactory Epi
  - Hyperplasia
  - Moderate
- \* Pancreas
  - Atrophy
  - Minimal
- \* Skin
  - Subcut Tiss
  - Hemangiopericytoma
  - Inflammation
  - Chronic Active, Mild
- \* Thyroid Gland
  - [ Hemangiopericytoma TGLs = 1-17+18+19+20+21 ]
  - [ Inflammation TGLs = 2-16 ]
  - C Cell
  - Hyperplasia
  - Mild

\* PROTOCOL REQUIRED TISSUE

**TDMS No.** 20515 - 03

**Test Type:** CHRONIC

**Route:** RESPIRATORY EXPOSURE WHOLE BODY

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

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Metal working fluids (CIMSTAR 3800)

**CAS Number:** CIMSTAR3800

**Date Report Requested:** 01/21/2011

**Time Report Requested:** 07:49:51

**First Dose M/F:** 04/14/08 / 04/14/08

**Lab:** BNW

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**ANIMAL ID:** 613

**TRT#:** 7

**SEX:** Male

**DAY ON TEST:** 646

**DOSE:** 100 mg/m3

**DISP:** Moribund Sacrifice

**HISTO:** 56932

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**ORGAN AND ACCOUNTABLE SITE STATUS**

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PRIMARY CAUSE OF DEATH

- Skin Subcut Tiss Hemangiopericytoma

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TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 614

TRT#: 7

SEX: Male

DAY ON TEST: 478

DOSE: 100 mg/m3

DISP: Moribund Sacrifice

HISTO: 56933

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Cortex
- \* Brain
- \* Harderian Gland
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Lymph Node, Mediastinal
- \* Pituitary Gland
- \* Stomach, Glandular
- \* Trachea
- \* Adrenal Medulla
- \* Epididymis
- \* Heart
- \* Intestine Small, Duodenum
- \* Kidney
- \* Lymph Node, Mesenteric
- \* Prostate
- \* Testes
- \* Urinary Bladder
- \* Bone
- \* Esophagus
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Liver
- \* Pancreas
- \* Salivary Glands
- \* Thymus
- \* Bone Marrow
- \* Eye
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Lymph Node, Mandibular
- \* Parathyroid Gland
- \* Seminal Vesicle
- \* Thyroid Gland

MISSING

- \* Lymph Node, Bronchial
- \* Mammary Gland

OBSERVATIONS

- \* Larynx
- \* Lung
- \* Nose
- \* Preputial Gland
- \* Skin
- \* Spleen
- \* Stomach, Forestomach
- Metaplasia
- Hyperplasia
- Inflammation
- Accumulation, Hyaline Droplet
- Hyperplasia
- Inflammation
- Inflammation
- Sarcoma
- Hyperplasia
- Ulcer
- Squamous, Minimal
- Minimal
- Granulomatous, Minimal
- Moderate
- Mild
- Chronic Active, Moderate
- Chronic Active, Marked
- Squamous, Moderate
- Moderate

PRIMARY CAUSE OF DEATH - Spleen Sarcoma

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 615

TRT#: 7

SEX: Male

DAY ON TEST: 730

DOSE: 100 mg/m3

DISP: Terminal Sacrifice

HISTO: 56934

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                           |                            |                           |                             |
|---------------------------|----------------------------|---------------------------|-----------------------------|
| * Bone                    | * Bone Marrow              | * Brain                   | * Epididymis                |
| * Esophagus               | * Eye                      | * Harderian Gland         | * Heart                     |
| * Intestine Large, Cecum  | * Intestine Large, Colon   | * Intestine Large, Rectum | * Intestine Small, Duodenum |
| * Intestine Small, Ileum  | * Intestine Small, Jejunum | * Islets, Pancreatic      | * Lymph Node, Mandibular    |
| * Lymph Node, Mediastinal | * Lymph Node, Mesenteric   | * Mammary Gland           | * Pancreas                  |
| * Parathyroid Gland       | * Preputial Gland          | * Prostate                | * Salivary Glands           |
| * Seminal Vesicle         | * Spleen                   | * Stomach, Forestomach    | * Stomach, Glandular        |
| * Testes                  | * Trachea                  | * Urinary Bladder         |                             |

MISSING

- \* Lymph Node, Bronchial

INSUFFICIENT TISSUE

- \* Thymus

OBSERVATIONS

- |                   |                               |                               |                        |
|-------------------|-------------------------------|-------------------------------|------------------------|
| * Adrenal Cortex  |                               | Hyperplasia                   | Mild                   |
| * Adrenal Medulla |                               | Pheochromocytoma Benign       |                        |
| * Kidney          |                               | Nephropathy                   | Mild                   |
| * Larynx          |                               | Metaplasia                    | Squamous, Moderate     |
| * Liver           |                               | Clear Cell Focus              |                        |
|                   | Bile Duct                     | Dilatation                    | Marked                 |
|                   | [ Dilatation TGLs = 3-15 ]    |                               |                        |
| * Lung            | Alveolar Epith                | Hyperplasia                   | Minimal                |
|                   | Bronchiole                    | Hyperplasia                   | Minimal                |
|                   | [ Inflammation TGLs = 4-4+5 ] | Inflammation                  | Granulomatous, Mild    |
| * Nose            |                               | Accumulation, Hyaline Droplet | Moderate               |
|                   | Glands, Olfactory Epi         | Hyperplasia                   | Minimal                |
| * Pituitary Gland | Pars Distalis                 | Hyperplasia                   | Mild                   |
| * Skin            |                               | Inflammation                  | Chronic Active, Marked |
|                   | Subcut Tiss                   | Lipoma                        |                        |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

---

ANIMAL ID: 615

TRT#: 7

SEX: Male

DAY ON TEST: 730

DOSE: 100 mg/m3

DISP: Terminal Sacrifice

HISTO: 56934

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**ORGAN AND ACCOUNTABLE SITE STATUS**

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[ Inflammation TGLs = 1-17 ]

[ Lipoma TGLs = 2-16 ]

\* Thyroid Gland

C Cell

Adenoma

C Cell

Hyperplasia

Mild

---

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 616

TRT#: 7

SEX: Male

DAY ON TEST: 731

DOSE: 100 mg/m3

DISP: Terminal Sacrifice

HISTO: 56935

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Medulla
- \* Epididymis
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Lymph Node, Mesenteric
- \* Preputial Gland
- \* Stomach, Forestomach
- \* Urinary Bladder
- \* Bone
- \* Esophagus
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Pancreas
- \* Salivary Glands
- \* Stomach, Glandular
- \* Bone Marrow
- \* Eye
- \* Intestine Large, Rectum
- \* Lymph Node, Mandibular
- \* Parathyroid Gland
- \* Seminal Vesicle
- \* Thymus
- \* Brain
- \* Harderian Gland
- \* Intestine Small, Duodenum
- \* Lymph Node, Mediastinal
- \* Pituitary Gland
- \* Spleen
- \* Trachea

MISSING

- \* Lymph Node, Bronchial
- \* Mammary Gland

OBSERVATIONS

- \* Adrenal Cortex
- \* Heart
- \* Islets, Pancreatic
- \* Kidney
- \* Larynx
- \* Liver
- \* Lung
- \* Nose
- \* Prostate
- \* Skin
- \* Testes
- \* Thyroid Gland
- Hyperplasia
- Cardiomyopathy
- Adenoma
- Inflammation
- Nephropathy
- Metaplasia
- Basophilic Focus
- Dilatation
- Hyperplasia
- Inflammation
- Accumulation, Hyaline Droplet
- Hyperplasia
- Adenoma
- Inflammation
- Edema
- Carcinoma
- Mild
- Minimal
- Suppurative, Mild
- Mild
- Squamous, Moderate
- Moderate
- Minimal
- Granulomatous, Mild
- Marked
- Mild
- Chronic Active, Marked
- Mild

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 617

TRT#: 7

SEX: Male

DAY ON TEST: 675

DOSE: 100 mg/m3

DISP: Moribund Sacrifice

HISTO: 56936

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Medulla
- \* Esophagus
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Lymph Node, Mediastinal
- \* Pituitary Gland
- \* Skin
- \* Stomach, Glandular
- \* Bone Marrow
- \* Eye
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Lymph Node, Mesenteric
- \* Preputial Gland
- Spinal Cord
- \* Thymus
- \* Brain
- \* Harderian Gland
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Parathyroid Gland
- \* Salivary Glands
- \* Spleen
- \* Thyroid Gland
- \* Epididymis
- \* Heart
- \* Intestine Small, Duodenum
- \* Lymph Node, Mandibular
- Peripheral Nerve
- \* Seminal Vesicle
- \* Stomach, Forestomach
- \* Trachea

MISSING

- \* Lymph Node, Bronchial
- \* Mammary Gland

OBSERVATIONS

- \* Adrenal Cortex Hyperplasia Mild
- \* Bone Osteosarcoma
- [ Osteosarcoma TGLs = 2,3-19+20+15 ]
- Coagulating Gland Inflammation Chronic Active, Moderate
- \* Kidney Inflammation Suppurative, Mild
- Nephropathy Minimal
- Metaplasia Squamous, Moderate
- \* Larynx Clear Cell Focus
- \* Liver
- \* Lung Alveolar Epith Hyperplasia Minimal
- Bronchiole Hyperplasia Minimal
- Inflammation Granulomatous, Mild
- Osteosarcoma Metastatic (Bone)
- [ Inflammation TGLs = 1-4+5 ]
- Lymph Node Iliac Ectasia Moderate
- [ Ectasia TGLs = 4-18 ]
- \* Nose Accumulation, Hyaline Droplet Marked
- Glands, Olfactory Epi Hyperplasia Mild
- \* Pancreas Atrophy Minimal
- \* Prostate Inflammation Chronic Active, Moderate

\* PROTOCOL REQUIRED TISSUE



TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

---

**ANIMAL ID:** 617

**TRT#:** 7

**SEX:** Male

**DAY ON TEST:** 675

**DOSE:** 100 mg/m3

**DISP:** Moribund Sacrifice

**HISTO:** 56936

---

**ORGAN AND ACCOUNTABLE SITE STATUS**

---

\* Testes

\* Urinary Bladder

Transit Epithe

Edema

Hyperplasia

Inflammation

Mild

Moderate

Chronic Active, Moderate

---

PRIMARY CAUSE OF DEATH

- Bone Osteosarcoma

---

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 618

TRT#: 7

SEX: Male

DAY ON TEST: 729

DOSE: 100 mg/m3

DISP: Terminal Sacrifice

HISTO: 56937

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Medulla
- \* Epididymis
- \* Intestine Large, Cecum
- \* Intestine Small, Jejunum
- \* Lymph Node, Mesenteric
- \* Seminal Vesicle
- \* Trachea
- \* Bone
- \* Esophagus
- \* Intestine Large, Colon
- \* Islets, Pancreatic
- \* Pancreas
- \* Skin
- \* Urinary Bladder
- \* Bone Marrow
- \* Eye
- \* Intestine Small, Duodenum
- \* Lymph Node, Mandibular
- \* Parathyroid Gland
- \* Stomach, Forestomach
- \* Brain
- \* Harderian Gland
- \* Intestine Small, Ileum
- \* Lymph Node, Mediastinal
- \* Salivary Glands
- \* Stomach, Glandular

MISSING

- \* Lymph Node, Bronchial
- \* Mammary Gland
- \* Thymus

INSUFFICIENT TISSUE

- \* Intestine Large, Rectum

OBSERVATIONS

- \* Adrenal Cortex Hyperplasia Mild
- \* Heart Hypertrophy Mild
- \* Kidney Cardiomyopathy Minimal
- \* Larynx Nephropathy Minimal
- \* Liver Metaplasia Squamous, Moderate
- [ Angiectasis TGLs = 4-15 ] Angiectasis Minimal
- \* Lung Bronchiole Hyperplasia Minimal
- [ Inflammation TGLs = 3-4+5 ] Inflammation Granulomatous, Mild
- \* Nose Accumulation, Hyaline Droplet Marked
- \* Pituitary Gland Glands, Olfactory Epi Hyperplasia Moderate
- [ Adenoma TGLs = 2-10 ] Pars Distalis Adenoma
- \* Preputial Gland Inflammation Chronic Active, Moderate
- \* Prostate Hyperplasia Minimal
- \* Spleen Hemangiosarcoma

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

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ANIMAL ID: 618

TRT#: 7

SEX: Male

DAY ON TEST: 729

DOSE: 100 mg/m3

DISP: Terminal Sacrifice

HISTO: 56937

---

ORGAN AND ACCOUNTABLE SITE STATUS

---

[ Hemangiosarcoma TGLs = 5-6 ]

\* Testes

Atrophy

Marked

Edema

Moderate

[ Atrophy TGLs = 1-9 ]

\* Thyroid Gland

C Cell

Hyperplasia

Minimal

---

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 619

TRT#: 7

SEX: Male

DAY ON TEST: 730

DOSE: 100 mg/m3

DISP: Terminal Sacrifice

HISTO: 56938

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Cortex
- \* Adrenal Medulla
- \* Bone
- \* Bone Marrow
- \* Brain
- \* Epididymis
- \* Esophagus
- \* Eye
- \* Harderian Gland
- \* Intestine Large, Cecum
- \* Intestine Large, Colon
- \* Intestine Large, Rectum
- \* Intestine Small, Duodenum
- \* Intestine Small, Ileum
- \* Intestine Small, Jejunum
- \* Islets, Pancreatic
- \* Lymph Node, Bronchial
- \* Lymph Node, Mandibular
- \* Lymph Node, Mediastinal
- \* Lymph Node, Mesenteric
- \* Pancreas
- \* Parathyroid Gland
- \* Preputial Gland
- \* Salivary Glands
- \* Seminal Vesicle
- \* Skin
- \* Spleen
- \* Stomach, Forestomach
- \* Stomach, Glandular
- \* Testes
- \* Thymus
- \* Urinary Bladder
- \* Trachea

MISSING

- \* Mammary Gland

OBSERVATIONS

- |                   |                               |                               |                     |
|-------------------|-------------------------------|-------------------------------|---------------------|
| * Heart           |                               | Cardiomyopathy                | Minimal             |
| * Kidney          |                               | Nephropathy                   | Moderate            |
| * Larynx          |                               | Metaplasia                    | Squamous, Moderate  |
| * Liver           |                               | Clear Cell Focus              |                     |
| * Lung            | Bronchiole                    | Hyperplasia                   | Minimal             |
|                   | [ Inflammation TGLs = 1-4+5 ] | Inflammation                  | Granulomatous, Mild |
| * Nose            |                               | Accumulation, Hyaline Droplet | Marked              |
|                   | Glands, Olfactory Epi         | Hyperplasia                   | Moderate            |
| * Pituitary Gland | Pars Distalis                 | Hyperplasia                   | Minimal             |
| * Prostate        |                               | Hyperplasia                   | Mild                |
| * Thyroid Gland   | C Cell                        | Hyperplasia                   | Minimal             |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 620

TRT#: 7

SEX: Male

DAY ON TEST: 729

DOSE: 100 mg/m3

DISP: Terminal Sacrifice

HISTO: 56939

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

* Adrenal Cortex	* Adrenal Medulla	* Bone	* Bone Marrow
* Brain	* Epididymis	* Esophagus	* Eye
* Harderian Gland	* Intestine Large, Cecum	* Intestine Large, Colon	* Intestine Large, Rectum
* Intestine Small, Duodenum	* Intestine Small, Ileum	* Intestine Small, Jejunum	* Islets, Pancreatic
* Lymph Node, Bronchial	* Lymph Node, Mandibular	* Lymph Node, Mediastinal	* Lymph Node, Mesenteric
* Pancreas	* Parathyroid Gland	* Preputial Gland	* Prostate
* Salivary Glands	* Spleen	* Stomach, Forestomach	* Stomach, Glandular
* Testes	* Thymus	* Trachea	* Urinary Bladder

MISSING

- \* Mammary Gland

OBSERVATIONS

* Heart		Cardiomyopathy	Minimal
* Kidney		Nephropathy	Moderate
* Larynx		Metaplasia	Squamous, Moderate
* Liver		Clear Cell Focus	
	Bile Duct	Dilatation	Marked
	[ Dilatation TGLs = 3-15 ]		
* Lung	Alveolar Epith	Hyperplasia	Mild
	Bronchiole	Hyperplasia	Minimal
		Inflammation	Granulomatous, Mild
* Nose		Accumulation, Hyaline Droplet	Marked
	Glands, Olfactory Epi	Hyperplasia	Moderate
* Pituitary Gland	Pars Distalis	Hyperplasia	Mild
* Seminal Vesicle		Hyperplasia	Mild
* Skin		Inflammation	Chronic Active, Marked
	[ Inflammation TGLs = 1,2-15+16 ]		
* Thyroid Gland	C Cell	Hyperplasia	Mild

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 621

TRT#: 7

SEX: Male

DAY ON TEST: 722

DOSE: 100 mg/m3

DISP: Moribund Sacrifice

HISTO: 56940

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Medulla
- \* Esophagus
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Lymph Node, Bronchial
- \* Mammary Gland
- \* Prostate
- \* Spleen
- \* Thymus
- \* Bone Marrow
- \* Eye
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Lymph Node, Mandibular
- \* Pancreas
- \* Salivary Glands
- \* Stomach, Forestomach
- \* Thyroid Gland
- \* Brain
- \* Harderian Gland
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Lymph Node, Mediastinal
- \* Pituitary Gland
- \* Seminal Vesicle
- \* Stomach, Glandular
- \* Trachea
- \* Epididymis
- \* Heart
- \* Intestine Small, Duodenum
- \* Liver
- \* Lymph Node, Mesenteric
- \* Preputial Gland
- \* Skin
- \* Testes
- \* Urinary Bladder

MISSING

- \* Parathyroid Gland

OBSERVATIONS

- \* Adrenal Cortex
  - \* Bone
    - [ Osteosarcoma TGLs = 2-15+16 ]
  - \* Kidney
  - \* Larynx
  - \* Lung
    - [ Inflammation TGLs = 3-4+5 ]
  - \* Nose
- Hyperplasia  
Osteosarcoma
- Nephropathy  
Metaplasia  
Hyperplasia  
Inflammation
- Accumulation, Hyaline Droplet  
Hyperplasia
- Mild  
Mild  
Squamous, Moderate  
Minimal  
Granulomatous, Mild  
Marked  
Moderate

PRIMARY CAUSE OF DEATH - Bone Osteosarcoma

\* PROTOCOL REQUIRED TISSUE



TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

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ANIMAL ID: 622

TRT#: 7

SEX: Male

DAY ON TEST: 695

DOSE: 100 mg/m3

DISP: Natural Death

HISTO: 56941

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**ORGAN AND ACCOUNTABLE SITE STATUS**

---

\* Testes

Atrophy

Moderate

\* Thyroid Gland

C Cell

Hyperplasia

Mild

---

PRIMARY CAUSE OF DEATH

- Pancreas Carcinoma

---



TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 623

TRT#: 7

SEX: Male

DAY ON TEST: 704

DOSE: 100 mg/m3

DISP: Moribund Sacrifice

HISTO: 56942

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Bone
- \* Esophagus
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Lymph Node, Mediastinal
- Peripheral Nerve
- \* Seminal Vesicle
- \* Stomach, Glandular
- \* Urinary Bladder
- \* Bone Marrow
- \* Eye
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Lymph Node, Mesenteric
- \* Preputial Gland
- Spinal Cord
- \* Thymus
- \* Brain
- \* Harderian Gland
- \* Intestine Small, Duodenum
- \* Lymph Node, Bronchial
- \* Pancreas
- \* Prostate
- \* Spleen
- \* Thyroid Gland
- \* Epididymis
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Lymph Node, Mandibular
- \* Parathyroid Gland
- \* Salivary Glands
- \* Stomach, Forestomach
- \* Trachea

MISSING

- \* Mammary Gland

OBSERVATIONS

- \* Adrenal Cortex
  - Hyperplasia
  - Hypertrophy
  - Angiectasis
- \* Adrenal Medulla
  - [ Angiectasis TGLs = 1-7 ]
- \* Heart
  - Cardiomyopathy
- \* Kidney
  - Nephropathy
- \* Larynx
  - Metaplasia
- \* Liver
  - Clear Cell Focus
- \* Lung
  - Bronchiole
  - Hyperplasia
  - Inflammation
- [ Inflammation TGLs = 3-4+5 ]
- \* Nose
  - Accumulation, Hyaline Droplet
  - Hyperplasia
- \* Pituitary Gland
  - Glands, Olfactory Epi
  - Pars Distalis
  - Adenoma
- \* Skin
  - Inflammation
- [ Inflammation TGLs = 2-16 ]
- \* Testes
  - Edema

PRIMARY CAUSE OF DEATH - Pituitary Gland Pars Distalis Adenoma

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 624

TRT#: 7

SEX: Male

DAY ON TEST: 730

DOSE: 100 mg/m3

DISP: Terminal Sacrifice

HISTO: 56943

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                            |                           |                             |                          |
|----------------------------|---------------------------|-----------------------------|--------------------------|
| * Adrenal Medulla          | * Bone                    | * Bone Marrow               | * Brain                  |
| * Epididymis               | * Esophagus               | * Eye                       | * Intestine Large, Cecum |
| * Intestine Large, Colon   | * Intestine Large, Rectum | * Intestine Small, Duodenum | * Intestine Small, Ileum |
| * Intestine Small, Jejunum | * Islets, Pancreatic      | * Liver                     | * Lymph Node, Bronchial  |
| * Lymph Node, Mandibular   | * Lymph Node, Mediastinal | * Lymph Node, Mesenteric    | * Pancreas               |
| * Parathyroid Gland        | * Preputial Gland         | * Prostate                  | * Salivary Glands        |
| * Seminal Vesicle          | * Spleen                  | * Stomach, Forestomach      | * Stomach, Glandular     |
| * Testes                   | * Thymus                  | * Trachea                   | * Urinary Bladder        |

MISSING

- \* Mammary Gland

OBSERVATIONS

- |                   |                              |                               |                          |
|-------------------|------------------------------|-------------------------------|--------------------------|
| * Adrenal Cortex  |                              | Hyperplasia                   | Mild                     |
| * Harderian Gland |                              | Hyperplasia                   | Minimal                  |
| * Heart           |                              | Cardiomyopathy                | Minimal                  |
| * Kidney          |                              | Nephropathy                   | Minimal                  |
| * Larynx          |                              | Metaplasia                    | Squamous, Mild           |
| * Lung            | Bronchiole                   | Hyperplasia                   | Minimal                  |
|                   |                              | Inflammation                  | Granulomatous, Minimal   |
| * Nose            |                              | Accumulation, Hyaline Droplet | Moderate                 |
|                   | Glands, Olfactory Epi        | Hyperplasia                   | Moderate                 |
| * Pituitary Gland | Pars Distalis                | Hyperplasia                   | Mild                     |
| * Skin            |                              | Inflammation                  | Chronic Active, Moderate |
|                   | [ Inflammation TGLs = 1-15 ] |                               |                          |
| * Thyroid Gland   | C Cell                       | Hyperplasia                   | Minimal                  |
| Tooth             |                              | Dysplasia                     | Mild                     |

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 625

TRT#: 7

SEX: Male

DAY ON TEST: 731

DOSE: 100 mg/m3

DISP: Terminal Sacrifice

HISTO: 56944

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                             |                          |                            |                           |
|-----------------------------|--------------------------|----------------------------|---------------------------|
| * Adrenal Cortex            | * Adrenal Medulla        | * Bone                     | * Bone Marrow             |
| * Brain                     | * Epididymis             | * Esophagus                | * Eye                     |
| * Harderian Gland           | * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum |
| * Intestine Small, Duodenum | * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      |
| * Lymph Node, Bronchial     | * Lymph Node, Mandibular | * Lymph Node, Mediastinal  | * Lymph Node, Mesenteric  |
| * Pancreas                  | * Parathyroid Gland      | * Preputial Gland          | * Salivary Glands         |
| * Seminal Vesicle           | * Spleen                 | * Stomach, Forestomach     | * Stomach, Glandular      |
| * Testes                    | * Thymus                 | * Trachea                  | * Urinary Bladder         |

MISSING

- \* Mammary Gland

OBSERVATIONS

- |                   |                                 |                               |                        |
|-------------------|---------------------------------|-------------------------------|------------------------|
| * Heart           |                                 | Cardiomyopathy                | Minimal                |
| * Kidney          |                                 | Nephropathy                   | Minimal                |
| * Larynx          |                                 | Metaplasia                    | Squamous, Moderate     |
| * Liver           |                                 | Basophilic Focus              |                        |
|                   |                                 | Clear Cell Focus              |                        |
| * Lung            | Bronchiole                      | Hyperplasia                   | Minimal                |
|                   |                                 | Inflammation                  | Granulomatous, Mild    |
|                   | [ Inflammation TGLs = 3-15 ]    |                               |                        |
| * Nose            |                                 | Accumulation, Hyaline Droplet | Marked                 |
|                   | Glands, Olfactory Epi           | Hyperplasia                   | Moderate               |
| * Pituitary Gland | Pars Distalis                   | Hyperplasia                   | Moderate               |
| * Prostate        |                                 | Hyperplasia                   | Moderate               |
| * Skin            |                                 | Inflammation                  | Chronic Active, Marked |
|                   | [ Inflammation TGLs = 1-16+17 ] |                               |                        |
| * Thyroid Gland   | C Cell                          | Hyperplasia                   | Mild                   |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 626

TRT#: 7

SEX: Male

DAY ON TEST: 729

DOSE: 100 mg/m3

DISP: Terminal Sacrifice

HISTO: 56945

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                          |                            |                           |                             |
|--------------------------|----------------------------|---------------------------|-----------------------------|
| * Bone                   | * Bone Marrow              | * Brain                   | * Epididymis                |
| * Esophagus              | * Eye                      | * Harderian Gland         | * Heart                     |
| * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum | * Intestine Small, Duodenum |
| * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      | * Lymph Node, Bronchial     |
| * Lymph Node, Mandibular | * Lymph Node, Mediastinal  | * Lymph Node, Mesenteric  | * Pancreas                  |
| * Parathyroid Gland      | * Preputial Gland          | * Prostate                | * Salivary Glands           |
| * Seminal Vesicle        | * Skin                     | * Spleen                  | * Stomach, Forestomach      |
| * Stomach, Glandular     | * Testes                   | * Thymus                  | * Thyroid Gland             |
| * Trachea                | * Urinary Bladder          |                           |                             |

MISSING

- \* Mammary Gland

OBSERVATIONS

- |                   |                               |                               |                        |
|-------------------|-------------------------------|-------------------------------|------------------------|
| * Adrenal Cortex  |                               | Hyperplasia                   | Mild                   |
|                   |                               | Hypertrophy                   | Mild                   |
| * Adrenal Medulla |                               | Hyperplasia                   | Moderate               |
| * Kidney          |                               | Nephropathy                   | Minimal                |
| * Larynx          |                               | Metaplasia                    | Squamous, Moderate     |
| * Liver           |                               | Clear Cell Focus              |                        |
| * Lung            | Bronchiole                    | Hyperplasia                   | Minimal                |
|                   |                               | Inflammation                  | Granulomatous, Minimal |
|                   | [ Inflammation TGLs = 1-4+5 ] |                               |                        |
| * Nose            |                               | Accumulation, Hyaline Droplet | Marked                 |
|                   | Glands, Olfactory Epi         | Hyperplasia                   | Moderate               |
| * Pituitary Gland | Pars Distalis                 | Adenoma                       |                        |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 627

TRT#: 7

SEX: Male

DAY ON TEST: 611

DOSE: 100 mg/m3

DISP: Moribund Sacrifice

HISTO: 56946

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                             |                          |                            |                           |
|-----------------------------|--------------------------|----------------------------|---------------------------|
| * Adrenal Medulla           | * Bone                   | * Bone Marrow              | * Brain                   |
| * Epididymis                | * Esophagus              | * Eye                      | * Harderian Gland         |
| * Heart                     | * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum |
| * Intestine Small, Duodenum | * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      |
| * Lymph Node, Mediastinal   | * Lymph Node, Mesenteric | * Parathyroid Gland        | * Pituitary Gland         |
| * Preputial Gland           | * Prostate               | * Salivary Glands          | * Seminal Vesicle         |
| * Stomach, Forestomach      | * Stomach, Glandular     | * Testes                   | * Thymus                  |
| * Thyroid Gland             | * Trachea                | * Urinary Bladder          |                           |

MISSING

- |                          |                 |
|--------------------------|-----------------|
| * Lymph Node, Mandibular | * Mammary Gland |
|--------------------------|-----------------|

OBSERVATIONS

- |                         |                                |  |  |
|-------------------------|--------------------------------|--|--|
| * Adrenal Cortex        |                                | Hyperplasia                                | Marked                                     |
| * Kidney                |                                | Nephropathy                                | Mild                                       |
| * Larynx                |                                | Metaplasia                                 | Squamous, Moderate                         |
| * Liver                 |                                | Clear Cell Focus                           |  |
| * Lung                  | Alveolar Epith<br>Bronchiole   | Hyperplasia<br>Hyperplasia<br>Inflammation | Moderate<br>Minimal<br>Granulomatous, Mild |
|                         | [ Hyperplasia TGLs = 1-5 ]     |  |  |
| * Lymph Node, Bronchial |                                | Ectasia                                    | Marked                                     |
|                         | [ Ectasia TGLs = 2-4 ]         |  |  |
| Mesentery               |                                | Liposarcoma                                |  |
|                         | [ Liposarcoma TGLs = 5-15+18 ] |  |  |
| * Nose                  |                                | Accumulation, Hyaline Droplet              | Moderate                                   |
|                         | Glands, Olfactory Epi          | Hyperplasia                                | Moderate                                   |
| * Pancreas              |                                | Atrophy                                    | Minimal                                    |
| * Skin                  | Subcut Tiss                    | Liposarcoma                                |  |
|                         | [ Liposarcoma TGLs = 4-16+17 ] |  |  |
| * Spleen                |                                | Angiectasis                                | Mild                                       |
|                         |                                | Hematopoietic Cell Proliferation           | Marked                                     |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

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ANIMAL ID: 627

TRT#: 7

SEX: Male

DAY ON TEST: 611

DOSE: 100 mg/m3

DISP: Moribund Sacrifice

HISTO: 56946

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**ORGAN AND ACCOUNTABLE SITE STATUS**

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[ Hematopoietic Cell Proliferation TGLs = 3-6 ]

---

PRIMARY CAUSE OF DEATH - Mesentery Liposarcoma

CONTRIBUTORY CAUSE OF DEATH - Skin Subcut Tiss Liposarcoma

---

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 628

TRT#: 7

SEX: Male

DAY ON TEST: 730

DOSE: 100 mg/m3

DISP: Terminal Sacrifice

HISTO: 56947

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Medulla
- \* Epididymis
- \* Heart
- \* Intestine Small, Duodenum
- \* Kidney
- \* Lymph Node, Mesenteric
- \* Preputial Gland
- \* Spleen
- \* Thymus
- \* Bone
- \* Esophagus
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Lymph Node, Bronchial
- \* Pancreas
- \* Salivary Glands
- \* Stomach, Forestomach
- \* Trachea
- \* Bone Marrow
- \* Eye
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Lymph Node, Mandibular
- \* Parathyroid Gland
- \* Seminal Vesicle
- \* Stomach, Glandular
- \* Urinary Bladder
- \* Brain
- \* Harderian Gland
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Lymph Node, Mediastinal
- \* Pituitary Gland
- \* Skin
- \* Testes

MISSING

- \* Mammary Gland

OBSERVATIONS

- \* Adrenal Cortex
- \* Larynx
- \* Liver
- [ Basophilic Focus TGLs = 3-6 ]
- [ Mixed Cell Focus TGLs = 2-15 ]
- \* Lung
- \* Nose
- \* Prostate
- \* Thyroid Gland
- [ Carcinoma TGLs = 1-3 ]
- Hypertrophy
- Metaplasia
- Basophilic Focus
- Clear Cell Focus
- Mixed Cell Focus
- Hyperplasia
- Inflammation
- Accumulation, Hyaline Droplet
- Hyperplasia
- Hyperplasia
- Carcinoma
- Mild
- Squamous, Moderate
- Minimal
- Granulomatous, Minimal
- Moderate
- Moderate
- Minimal

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 629

TRT#: 7

SEX: Male

DAY ON TEST: 729

DOSE: 100 mg/m3

DISP: Terminal Sacrifice

HISTO: 56948

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                          |                            |                           |                             |
|--------------------------|----------------------------|---------------------------|-----------------------------|
| * Adrenal Cortex         | * Adrenal Medulla          | * Bone                    | * Bone Marrow               |
| * Brain                  | * Epididymis               | * Esophagus               | * Harderian Gland           |
| * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum | * Intestine Small, Duodenum |
| * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      | * Kidney                    |
| * Liver                  | * Lymph Node, Bronchial    | * Lymph Node, Mandibular  | * Lymph Node, Mediastinal   |
| * Lymph Node, Mesenteric | * Pancreas                 | * Parathyroid Gland       | * Preputial Gland           |
| * Prostate               | * Salivary Glands          | * Seminal Vesicle         | * Spleen                    |
| * Stomach, Forestomach   | * Stomach, Glandular       | * Testes                  | * Thymus                    |
| * Trachea                | * Urinary Bladder          |                           |                             |

MISSING

- \* Mammary Gland

OBSERVATIONS

- |                   |                               |                               |                          |
|-------------------|-------------------------------|-------------------------------|--------------------------|
| * Eye             | Retina                        | Atrophy                       | Moderate                 |
| * Heart           |                               | Cardiomyopathy                | Minimal                  |
| * Larynx          |                               | Metaplasia                    | Squamous, Mild           |
| * Lung            | Bronchiole                    | Hyperplasia                   | Minimal                  |
|                   | [ Inflammation TGLs = 2-4+5 ] | Inflammation                  | Granulomatous, Mild      |
| * Nose            |                               | Accumulation, Hyaline Droplet | Moderate                 |
|                   | Glands, Olfactory Epi         | Hyperplasia                   | Moderate                 |
| * Pituitary Gland | Pars Distalis                 | Adenoma                       |                          |
| * Skin            |                               | Inflammation                  | Chronic Active, Moderate |
|                   | [ Inflammation TGLs = 3-15 ]  |                               |                          |
| * Thyroid Gland   | Follicular Cel                | Carcinoma                     |                          |
|                   | [ Carcinoma TGLs = 1-3 ]      |                               |                          |

\* PROTOCOL REQUIRED TISSUE



TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 630

TRT#: 7

SEX: Male

DAY ON TEST: 729

DOSE: 100 mg/m3

DISP: Terminal Sacrifice

HISTO: 56949

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Medulla
- \* Epididymis
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Lymph Node, Mandibular
- \* Parathyroid Gland
- \* Seminal Vesicle
- \* Testes
- \* Bone
- \* Esophagus
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Lymph Node, Mediastinal
- \* Pituitary Gland
- \* Spleen
- \* Thymus
- \* Bone Marrow
- \* Eye
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Lymph Node, Mesenteric
- \* Preputial Gland
- \* Stomach, Forestomach
- \* Trachea
- \* Brain
- \* Harderian Gland
- \* Intestine Small, Duodenum
- \* Liver
- \* Pancreas
- \* Salivary Glands
- \* Stomach, Glandular
- \* Urinary Bladder

MISSING

- \* Lymph Node, Bronchial
- \* Mammary Gland

OBSERVATIONS

- \* Adrenal Cortex
  - Adenoma
  - Hyperplasia
- \* Heart
  - Cardiomyopathy
- \* Kidney
  - Nephropathy
- \* Larynx
  - Metaplasia
- \* Lung
  - Bronchiole
    - Hyperplasia
    - Inflammation
  - [ Inflammation TGLs = 4-4+5 ]
- \* Nose
  - Accumulation, Hyaline Droplet
  - Glands, Olfactory Epi
    - Hyperplasia
- \* Prostate
  - Hyperplasia
- \* Skin
  - Subcut Tiss
    - Fibroma
    - Inflammation
  - [ Fibroma TGLs = 1-15 ]
  - [ Inflammation TGLs = 5-16 ]
- \* Thyroid Gland
  - C Cell
    - Adenoma
  - [ Adenoma TGLs = 2-3 ]

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 631

TRT#: 7

SEX: Male

DAY ON TEST: 730

DOSE: 100 mg/m3

DISP: Terminal Sacrifice

HISTO: 56950

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                          |                            |                           |                             |
|--------------------------|----------------------------|---------------------------|-----------------------------|
| * Adrenal Medulla        | * Bone                     | * Bone Marrow             | * Brain                     |
| * Epididymis             | * Esophagus                | * Eye                     | * Harderian Gland           |
| * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum | * Intestine Small, Duodenum |
| * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      | * Kidney                    |
| * Lymph Node, Bronchial  | * Lymph Node, Mandibular   | * Lymph Node, Mediastinal | * Lymph Node, Mesenteric    |
| * Pancreas               | * Preputial Gland          | * Prostate                | * Salivary Glands           |
| * Seminal Vesicle        | * Spleen                   | * Stomach, Forestomach    | * Stomach, Glandular        |
| * Testes                 | * Thymus                   | * Trachea                 | * Urinary Bladder           |

MISSING

- |                 |                     |
|-----------------|---------------------|
| * Mammary Gland | * Parathyroid Gland |
|-----------------|---------------------|

OBSERVATIONS

- |                   |                                   |                               |                        |
|-------------------|-----------------------------------|-------------------------------|------------------------|
| * Adrenal Cortex  |                                   | Hypertrophy                   | Mild                   |
| * Heart           |                                   | Cardiomyopathy                | Minimal                |
| * Larynx          |                                   | Metaplasia                    | Squamous, Moderate     |
| * Liver           |                                   | Basophilic Focus              |                        |
|                   |                                   | Clear Cell Focus              |                        |
| * Lung            | Bronchiole                        | Hyperplasia                   | Minimal                |
|                   | [ Inflammation TGLs = 4-4+5 ]     | Inflammation                  | Granulomatous, Mild    |
| * Nose            |                                   | Accumulation, Hyaline Droplet | Moderate               |
|                   | Glands, Olfactory Epi             | Hyperplasia                   | Mild                   |
| * Pituitary Gland | Pars Distalis                     | Adenoma                       |                        |
|                   | [ Adenoma TGLs = 3-10 ]           |                               |                        |
| * Skin            |                                   | Inflammation                  | Chronic Active, Marked |
|                   | [ Inflammation TGLs = 1,2-15+16 ] |                               |                        |
| * Thyroid Gland   | C Cell                            | Hyperplasia                   | Minimal                |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 632

TRT#: 7

SEX: Male

DAY ON TEST: 729

DOSE: 100 mg/m3

DISP: Terminal Sacrifice

HISTO: 56951

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                          |                            |                           |                             |
|--------------------------|----------------------------|---------------------------|-----------------------------|
| * Adrenal Medulla        | * Bone                     | * Bone Marrow             | * Brain                     |
| * Epididymis             | * Esophagus                | * Eye                     | * Harderian Gland           |
| * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum | * Intestine Small, Duodenum |
| * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      | * Lymph Node, Bronchial     |
| * Lymph Node, Mandibular | * Lymph Node, Mediastinal  | * Lymph Node, Mesenteric  | * Pancreas                  |
| * Parathyroid Gland      | * Prostate                 | * Salivary Glands         | * Seminal Vesicle           |
| * Skin                   | * Spleen                   | * Stomach, Forestomach    | * Stomach, Glandular        |
| * Thymus                 | * Trachea                  | * Urinary Bladder         |                             |

MISSING

- \* Mammary Gland

OBSERVATIONS

- |                   |                               |                               |                      |
|-------------------|-------------------------------|-------------------------------|----------------------|
| * Adrenal Cortex  |                               | Hyperplasia                   | Mild                 |
| * Heart           |                               | Cardiomyopathy                | Minimal              |
| * Kidney          |                               | Nephropathy                   | Mild                 |
| * Larynx          |                               | Metaplasia                    | Squamous, Moderate   |
| * Liver           |                               | Clear Cell Focus              |                      |
| * Lung            | Bronchiole                    | Hyperplasia                   | Minimal              |
|                   |                               | Inflammation                  | Granulomatous, Mild  |
|                   | [ Inflammation TGLs = 2-4+5 ] |                               |                      |
| * Nose            |                               | Accumulation, Hyaline Droplet | Marked               |
|                   | Glands, Olfactory Epi         | Hyperplasia                   | Moderate             |
| * Pituitary Gland | Pars Distalis                 | Hyperplasia                   | Mild                 |
| * Preputial Gland |                               | Inflammation                  | Chronic Active, Mild |
| * Testes          |                               | Atrophy                       | Moderate             |
|                   | [ Atrophy TGLs = 1-9 ]        |                               |                      |
| * Thyroid Gland   | C Cell                        | Hyperplasia                   | Minimal              |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 633

TRT#: 7

SEX: Male

DAY ON TEST: 729

DOSE: 100 mg/m3

DISP: Terminal Sacrifice

HISTO: 56952

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                          |                            |                           |                             |
|--------------------------|----------------------------|---------------------------|-----------------------------|
| * Adrenal Medulla        | * Bone                     | * Bone Marrow             | * Brain                     |
| * Epididymis             | * Esophagus                | * Eye                     | * Harderian Gland           |
| * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum | * Intestine Small, Duodenum |
| * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      | * Lymph Node, Bronchial     |
| * Lymph Node, Mandibular | * Lymph Node, Mediastinal  | * Lymph Node, Mesenteric  | * Pancreas                  |
| * Parathyroid Gland      | * Preputial Gland          | * Prostate                | * Salivary Glands           |
| * Seminal Vesicle        | * Skin                     | * Spleen                  | * Stomach, Forestomach      |
| * Stomach, Glandular     | * Testes                   | * Thymus                  | * Thyroid Gland             |
| * Trachea                | * Urinary Bladder          |                           |                             |

MISSING

- \* Mammary Gland

OBSERVATIONS

- |                   |                               |                               |                     |
|-------------------|-------------------------------|-------------------------------|---------------------|
| * Adrenal Cortex  |                               | Hyperplasia                   | Moderate            |
| * Heart           |                               | Cardiomyopathy                | Minimal             |
| * Kidney          |                               | Nephropathy                   | Mild                |
| * Larynx          |                               | Metaplasia                    | Squamous, Moderate  |
| * Liver           |                               | Angiectasis                   | Mild                |
|                   | [ Angiectasis TGLs = 2-6 ]    |                               |                     |
| * Lung            | Bronchiole                    | Hyperplasia                   | Minimal             |
|                   | [ Inflammation TGLs = 3-4+5 ] | Inflammation                  | Granulomatous, Mild |
| * Nose            |                               | Accumulation, Hyaline Droplet | Moderate            |
|                   | Glands, Olfactory Epi         | Hyperplasia                   | Moderate            |
| * Pituitary Gland | Pars Distalis                 | Adenoma                       |                     |
|                   | [ Adenoma TGLs = 1-10 ]       |                               |                     |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 634

TRT#: 7

SEX: Male

DAY ON TEST: 729

DOSE: 100 mg/m3

DISP: Terminal Sacrifice

HISTO: 56953

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                          |                            |                           |                             |
|--------------------------|----------------------------|---------------------------|-----------------------------|
| * Adrenal Medulla        | * Bone                     | * Bone Marrow             | * Brain                     |
| * Epididymis             | * Esophagus                | * Eye                     | * Heart                     |
| * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum | * Intestine Small, Duodenum |
| * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      | * Lymph Node, Bronchial     |
| * Lymph Node, Mandibular | * Lymph Node, Mediastinal  | * Lymph Node, Mesenteric  | * Pancreas                  |
| * Preputial Gland        | * Prostate                 | * Salivary Glands         | * Seminal Vesicle           |
| * Skin                   | * Spleen                   | * Stomach, Forestomach    | * Stomach, Glandular        |
| * Thymus                 | * Trachea                  | * Urinary Bladder         |                             |

MISSING

- \* Mammary Gland

OBSERVATIONS

- |                     |                               |                               |                     |
|---------------------|-------------------------------|-------------------------------|---------------------|
| * Adrenal Cortex    |                               | Hyperplasia                   | Mild                |
| * Harderian Gland   |                               | Hyperplasia                   | Mild                |
| * Kidney            |                               | Nephropathy                   | Moderate            |
|                     | [ Nephropathy TGLs = 2-7 ]    |                               |                     |
| * Larynx            |                               | Metaplasia                    | Squamous, Mild      |
| * Liver             |                               | Angiectasis                   | Minimal             |
|                     |                               | Clear Cell Focus              |                     |
|                     |                               | Dilatation                    | Moderate            |
|                     | [ Angiectasis TGLs = 4-6 ]    |                               |                     |
|                     | [ Dilatation TGLs = 1-15 ]    |                               |                     |
| * Lung              |                               | Bile Duct                     |                     |
|                     |                               | Bronchiole                    |                     |
|                     |                               | Hyperplasia                   | Minimal             |
|                     |                               | Inflammation                  | Granulomatous, Mild |
|                     | [ Inflammation TGLs = 3-4+5 ] |                               |                     |
| * Nose              |                               | Accumulation, Hyaline Droplet | Moderate            |
|                     |                               | Glands, Olfactory Epi         |                     |
|                     |                               | Hyperplasia                   | Mild                |
| * Parathyroid Gland |                               | Hyperplasia                   | Mild                |
| * Pituitary Gland   |                               | Hyperplasia                   | Mild                |
| * Testes            |                               | Edema                         | Mild                |
| * Thyroid Gland     |                               | Hyperplasia                   | Mild                |
|                     |                               | C Cell                        |                     |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 635

TRT#: 7

SEX: Male

DAY ON TEST: 729

DOSE: 100 mg/m3

DISP: Terminal Sacrifice

HISTO: 56954

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Bone
- \* Esophagus
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Lymph Node, Mesenteric
- \* Seminal Vesicle
- \* Stomach, Glandular
- \* Trachea
- \* Bone Marrow
- \* Eye
- \* Intestine Small, Duodenum
- \* Lymph Node, Bronchial
- \* Pancreas
- \* Skin
- \* Testes
- \* Urinary Bladder
- \* Brain
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Lymph Node, Mandibular
- \* Preputial Gland
- \* Spleen
- \* Thymus
- \* Epididymis
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Lymph Node, Mediastinal
- \* Salivary Glands
- \* Stomach, Forestomach
- \* Thyroid Gland

MISSING

- \* Mammary Gland
- \* Parathyroid Gland

OBSERVATIONS

- \* Adrenal Cortex
- \* Adrenal Medulla
- \* Harderian Gland
- \* Heart
- \* Kidney
- \* Larynx
- \* Liver
- \* Lung
- \* Nose
- \* Pituitary Gland
- \* Prostate
- Hyperplasia
- Pheochromocytoma Benign
- Hyperplasia
- Cardiomyopathy
- Nephropathy
- Metaplasia
- Clear Cell Focus
- Bronchiole
- Hyperplasia
- Inflammation
- Accumulation, Hyaline Droplet
- Glands, Olfactory Epi
- Pars Distalis
- Hyperplasia
- Hyperplasia
- Hyperplasia
- Mild
- Minimal
- Mild
- Moderate
- Squamous, Moderate
- Minimal
- Granulomatous, Mild
- Marked
- Mild
- Mild
- Mild

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 636

TRT#: 7

SEX: Male

DAY ON TEST: 395

DOSE: 100 mg/m3

DISP: Moribund Sacrifice

HISTO: 56955

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                           |                             |                          |                            |
|---------------------------|-----------------------------|--------------------------|----------------------------|
| * Adrenal Cortex          | * Adrenal Medulla           | * Bone                   | * Bone Marrow              |
| * Brain                   | * Epididymis                | * Esophagus              | * Eye                      |
| * Harderian Gland         | * Heart                     | * Intestine Large, Cecum | * Intestine Large, Colon   |
| * Intestine Large, Rectum | * Intestine Small, Duodenum | * Intestine Small, Ileum | * Intestine Small, Jejunum |
| * Islets, Pancreatic      | * Kidney                    | * Lymph Node, Bronchial  | * Lymph Node, Mandibular   |
| * Lymph Node, Mediastinal | * Lymph Node, Mesenteric    | * Pancreas               | * Parathyroid Gland        |
| Peripheral Nerve          | * Pituitary Gland           | * Preputial Gland        | * Prostate                 |
| * Salivary Glands         | * Seminal Vesicle           | * Skin                   | Spinal Cord                |
| * Spleen                  | * Stomach, Forestomach      | * Stomach, Glandular     | * Testes                   |
| * Thymus                  | * Thyroid Gland             | * Trachea                | * Urinary Bladder          |

MISSING

- \* Mammary Gland

OBSERVATIONS

- |          |                       |                               |                     |
|----------|-----------------------|-------------------------------|---------------------|
| * Larynx |                       | Metaplasia                    | Squamous, Moderate  |
| * Liver  |                       | Basophilic Focus              |                     |
| * Lung   | Bronchiole            | Hyperplasia                   | Minimal             |
|          |                       | Inflammation                  | Granulomatous, Mild |
| * Nose   |                       | Accumulation, Hyaline Droplet | Marked              |
|          | Glands, Olfactory Epi | Hyperplasia                   | Mild                |

PRIMARY CAUSE OF DEATH

- UNCERTAIN

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 637

TRT#: 7

SEX: Male

DAY ON TEST: 731

DOSE: 100 mg/m3

DISP: Terminal Sacrifice

HISTO: 56956

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Medulla
- \* Epididymis
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Lymph Node, Mediastinal
- \* Prostate
- \* Stomach, Forestomach
- \* Trachea
- \* Bone
- \* Esophagus
- \* Intestine Large, Colon
- \* Islets, Pancreatic
- \* Lymph Node, Mesenteric
- \* Salivary Glands
- \* Stomach, Glandular
- \* Urinary Bladder
- \* Bone Marrow
- \* Eye
- \* Intestine Large, Rectum
- \* Lymph Node, Bronchial
- \* Pancreas
- \* Seminal Vesicle
- \* Testes
- \* Brain
- \* Harderian Gland
- \* Intestine Small, Duodenum
- \* Lymph Node, Mandibular
- \* Parathyroid Gland
- \* Spleen
- \* Thymus

MISSING

- \* Mammary Gland

OBSERVATIONS

- \* Adrenal Cortex
  - \* Heart
  - \* Intestine Small, Jejunum
    - [ Angiectasis TGLs = 3-15 ]
    - [ Inflammation TGLs = 3-15 ]
  - \* Kidney
  - \* Larynx
  - \* Liver
  - \* Lung
    - [ Inflammation TGLs = 4-4+5 ]
  - \* Nose
  - \* Pituitary Gland
  - \* Preputial Gland
    - [ Ectasia TGLs = 2-16 ]
  - \* Skin
- Lymphatic
  - Bronchiole
  - Glands, Olfactory Epi
  - Pars Distalis
  - Duct
- Carcinoma
  - Cardiomyopathy
  - Angiectasis
  - Inflammation
  - Nephropathy
  - Inflammation
  - Metaplasia
  - Clear Cell Focus
  - Hyperplasia
  - Inflammation
  - Accumulation, Hyaline Droplet
  - Hyperplasia
  - Hyperplasia
  - Ectasia
  - Inflammation
- Minimal
  - Marked
  - Chronic, Moderate
  - Minimal
  - Chronic, Mild
  - Squamous, Mild
  - Minimal
  - Granulomatous, Mild
  - Marked
  - Moderate
  - Mild
  - Moderate
  - Chronic Active, Mild

\* PROTOCOL REQUIRED TISSUE



TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

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ANIMAL ID: 637

TRT#: 7

SEX: Male

DAY ON TEST: 731

DOSE: 100 mg/m3

DISP: Terminal Sacrifice

HISTO: 56956

---

**ORGAN AND ACCOUNTABLE SITE STATUS**

---

[ Inflammation TGLs = 1-17 ]

\* Thyroid Gland

C Cell

Hyperplasia

Minimal

---

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 638

TRT#: 7

SEX: Male

DAY ON TEST: 457

DOSE: 100 mg/m3

DISP: Moribund Sacrifice

HISTO: 56957

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Cortex
- \* Brain
- \* Heart
- \* Intestine Small, Duodenum
- \* Liver
- \* Lymph Node, Mediastinal
- \* Parathyroid Gland
- \* Salivary Glands
- \* Stomach, Forestomach
- \* Urinary Bladder
- \* Adrenal Medulla
- \* Esophagus
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Lung
- \* Lymph Node, Mesenteric
- \* Pituitary Gland
- \* Seminal Vesicle
- \* Stomach, Glandular
- \* Bone
- \* Eye
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Lymph Node, Bronchial
- \* Mammary Gland
- \* Preputial Gland
- \* Skin
- \* Thyroid Gland
- \* Bone Marrow
- \* Harderian Gland
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Lymph Node, Mandibular
- \* Pancreas
- \* Prostate
- \* Spleen
- \* Trachea

OBSERVATIONS

- \* Epididymis
  - \* Kidney
  - \* Larynx
  - \* Nose
  - \* Testes
  - \* Thymus
- Glands, Olfactory Epi
- [ Mesothelioma Malignant TGLs = 2-9+16 ]
- [ Thymoma Malignant TGLs = 1-15 ]

Mesothelioma Malignant  
 Inflammation  
 Metaplasia  
 Accumulation, Hyaline Droplet  
 Hyperplasia  
 Mesothelioma Malignant  
 Suppurative, Mild  
 Squamous, Mild  
 Moderate  
 Moderate  
 Thymoma Malignant

PRIMARY CAUSE OF DEATH - Thymus Thymoma Malignant

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 639

TRT#: 7

SEX: Male

DAY ON TEST: 730

DOSE: 100 mg/m3

DISP: Terminal Sacrifice

HISTO: 56958

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Cortex
- \* Esophagus
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Lymph Node, Mediastinal
- \* Preputial Gland
- \* Spleen
- \* Thyroid Gland
- \* Bone
- \* Eye
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Lymph Node, Mesenteric
- \* Salivary Glands
- \* Stomach, Forestomach
- \* Trachea
- \* Bone Marrow
- \* Harderian Gland
- \* Intestine Small, Duodenum
- \* Lymph Node, Bronchial
- \* Pancreas
- \* Seminal Vesicle
- \* Stomach, Glandular
- \* Urinary Bladder
- \* Epididymis
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Lymph Node, Mandibular
- \* Parathyroid Gland
- \* Skin
- \* Thymus

MISSING

- \* Mammary Gland

OBSERVATIONS

- \* Adrenal Medulla
  - \* Brain
  - \* Heart
  - \* Kidney
  - \* Larynx
  - \* Liver
  - \* Lung
  - \* Nose
  - \* Pituitary Gland
  - \* Prostate
  - \* Testes
- [ Fatty Change TGLs = 1-15 ]
- Renal Tubule
  - Alveolar Epith
  - Bronchiole
  - Glands, Olfactory Epi
  - Pars Distalis
  - Pars Intermed
- Pheochromocytoma Benign
  - Granular Cell Tumor Benign
  - Cardiomyopathy
  - Hyperplasia
  - Nephropathy
  - Metaplasia
  - Basophilic Focus
  - Fatty Change
  - Hyperplasia
  - Hyperplasia
  - Inflammation
  - Accumulation, Hyaline Droplet
  - Hyperplasia
  - Hyperplasia
  - Hyperplasia
  - Hyperplasia
  - Edema
- Minimal
  - Mild
  - Moderate
  - Squamous, Moderate
  - Mild
  - Moderate
  - Minimal
  - Granulomatous, Mild
  - Moderate
  - Moderate
  - Mild
  - Moderate
  - Mild
  - Moderate

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 640

TRT#: 7

SEX: Male

DAY ON TEST: 635

DOSE: 100 mg/m3

DISP: Moribund Sacrifice

HISTO: 56959

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                           |                             |                          |                            |
|---------------------------|-----------------------------|--------------------------|----------------------------|
| * Adrenal Cortex          | * Adrenal Medulla           | * Bone                   | * Bone Marrow              |
| * Brain                   | * Epididymis                | * Esophagus              | * Eye                      |
| * Harderian Gland         | * Heart                     | * Intestine Large, Cecum | * Intestine Large, Colon   |
| * Intestine Large, Rectum | * Intestine Small, Duodenum | * Intestine Small, Ileum | * Intestine Small, Jejunum |
| * Islets, Pancreatic      | * Liver                     | * Lymph Node, Bronchial  | * Lymph Node, Mandibular   |
| * Lymph Node, Mediastinal | * Lymph Node, Mesenteric    | * Pancreas               | * Parathyroid Gland        |
| Peripheral Nerve          | * Preputial Gland           | * Salivary Glands        | * Seminal Vesicle          |
| Spinal Cord               | * Spleen                    | * Stomach, Forestomach   | * Stomach, Glandular       |
| * Testes                  | * Thymus                    | * Trachea                | * Urinary Bladder          |

MISSING

- \* Mammary Gland

OBSERVATIONS

- |                                   |  |  |  |
|-----------------------------------|--|--|--|
| * Kidney                          |  | Nephropathy                                | Moderate                               |
| * Larynx                          |  | Metaplasia                                 | Squamous, Moderate                     |
| * Lung                            | Alveolar Epith<br>Bronchiole           | Hyperplasia<br>Hyperplasia<br>Inflammation | Mild<br>Minimal<br>Granulomatous, Mild |
| * Nose                            |  | Accumulation, Hyaline Droplet              | Moderate                               |
| * Pituitary Gland                 | Glands, Olfactory Epi<br>Pars Distalis | Hyperplasia<br>Adenoma                     | Moderate                               |
| [ Adenoma TGLs = 1-10 ]           |  |  |  |
| * Prostate                        |  | Inflammation                               | Chronic Active, Mild                   |
| * Skin                            |  | Inflammation                               | Chronic Active, Marked                 |
| [ Inflammation TGLs = 2,3-15+16 ] |  |  |  |
| * Thyroid Gland                   | C Cell                                 | Hyperplasia                                | Marked                                 |

PRIMARY CAUSE OF DEATH - Pituitary Gland Pars Distalis Adenoma

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 641

TRT#: 7

SEX: Male

DAY ON TEST: 730

DOSE: 100 mg/m3

DISP: Terminal Sacrifice

HISTO: 56960

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                             |                           |                            |                           |
|-----------------------------|---------------------------|----------------------------|---------------------------|
| * Adrenal Medulla           | * Bone                    | * Bone Marrow              | * Brain                   |
| * Epididymis                | * Esophagus               | * Eye                      | * Harderian Gland         |
| * Heart                     | * Intestine Large, Cecum  | * Intestine Large, Colon   | * Intestine Large, Rectum |
| * Intestine Small, Duodenum | * Intestine Small, Ileum  | * Intestine Small, Jejunum | * Islets, Pancreatic      |
| * Lymph Node, Mandibular    | * Lymph Node, Mediastinal | * Lymph Node, Mesenteric   | * Pancreas                |
| * Parathyroid Gland         | * Preputial Gland         | * Prostate                 | * Salivary Glands         |
| * Seminal Vesicle           | * Skin                    | * Spleen                   | * Stomach, Forestomach    |
| * Stomach, Glandular        | * Testes                  | * Thymus                   | * Trachea                 |
| * Urinary Bladder           |                           |                            |                           |

MISSING

- |                         |                 |
|-------------------------|-----------------|
| * Lymph Node, Bronchial | * Mammary Gland |
|-------------------------|-----------------|

OBSERVATIONS

- |                   |                               |                               |                     |
|-------------------|-------------------------------|-------------------------------|---------------------|
| * Adrenal Cortex  |                               | Hyperplasia                   | Mild                |
|                   |                               | Hypertrophy                   | Mild                |
| * Kidney          |                               | Nephropathy                   | Minimal             |
| * Larynx          |                               | Metaplasia                    | Squamous, Moderate  |
| * Liver           |                               | Basophilic Focus              |                     |
| * Lung            | Bronchiole                    | Hyperplasia                   | Minimal             |
|                   |                               | Inflammation                  | Granulomatous, Mild |
|                   | [ Inflammation TGLs = 1-4+5 ] |                               |                     |
| * Nose            |                               | Accumulation, Hyaline Droplet | Moderate            |
|                   | Glands, Olfactory Epi         | Hyperplasia                   | Moderate            |
| * Pituitary Gland | Pars Distalis                 | Hyperplasia                   | Mild                |
| * Thyroid Gland   | C Cell                        | Hyperplasia                   | Mild                |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 642

TRT#: 7

SEX: Male

DAY ON TEST: 730

DOSE: 100 mg/m3

DISP: Terminal Sacrifice

HISTO: 56961

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Medulla
- \* Epididymis
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Pancreas
- \* Salivary Glands
- \* Stomach, Glandular
- \* Bone
- \* Esophagus
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Parathyroid Gland
- \* Seminal Vesicle
- \* Thymus
- \* Bone Marrow
- \* Eye
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Preputial Gland
- \* Spleen
- \* Trachea
- \* Brain
- \* Harderian Gland
- \* Intestine Small, Duodenum
- \* Lymph Node, Mandibular
- \* Prostate
- \* Stomach, Forestomach
- \* Urinary Bladder

MISSING

- \* Lymph Node, Bronchial
- \* Lymph Node, Mediastinal
- \* Mammary Gland

OBSERVATIONS

- \* Adrenal Cortex
  - Adenoma
  - Hyperplasia
  - Hypertrophy
- \* Heart
  - Cardiomyopathy
- \* Kidney
  - Nephropathy
- \* Larynx
  - Metaplasia
- \* Liver
  - Basophilic Focus
  - Clear Cell Focus
- \* Lung
  - [ Clear Cell Focus TGLs = 2-6 ]
  - Bronchiole
    - Hyperplasia
    - Inflammation
  - [ Inflammation TGLs = 4-4+5 ]
- \* Lymph Node, Mesenteric
  - [ Hemangiosarcoma TGLs = 3-15 ]
- \* Nose
  - Accumulation, Hyaline Droplet
  - Glands, Olfactory Epi
  - Hyperplasia
- \* Pituitary Gland
  - Adenoma
  - Pars Distalis
- \* Skin
  - [ Adenoma TGLs = 1-10 ]
  - [ Inflammation TGLs = 5-16 ]

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

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ANIMAL ID: 642

TRT#: 7

SEX: Male

DAY ON TEST: 730

DOSE: 100 mg/m3

DISP: Terminal Sacrifice

HISTO: 56961

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**ORGAN AND ACCOUNTABLE SITE STATUS**

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\* Testes

Interstit Cell

Adenoma

\* Thyroid Gland

C Cell

Hyperplasia

Minimal

---

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 643

TRT#: 7

SEX: Male

DAY ON TEST: 729

DOSE: 100 mg/m3

DISP: Terminal Sacrifice

HISTO: 56962

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Medulla
- \* Epididymis
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Lymph Node, Mediastinal
- \* Seminal Vesicle
- \* Stomach, Glandular
- \* Trachea
- \* Bone
- \* Esophagus
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Lymph Node, Mesenteric
- \* Skin
- \* Testes
- \* Urinary Bladder
- \* Bone Marrow
- \* Eye
- \* Intestine Small, Duodenum
- \* Lymph Node, Bronchial
- \* Preputial Gland
- \* Spleen
- \* Thymus
- \* Brain
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Lymph Node, Mandibular
- \* Salivary Glands
- \* Stomach, Forestomach
- \* Thyroid Gland

MISSING

- \* Mammary Gland

OBSERVATIONS

- |                     |               |                               |                     |
|---------------------|---------------|-------------------------------|---------------------|
| * Adrenal Cortex    |               | Hypertrophy                   | Mild                |
| * Harderian Gland   |               | Hyperplasia                   | Minimal             |
| * Heart             |               | Cardiomyopathy                | Minimal             |
| * Kidney            |               | Nephropathy                   | Moderate            |
| * Larynx            |               | Metaplasia                    | Squamous, Moderate  |
| * Liver             |               | Basophilic Focus              |                     |
|                     |               | Clear Cell Focus              |                     |
| * Lung              | Bronchiole    | Hyperplasia                   | Minimal             |
|                     |               | Inflammation                  | Granulomatous, Mild |
| * Nose              |               | Accumulation, Hyaline Droplet | Moderate            |
| * Pancreas          |               | Basophilic Focus              |                     |
| * Parathyroid Gland |               | Adenoma                       |                     |
| * Pituitary Gland   | Pars Distalis | Hyperplasia                   | Mild                |
| * Prostate          |               | Hyperplasia                   | Moderate            |

\* PROTOCOL REQUIRED TISSUE



TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 644

TRT#: 7

SEX: Male

DAY ON TEST: 627

DOSE: 100 mg/m3

DISP: Moribund Sacrifice

HISTO: 56963

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                           |                             |                           |                            |
|---------------------------|-----------------------------|---------------------------|----------------------------|
| * Adrenal Medulla         | * Bone Marrow               | * Brain                   | * Epididymis               |
| * Esophagus               | * Heart                     | * Intestine Large, Cecum  | * Intestine Large, Colon   |
| * Intestine Large, Rectum | * Intestine Small, Duodenum | * Intestine Small, Ileum  | * Intestine Small, Jejunum |
| * Islets, Pancreatic      | * Lymph Node, Bronchial     | * Lymph Node, Mediastinal | * Lymph Node, Mesenteric   |
| * Pancreas                | * Parathyroid Gland         | * Preputial Gland         | * Seminal Vesicle          |
| * Skin                    | * Spleen                    | * Stomach, Forestomach    | * Stomach, Glandular       |
| * Testes                  | * Thymus                    | * Thyroid Gland           | * Urinary Bladder          |

MISSING

- \* Mammary Gland

OBSERVATIONS

- |                          |                                   |                               |                              |
|--------------------------|-----------------------------------|-------------------------------|------------------------------|
| * Adrenal Cortex         |                                   | Hypertrophy                   | Mild                         |
| * Bone                   |                                   | Sarcoma                       | Metastatic (Salivary Glands) |
|                          | [ Sarcoma TGLs = 3-15+16 ]        |                               |                              |
| * Eye                    | Cornea                            | Inflammation                  | Chronic Active, Mild         |
|                          | [ Inflammation TGLs = 1-13 ]      |                               |                              |
| * Harderian Gland        |                                   | Sarcoma                       | Metastatic (Salivary Glands) |
| * Kidney                 |                                   | Nephropathy                   | Minimal                      |
| * Larynx                 |                                   | Metaplasia                    | Squamous, Mild               |
|                          |                                   | Sarcoma                       | Metastatic (Salivary Glands) |
| * Liver                  |                                   | Basophilic Focus              |                              |
| * Lung                   | Bronchiole                        | Hyperplasia                   | Minimal                      |
|                          |                                   | Inflammation                  | Granulomatous, Mild          |
|                          |                                   | Sarcoma                       | Metastatic (Salivary Glands) |
|                          | [ Inflammation TGLs = 4,5,6-5+4 ] |                               |                              |
| * Lymph Node, Mandibular |                                   | Hyperplasia                   | Lymphoid, Moderate           |
|                          | [ Hyperplasia TGLs = 2-14+17 ]    |                               |                              |
| * Nose                   |                                   | Accumulation, Hyaline Droplet | Marked                       |
|                          | Glands, Olfactory Epi             | Hyperplasia                   | Moderate                     |
|                          |                                   | Sarcoma                       | Metastatic (Salivary Glands) |
| * Pituitary Gland        | Pars Distalis                     | Adenoma                       |                              |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

---

ANIMAL ID: 644

TRT#: 7

SEX: Male

DAY ON TEST: 627

DOSE: 100 mg/m3

DISP: Moribund Sacrifice

HISTO: 56963

---

**ORGAN AND ACCOUNTABLE SITE STATUS**

---

\* Prostate

Hyperplasia

Mild

\* Salivary Glands

Sarcoma

[ Sarcoma TGLs = 7-17+14 ]

\* Trachea

Sarcoma

Metastatic (Salivary Glands)

---

PRIMARY CAUSE OF DEATH

- Salivary Glands Sarcoma

---

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 645

TRT#: 7

SEX: Male

DAY ON TEST: 730

DOSE: 100 mg/m3

DISP: Terminal Sacrifice

HISTO: 56964

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                          |                            |                           |                             |
|--------------------------|----------------------------|---------------------------|-----------------------------|
| * Adrenal Medulla        | * Bone                     | * Bone Marrow             | * Brain                     |
| * Epididymis             | * Esophagus                | * Eye                     | * Harderian Gland           |
| * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum | * Intestine Small, Duodenum |
| * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      | * Lymph Node, Bronchial     |
| * Lymph Node, Mandibular | * Lymph Node, Mediastinal  | * Lymph Node, Mesenteric  | * Parathyroid Gland         |
| * Preputial Gland        | * Prostate                 | * Salivary Glands         | * Seminal Vesicle           |
| * Skin                   | * Spleen                   | * Stomach, Forestomach    | * Stomach, Glandular        |
| * Testes                 | * Thymus                   | * Trachea                 | * Urinary Bladder           |

MISSING

- \* Mammary Gland

OBSERVATIONS

- |                   |                                  |                               |                     |
|-------------------|----------------------------------|-------------------------------|---------------------|
| * Adrenal Cortex  |                                  | Hypertrophy                   | Mild                |
| * Heart           |                                  | Cardiomyopathy                | Minimal             |
| * Kidney          |                                  | Infarct                       | Marked              |
|                   |                                  | Nephropathy                   | Mild                |
|                   | [ Infarct TGLs = 3-7+17 ]        |                               |                     |
| * Larynx          |                                  | Metaplasia                    | Squamous, Mild      |
| * Liver           |                                  | Basophilic Focus              |                     |
|                   |                                  | Clear Cell Focus              |                     |
|                   | [ Basophilic Focus TGLs = 2-15 ] |                               |                     |
| * Lung            | Alveolar Epith                   | Hyperplasia                   | Mild                |
|                   | Bronchiole                       | Hyperplasia                   | Minimal             |
|                   |                                  | Inflammation                  | Granulomatous, Mild |
|                   | [ Inflammation TGLs = 1-4+5 ]    |                               |                     |
| Lymph Node        | Renal                            | Ectasia                       | Minimal             |
|                   | [ Ectasia TGLs = 4-16 ]          |                               |                     |
| * Nose            |                                  | Accumulation, Hyaline Droplet | Marked              |
|                   | Glands, Olfactory Epi            | Hyperplasia                   | Mild                |
| * Pancreas        |                                  | Atrophy                       | Mild                |
| * Pituitary Gland | Pars Distalis                    | Hyperplasia                   | Minimal             |

\* PROTOCOL REQUIRED TISSUE

**TDMS No.** 20515 - 03

**Test Type:** CHRONIC

**Route:** RESPIRATORY EXPOSURE WHOLE BODY

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

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Metal working fluids (CIMSTAR 3800)

**CAS Number:** CIMSTAR3800

**Date Report Requested:** 01/21/2011

**Time Report Requested:** 07:49:51

**First Dose M/F:** 04/14/08 / 04/14/08

**Lab:** BNW

---

**ANIMAL ID:** 645

**TRT#:** 7

**SEX:** Male

**DAY ON TEST:** 730

**DOSE:** 100 mg/m3

**DISP:** Terminal Sacrifice

**HISTO:** 56964

---

**ORGAN AND ACCOUNTABLE SITE STATUS**

---

\* Thyroid Gland

C Cell

Hyperplasia

Minimal

---

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 646

TRT#: 7

SEX: Male

DAY ON TEST: 729

DOSE: 100 mg/m3

DISP: Terminal Sacrifice

HISTO: 56965

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                             |                           |                            |                           |
|-----------------------------|---------------------------|----------------------------|---------------------------|
| * Adrenal Medulla           | * Bone                    | * Bone Marrow              | * Brain                   |
| * Epididymis                | * Esophagus               | * Eye                      | * Harderian Gland         |
| * Heart                     | * Intestine Large, Cecum  | * Intestine Large, Colon   | * Intestine Large, Rectum |
| * Intestine Small, Duodenum | * Intestine Small, Ileum  | * Intestine Small, Jejunum | * Islets, Pancreatic      |
| * Lymph Node, Mandibular    | * Lymph Node, Mediastinal | * Lymph Node, Mesenteric   | * Pancreas                |
| * Parathyroid Gland         | * Preputial Gland         | * Prostate                 | * Salivary Glands         |
| * Seminal Vesicle           | * Skin                    | * Spleen                   | * Stomach, Forestomach    |
| * Stomach, Glandular        | * Thymus                  | * Trachea                  | * Urinary Bladder         |

MISSING

- |                         |                 |
|-------------------------|-----------------|
| * Lymph Node, Bronchial | * Mammary Gland |
|-------------------------|-----------------|

OBSERVATIONS

- |                   |                             |                               |                     |
|-------------------|-----------------------------|-------------------------------|---------------------|
| * Adrenal Cortex  |                             | Degeneration                  | Cystic, Mild        |
|                   |                             | Hyperplasia                   | Mild                |
| * Kidney          |                             | Nephropathy                   | Minimal             |
| * Larynx          |                             | Metaplasia                    | Squamous, Moderate  |
| * Liver           |                             | Clear Cell Focus              |                     |
| * Lung            | Alveolar Epith              | Hyperplasia                   | Moderate            |
|                   | Bronchiole                  | Hyperplasia                   | Minimal             |
|                   |                             | Inflammation                  | Granulomatous, Mild |
|                   | [ Hyperplasia TGLs = 2-4 ]  |                               |                     |
|                   | [ Inflammation TGLs = 1-5 ] |                               |                     |
| * Nose            |                             | Accumulation, Hyaline Droplet | Moderate            |
|                   | Glands, Olfactory Epi       | Hyperplasia                   | Moderate            |
| * Pituitary Gland | Pars Distalis               | Adenoma                       |                     |
|                   | [ Adenoma TGLs = 3-10 ]     |                               |                     |
| * Testes          |                             | Edema                         | Mild                |
| * Thyroid Gland   | C Cell                      | Hyperplasia                   | Minimal             |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 647

TRT#: 7

SEX: Male

DAY ON TEST: 730

DOSE: 100 mg/m3

DISP: Terminal Sacrifice

HISTO: 56966

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Medulla
- \* Epididymis
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Lymph Node, Mandibular
- \* Pituitary Gland
- \* Seminal Vesicle
- \* Stomach, Glandular
- \* Urinary Bladder
- \* Bone
- \* Esophagus
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Lymph Node, Mediastinal
- \* Preputial Gland
- \* Skin
- \* Testes
- \* Bone Marrow
- \* Eye
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Pancreas
- \* Prostate
- \* Spleen
- \* Thymus
- \* Brain
- \* Harderian Gland
- \* Intestine Small, Duodenum
- \* Lymph Node, Bronchial
- \* Parathyroid Gland
- \* Salivary Glands
- \* Stomach, Forestomach
- \* Trachea

MISSING

- \* Mammary Gland

OBSERVATIONS

- \* Adrenal Cortex
- \* Heart
- \* Kidney
- \* Larynx
- \* Liver
- \* Lung
- \* Lymph Node, Mesenteric
- \* Nose
- \* Thyroid Gland
- Alveolar Epith
- Bronchiole
- [ Inflammation TGLs = 2-4+5 ]
- [ Hemangiosarcoma TGLs = 1-8 ]
- Glands, Olfactory Epi
- C Cell
- Hyperplasia
- Cardiomyopathy
- Nephropathy
- Metaplasia
- Clear Cell Focus
- Hyperplasia
- Hyperplasia
- Inflammation
- Hemangiosarcoma
- Accumulation, Hyaline Droplet
- Hyperplasia
- Adenoma
- Mild
- Minimal
- Minimal
- Squamous, Moderate
- Minimal
- Minimal
- Granulomatous, Mild
- Marked
- Moderate

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 648

TRT#: 7

SEX: Male

DAY ON TEST: 731

DOSE: 100 mg/m3

DISP: Terminal Sacrifice

HISTO: 56967

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Medulla
- \* Epididymis
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Lymph Node, Mediastinal
- \* Preputial Gland
- \* Stomach, Forestomach
- \* Trachea
- \* Bone
- \* Esophagus
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Lymph Node, Mesenteric
- \* Salivary Glands
- \* Stomach, Glandular
- \* Urinary Bladder
- \* Bone Marrow
- \* Eye
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Pancreas
- \* Seminal Vesicle
- \* Testes
- \* Brain
- \* Harderian Gland
- \* Intestine Small, Duodenum
- \* Lymph Node, Mandibular
- \* Parathyroid Gland
- \* Spleen
- \* Thymus

MISSING

- \* Lymph Node, Bronchial
- \* Mammary Gland

OBSERVATIONS

- \* Adrenal Cortex
  - Degeneration
  - Cystic, Minimal
- \* Heart
  - Hypertrophy
  - Mild
- \* Kidney
  - Cardiomyopathy
  - Minimal
- \* Larynx
  - Lipoma
  - Nephropathy
  - Mild
- \* Liver
  - Metaplasia
  - Squamous, Moderate
  - Angiectasis
  - Mild
  - Basophilic Focus
- \* Lung
  - [ Angiectasis TGLs = 3-6+17 ]
  - Bronchiole
    - Hyperplasia
    - Minimal
  - [ Inflammation TGLs = 4-4+5 ]
  - Inflammation
    - Granulomatous, Mild
- \* Nose
  - Accumulation, Hyaline Droplet
  - Moderate
- \* Pituitary Gland
  - Glands, Olfactory Epi
    - Hyperplasia
    - Moderate
  - Pars Intermed
    - Hyperplasia
    - Mild
  - Pars Distalis
    - Hyperplasia
    - Mild
- \* Prostate
  - Hyperplasia
  - Moderate
- \* Skin
  - Subcut Tiss
    - Hemangiosarcoma
    - Inflammation
    - Chronic Active, Moderate

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

---

ANIMAL ID: 648

TRT#: 7

SEX: Male

DAY ON TEST: 731

DOSE: 100 mg/m3

DISP: Terminal Sacrifice

HISTO: 56967

---

**ORGAN AND ACCOUNTABLE SITE STATUS**

---

[ Hemangiosarcoma TGLs = 2-16 ]

[ Inflammation TGLs = 1-15 ]

\* Thyroid Gland

C Cell

Hyperplasia

Minimal

---



TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 649

TRT#: 7

SEX: Male

DAY ON TEST: 729

DOSE: 100 mg/m3

DISP: Terminal Sacrifice

HISTO: 56968

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                          |                            |                           |                             |
|--------------------------|----------------------------|---------------------------|-----------------------------|
| * Adrenal Medulla        | * Bone                     | * Bone Marrow             | * Brain                     |
| * Epididymis             | * Esophagus                | * Eye                     | * Heart                     |
| * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum | * Intestine Small, Duodenum |
| * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      | * Liver                     |
| * Lymph Node, Bronchial  | * Lymph Node, Mediastinal  | * Lymph Node, Mesenteric  | * Pancreas                  |
| * Parathyroid Gland      | * Preputial Gland          | * Prostate                | * Salivary Glands           |
| * Seminal Vesicle        | * Spleen                   | * Stomach, Forestomach    | * Stomach, Glandular        |
| * Thymus                 | * Trachea                  |                           |                             |

MISSING

- |                          |                 |
|--------------------------|-----------------|
| * Lymph Node, Mandibular | * Mammary Gland |
|--------------------------|-----------------|

INSUFFICIENT TISSUE

- \* Urinary Bladder

OBSERVATIONS

- |                   |                              |  |   |
|-------------------|------------------------------|--|---|
| * Adrenal Cortex  |                              | Hyperplasia                                | Mild                                      |
| * Harderian Gland |                              | Hyperplasia                                | Minimal                                   |
| * Kidney          |                              | Nephropathy                                | Moderate                                  |
| * Larynx          |                              | Metaplasia                                 | Squamous, Mild                            |
| * Lung            | Alveolar Epith<br>Bronchiole | Hyperplasia<br>Hyperplasia<br>Inflammation | Minimal<br>Minimal<br>Granulomatous, Mild |
|                   | [ Inflammation TGLs = 3-5 ]  |  |   |
| * Nose            |                              | Accumulation, Hyaline Droplet              | Moderate                                  |
|                   | Glands, Olfactory Epi        | Hyperplasia                                | Moderate                                  |
| * Pituitary Gland | Pars Distalis                | Adenoma                                    |   |
|                   | [ Adenoma TGLs = 4-10 ]      |  |   |
| * Skin            |                              | Inflammation                               | Chronic Active, Marked                    |
|                   | [ Inflammation TGLs = 2-15 ] |  |   |
| * Testes          |                              | Edema                                      | Moderate                                  |
| * Thyroid Gland   | C Cell                       | Hyperplasia                                | Minimal                                   |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 650

TRT#: 7

SEX: Male

DAY ON TEST: 729

DOSE: 100 mg/m3

DISP: Terminal Sacrifice

HISTO: 56969

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                             |                          |                            |                           |
|-----------------------------|--------------------------|----------------------------|---------------------------|
| * Adrenal Medulla           | * Bone                   | * Bone Marrow              | * Brain                   |
| * Epididymis                | * Esophagus              | * Eye                      | * Harderian Gland         |
| * Heart                     | * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum |
| * Intestine Small, Duodenum | * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      |
| * Kidney                    | * Lymph Node, Bronchial  | * Lymph Node, Mandibular   | * Lymph Node, Mediastinal |
| * Lymph Node, Mesenteric    | * Pancreas               | * Parathyroid Gland        | * Pituitary Gland         |
| * Preputial Gland           | * Prostate               | * Salivary Glands          | * Seminal Vesicle         |
| * Skin                      | * Spleen                 | * Stomach, Forestomach     | * Stomach, Glandular      |
| * Testes                    | * Thymus                 | * Trachea                  | * Urinary Bladder         |

MISSING

- \* Mammary Gland

OBSERVATIONS

- |                  |                             |                               |                     |
|------------------|-----------------------------|-------------------------------|---------------------|
| * Adrenal Cortex |                             | Hyperplasia                   | Mild                |
| * Larynx         |                             | Metaplasia                    | Squamous, Mild      |
| * Liver          |                             | Angiectasis                   | Minimal             |
|                  |                             | Basophilic Focus              |                     |
| * Lung           | [ Angiectasis TGLs = 1-6 ]  |                               |                     |
|                  | Bronchiole                  | Hyperplasia                   | Minimal             |
|                  |                             | Inflammation                  | Granulomatous, Mild |
|                  | [ Inflammation TGLs = 2-5 ] |                               |                     |
|                  | Lymph Node                  | Ectasia                       | Minimal             |
|                  | [ Ectasia TGLs = 3-15 ]     |                               |                     |
| * Nose           |                             | Accumulation, Hyaline Droplet | Marked              |
|                  | Glands, Olfactory Epi       | Hyperplasia                   | Moderate            |
| * Thyroid Gland  | C Cell                      | Hyperplasia                   | Mild                |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 101

TRT#: 2

SEX: Female

DAY ON TEST: 599

DOSE: Control

DISP: Moribund Sacrifice

HISTO: 56870

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                             |                          |                            |                           |
|-----------------------------|--------------------------|----------------------------|---------------------------|
| * Adrenal Cortex            | * Adrenal Medulla        | * Bone Marrow              | * Brain                   |
| * Clitoral Gland            | * Esophagus              | * Eye                      | * Harderian Gland         |
| * Heart                     | * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum |
| * Intestine Small, Duodenum | * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      |
| * Larynx                    | * Lung                   | * Lymph Node, Bronchial    | * Lymph Node, Mandibular  |
| * Lymph Node, Mediastinal   | * Lymph Node, Mesenteric | * Mammary Gland            | * Nose                    |
| * Parathyroid Gland         | Peripheral Nerve         | * Pituitary Gland          | * Salivary Glands         |
| * Skin                      | Spinal Cord              | * Spleen                   | * Stomach, Forestomach    |
| * Stomach, Glandular        | * Thymus                 | * Thyroid Gland            | * Trachea                 |
| * Urinary Bladder           | * Uterus                 |                            |                           |

OBSERVATIONS

- |                        |                  |          |
|------------------------|------------------|----------|
| * Bone                 | Callus           | Moderate |
| [ Callus TGLs = 2-14 ] |                  |          |
| * Kidney               | Nephropathy      | Minimal  |
| * Liver                | Basophilic Focus |          |
|                        | Clear Cell Focus |          |
| * Ovary                | Cyst             | Mild     |
| [ Cyst TGLs = 1-9 ]    |                  |          |
| * Pancreas             | Atrophy          | Mild     |

PRIMARY CAUSE OF DEATH - Bone Callus

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 102

TRT#: 2

SEX: Female

DAY ON TEST: 732

DOSE: Control

DISP: Terminal Sacrifice

HISTO: 56871

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Medulla
- \* Esophagus
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Lung
- \* Mammary Gland
- \* Parathyroid Gland
- \* Stomach, Glandular
- \* Urinary Bladder
- \* Bone
- \* Eye
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Lymph Node, Mandibular
- \* Nose
- \* Skin
- \* Thymus
- \* Uterus
- \* Bone Marrow
- \* Heart
- \* Intestine Small, Duodenum
- \* Kidney
- \* Lymph Node, Mediastinal
- \* Ovary
- \* Spleen
- \* Thyroid Gland
- \* Brain
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Larynx
- \* Lymph Node, Mesenteric
- \* Pancreas
- \* Stomach, Forestomach
- \* Trachea

MISSING

- \* Lymph Node, Bronchial

OBSERVATIONS

- \* Adrenal Cortex
- \* Clitoral Gland
- \* Harderian Gland
- \* Liver
- Mesentery
- [ Necrosis TGLs = 1-14 ]
- \* Pituitary Gland
- \* Salivary Glands
- Fat
- Pars Distalis
- Hyperplasia
- Inflammation
- Hyperplasia
- Basophilic Focus
- Clear Cell Focus
- Necrosis
- Hyperplasia
- Basophilic Focus
- Mild
- Chronic Active, Mild
- Minimal
- Mild
- Mild

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 103

TRT#: 2

SEX: Female

DAY ON TEST: 610

DOSE: Control

DISP: Moribund Sacrifice

HISTO: 56872

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Medulla
- \* Clitoral Gland
- \* Heart
- \* Intestine Small, Duodenum
- \* Kidney
- \* Lymph Node, Mediastinal
- \* Pancreas
- \* Spleen
- \* Urinary Bladder
- \* Bone
- \* Esophagus
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Larynx
- \* Lymph Node, Mesenteric
- \* Parathyroid Gland
- \* Stomach, Forestomach
- \* Uterus
- \* Bone Marrow
- \* Eye
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Lung
- \* Mammary Gland
- \* Salivary Glands
- \* Stomach, Glandular
- \* Brain
- \* Harderian Gland
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Lymph Node, Mandibular
- \* Ovary
- \* Skin
- \* Trachea

MISSING

- \* Lymph Node, Bronchial

OBSERVATIONS

- \* Adrenal Cortex
  - \* Liver
  - \* Nose
  - \* Pituitary Gland [ Adenoma TGLs = 2-10 ] Pars Distalis
  - \* Thymus [ Lymphoma Malignant TGLs = 1-3+14 ] Lymphoma Malignant
  - \* Thyroid Gland C Cell Hyperplasia
- Degeneration Cystic, Mild
- Basophilic Focus
- Eosinophilic Focus
- Fatty Change Mild
- Accumulation, Hyaline Droplet Minimal
- Adenoma
- Hyperplasia Moderate

PRIMARY CAUSE OF DEATH - Thymus Lymphoma Malignant

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 104

TRT#: 2

SEX: Female

DAY ON TEST: 732

DOSE: Control

DISP: Terminal Sacrifice

HISTO: 56873

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                            |                           |                             |                           |
|----------------------------|---------------------------|-----------------------------|---------------------------|
| * Bone                     | * Bone Marrow             | * Brain                     | * Esophagus               |
| * Eye                      | * Harderian Gland         | * Heart                     | * Intestine Large, Cecum  |
| * Intestine Large, Colon   | * Intestine Large, Rectum | * Intestine Small, Duodenum | * Intestine Small, Ileum  |
| * Intestine Small, Jejunum | * Islets, Pancreatic      | * Kidney                    | * Larynx                  |
| * Lung                     | * Lymph Node, Bronchial   | * Lymph Node, Mandibular    | * Lymph Node, Mediastinal |
| * Lymph Node, Mesenteric   | * Nose                    | * Pancreas                  | * Parathyroid Gland       |
| * Salivary Glands          | * Skin                    | * Spleen                    | * Stomach, Forestomach    |
| * Stomach, Glandular       | * Thymus                  | * Trachea                   | * Urinary Bladder         |

OBSERVATIONS

- |  |               |                         |                      |
|--|---------------|-------------------------|----------------------|
| * Adrenal Cortex                             |               | Hyperplasia             | Mild                 |
| * Adrenal Medulla                            |               | Pheochromocytoma Benign |                      |
| * Clitoral Gland                             |               | Inflammation            | Chronic Active, Mild |
| [ Inflammation TGLs = 2-9 ]                  |               |                         |                      |
| * Liver                                      |               | Basophilic Focus        |                      |
|  |               | Clear Cell Focus        |                      |
|  | Bile Duct     | Hyperplasia             | Moderate             |
| [ Hyperplasia TGLs = 4-14 ]                  |               |                         |                      |
| * Mammary Gland                              |               | Fibroadenoma            |                      |
|  |               | Galactocele             | Mild                 |
| [ Fibroadenoma TGLs = 1-17 ]                 |               |                         |                      |
| [ Galactocele TGLs = 3-16 ]                  |               |                         |                      |
| * Ovary                                      |               | Cyst                    | Moderate             |
| [ Cyst TGLs = 7-9 ]                          |               |                         |                      |
| * Pituitary Gland                            | Pars Distalis | Adenoma                 |                      |
| [ Adenoma TGLs = 5-10 ]                      |               |                         |                      |
| * Thyroid Gland                              | C Cell        | Hyperplasia             | Mild                 |
| * Uterus                                     | Endometrium   | Carcinoma               |                      |
| Note: Carcinoma was squamous cell carcinoma. |               |                         |                      |
| [ Carcinoma TGLs = 8-18 ]                    |               |                         |                      |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 105

TRT#: 2

SEX: Female

DAY ON TEST: 731

DOSE: Control

DISP: Terminal Sacrifice

HISTO: 56874

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Medulla
- \* Clitoral Gland
- \* Intestine Large, Cecum
- \* Intestine Small, Jejunum
- \* Lymph Node, Bronchial
- \* Nose
- \* Salivary Glands
- \* Stomach, Glandular
- \* Uterus
- \* Bone
- \* Esophagus
- \* Intestine Large, Colon
- \* Islets, Pancreatic
- \* Lymph Node, Mandibular
- \* Ovary
- \* Skin
- \* Thymus
- \* Bone Marrow
- \* Eye
- \* Intestine Small, Duodenum
- \* Larynx
- \* Lymph Node, Mediastinal
- \* Pancreas
- \* Spleen
- \* Trachea
- \* Brain
- \* Harderian Gland
- \* Intestine Small, Ileum
- \* Lung
- \* Lymph Node, Mesenteric
- \* Parathyroid Gland
- \* Stomach, Forestomach
- \* Urinary Bladder

INSUFFICIENT TISSUE

- \* Intestine Large, Rectum

OBSERVATIONS

- |   |  |   |
|---|--|---|
| <ul style="list-style-type: none"> <li>* Adrenal Cortex</li> <li>* Heart</li> <li>* Kidney</li> <li>* Liver</li> <li>* Mammary Gland<br/>[ Fibroadenoma TGLs = 1,4-14+15 ]</li> <li>* Pituitary Gland<br/>[ Adenoma TGLs = 3-10 ]</li> <li>* Thyroid Gland</li> </ul> | <ul style="list-style-type: none"> <li>Hyperplasia</li> <li>Cardiomyopathy</li> <li>Nephropathy</li> <li>Basophilic Focus</li> <li>Fibroadenoma</li> <li>Adenoma</li> <li>Hyperplasia</li> </ul> | <ul style="list-style-type: none"> <li>Mild</li> <li>Minimal</li> <li>Minimal</li> <li>Multiple</li> <li>Minimal</li> </ul> |
|---|--|---|

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 106

TRT#: 2

SEX: Female

DAY ON TEST: 690

DOSE: Control

DISP: Natural Death

HISTO: 56875

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                           |                   |                         |                          |
|---------------------------|-------------------|-------------------------|--------------------------|
| * Adrenal Cortex          | * Bone            | * Bone Marrow           | * Brain                  |
| * Clitoral Gland          | * Esophagus       | * Kidney                | * Larynx                 |
| * Liver                   | * Lung            | * Lymph Node, Bronchial | * Lymph Node, Mandibular |
| * Lymph Node, Mediastinal | * Mammary Gland   | * Ovary                 | * Parathyroid Gland      |
| * Salivary Glands         | * Spleen          | * Stomach, Forestomach  | * Stomach, Glandular     |
| * Thymus                  | * Urinary Bladder | * Uterus                |                          |

AUTO PRECLUDES DIAG.

- |                           |                             |                          |                            |
|---------------------------|-----------------------------|--------------------------|----------------------------|
| * Eye                     | * Harderian Gland           | * Intestine Large, Cecum | * Intestine Large, Colon   |
| * Intestine Large, Rectum | * Intestine Small, Duodenum | * Intestine Small, Ileum | * Intestine Small, Jejunum |
| * Islets, Pancreatic      | * Lymph Node, Mesenteric    | * Pancreas               | * Trachea                  |

OBSERVATIONS

- |   |               |                               |          |
|---|---------------|-------------------------------|----------|
| * Adrenal Medulla<br>[ Pheochromocytoma Malignant TGLs = 5-14 ] |               | Pheochromocytoma Malignant    |          |
| * Heart   |               | Cardiomyopathy                | Minimal  |
| * Nose  |               | Accumulation, Hyaline Droplet | Mild     |
| * Pituitary Gland<br>[ Adenoma TGLs = 3-10 ]                    | Pars Distalis | Adenoma                       |          |
| * Skin<br>[ Angiectasis TGLs = 1,6-15+16 ]                      |               | Angiectasis                   | Moderate |
| * Thyroid Gland   | C Cell        | Adenoma                       |          |

PRIMARY CAUSE OF DEATH - Adrenal Medulla Pheochromocytoma Malignant

\* PROTOCOL REQUIRED TISSUE



TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 107

TRT#: 2

SEX: Female

DAY ON TEST: 731

DOSE: Control

DISP: Moribund Sacrifice

HISTO: 56876

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Medulla
- \* Clitoral Gland
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Lymph Node, Bronchial
- \* Mammary Gland
- \* Parathyroid Gland
- \* Stomach, Forestomach
- \* Uterus
- \* Bone
- \* Esophagus
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Lymph Node, Mandibular
- \* Nose
- \* Salivary Glands
- \* Thymus
- \* Bone Marrow
- \* Harderian Gland
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Lymph Node, Mediastinal
- \* Ovary
- \* Skin
- \* Trachea
- \* Brain
- \* Heart
- \* Intestine Small, Duodenum
- \* Larynx
- \* Lymph Node, Mesenteric
- \* Pancreas
- \* Spleen
- \* Urinary Bladder

OBSERVATIONS

- \* Adrenal Cortex
- \* Eye
- \* Kidney
  - [ Inflammation TGLs = 7,8,9-14 ]
  - [ Nephropathy TGLs = 4-7 ]
- \* Liver
- \* Lung
  - [ Hyperplasia TGLs = 1-5 ]
- Lymph Node
  - [ Ectasia TGLs = 5-16 ]
- Mesentery
  - [ Necrosis TGLs = 3-15 ]
- \* Pituitary Gland
  - [ Adenoma TGLs = 2-10 ]
- \* Stomach, Glandular
- \* Thyroid Gland
- Retina
  - Necrosis
  - Atrophy
  - Inflammation
  - Nephropathy
- Alveolar Epith
  - Basophilic Focus
  - Hyperplasia
- Renal
  - Ectasia
- Fat
  - Necrosis
- Pars Distalis
  - Adenoma
- C Cell
  - Mineralization
  - Hyperplasia

PRIMARY CAUSE OF DEATH - Kidney Inflammation

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 108

TRT#: 2

SEX: Female

DAY ON TEST: 731

DOSE: Control

DISP: Terminal Sacrifice

HISTO: 56877

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                             |                           |                            |                           |
|-----------------------------|---------------------------|----------------------------|---------------------------|
| * Adrenal Medulla           | * Bone                    | * Bone Marrow              | * Brain                   |
| * Clitoral Gland            | * Esophagus               | * Eye                      | * Harderian Gland         |
| * Heart                     | * Intestine Large, Cecum  | * Intestine Large, Colon   | * Intestine Large, Rectum |
| * Intestine Small, Duodenum | * Intestine Small, Ileum  | * Intestine Small, Jejunum | * Islets, Pancreatic      |
| * Kidney                    | * Larynx                  | * Lung                     | * Lymph Node, Bronchial   |
| * Lymph Node, Mandibular    | * Lymph Node, Mediastinal | * Lymph Node, Mesenteric   | * Mammary Gland           |
| * Nose                      | * Ovary                   | * Pancreas                 | * Pituitary Gland         |
| * Salivary Glands           | * Skin                    | * Spleen                   | * Stomach, Forestomach    |
| * Stomach, Glandular        | * Trachea                 | * Urinary Bladder          | * Uterus                  |

MISSING

- \* Parathyroid Gland

OBSERVATIONS

- |                                    |        |                    |      |
|------------------------------------|--------|--------------------|------|
| * Adrenal Cortex                   |        | Angiectasis        | Mild |
| [ Angiectasis TGLs = 2-7 ]         |        |                    |      |
| * Liver                            |        | Basophilic Focus   |      |
|                                    |        | Clear Cell Focus   |      |
| * Thymus                           |        | Lymphoma Malignant |      |
| [ Lymphoma Malignant TGLs = 1-14 ] |        |                    |      |
| * Thyroid Gland                    | C Cell | Hyperplasia        | Mild |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 109

TRT#: 2

SEX: Female

DAY ON TEST: 732

DOSE: Control

DISP: Terminal Sacrifice

HISTO: 56878

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                            |                          |                             |                          |
|----------------------------|--------------------------|-----------------------------|--------------------------|
| * Adrenal Medulla          | * Bone                   | * Bone Marrow               | * Brain                  |
| * Clitoral Gland           | * Esophagus              | * Eye                       | * Harderian Gland        |
| * Intestine Large, Cecum   | * Intestine Large, Colon | * Intestine Small, Duodenum | * Intestine Small, Ileum |
| * Intestine Small, Jejunum | * Islets, Pancreatic     | * Larynx                    | * Lung                   |
| * Lymph Node, Bronchial    | * Lymph Node, Mandibular | * Lymph Node, Mediastinal   | * Lymph Node, Mesenteric |
| * Mammary Gland            | * Nose                   | * Ovary                     | * Parathyroid Gland      |
| * Salivary Glands          | * Skin                   | * Spleen                    | * Stomach, Forestomach   |
| * Stomach, Glandular       | * Thymus                 | * Thyroid Gland             | * Trachea                |
| * Urinary Bladder          | * Uterus                 |                             |                          |

INSUFFICIENT TISSUE

- \* Intestine Large, Rectum

OBSERVATIONS

- |                   |                              |                  |                     |
|-------------------|------------------------------|------------------|---------------------|
| * Adrenal Cortex  |                              | Hyperplasia      | Mild                |
|                   |                              | Hypertrophy      | Mild                |
| * Heart           |                              | Cardiomyopathy   | Minimal             |
| * Kidney          |                              | Nephropathy      | Moderate            |
| * Liver           |                              | Basophilic Focus |                     |
| * Pancreas        |                              | Atrophy          | Minimal             |
| * Pituitary Gland | Pars Distalis                | Adenoma          |                     |
|                   | [ Adenoma TGLs = 2-10 ]      |                  |                     |
| Tongue            |                              | Inflammation     | Granulomatous, Mild |
|                   | [ Inflammation TGLs = 1-14 ] |                  |                     |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 110

TRT#: 2

SEX: Female

DAY ON TEST: 712

DOSE: Control

DISP: Moribund Sacrifice

HISTO: 56879

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                          |                            |                           |                             |
|--------------------------|----------------------------|---------------------------|-----------------------------|
| * Adrenal Medulla        | * Bone                     | * Bone Marrow             | * Brain                     |
| * Clitoral Gland         | * Esophagus                | * Eye                     | * Harderian Gland           |
| * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum | * Intestine Small, Duodenum |
| * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      | * Larynx                    |
| * Lung                   | * Lymph Node, Bronchial    | * Lymph Node, Mandibular  | * Lymph Node, Mediastinal   |
| * Lymph Node, Mesenteric | * Mammary Gland            | * Ovary                   | * Pancreas                  |
| * Parathyroid Gland      | * Salivary Glands          | * Skin                    | * Spleen                    |
| * Stomach, Forestomach   | * Stomach, Glandular       | * Thymus                  | * Trachea                   |
| * Urinary Bladder        |                            |                           |                             |

OBSERVATIONS

- |                         |               |                               |              |
|-------------------------|---------------|-------------------------------|--------------|
| * Adrenal Cortex        |               | Degeneration                  | Cystic, Mild |
|                         |               | Hypertrophy                   | Mild         |
| * Heart                 |               | Cardiomyopathy                | Minimal      |
| * Kidney                |               | Nephropathy                   | Mild         |
| * Liver                 |               | Basophilic Focus              |              |
| * Nose                  |               | Accumulation, Hyaline Droplet | Minimal      |
| * Pituitary Gland       | Pars Distalis | Adenoma                       |              |
| [ Adenoma TGLs = 3-10 ] |               |                               |              |
| * Thyroid Gland         | C Cell        | Hyperplasia                   | Mild         |
| * Uterus                | Endometrium   | Hyperplasia                   | Cystic, Mild |

PRIMARY CAUSE OF DEATH - Pituitary Gland Pars Distalis Adenoma

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 111

TRT#: 2

SEX: Female

DAY ON TEST: 731

DOSE: Control

DISP: Terminal Sacrifice

HISTO: 56880

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Bone
- \* Esophagus
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Liver
- \* Lymph Node, Mediastinal
- \* Pancreas
- \* Stomach, Forestomach
- \* Urinary Bladder
- \* Bone Marrow
- \* Eye
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Lung
- \* Lymph Node, Mesenteric
- \* Parathyroid Gland
- \* Stomach, Glandular
- \* Uterus
- \* Brain
- \* Harderian Gland
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Lymph Node, Bronchial
- \* Nose
- \* Salivary Glands
- \* Thymus
- \* Clitoral Gland
- \* Heart
- \* Intestine Small, Duodenum
- \* Larynx
- \* Lymph Node, Mandibular
- \* Ovary
- \* Spleen
- \* Trachea

OBSERVATIONS

- \* Adrenal Cortex
  - \* Adrenal Medulla
  - \* Kidney
  - \* Mammary Gland
    - [ Fibroadenoma TGLs = 3,6-16+14 ]
  - Mesentery
    - [ Necrosis TGLs = 2-15 ]
  - \* Pituitary Gland
    - [ Adenoma TGLs = 1-10 ]
  - \* Skin
    - [ Inflammation TGLs = 4,5-17+18 ]
  - \* Thyroid Gland
- |  |              |                        |
|--|--------------|------------------------|
|  | Degeneration | Cystic, Moderate       |
|  | Hyperplasia  | Moderate               |
|  | Nephropathy  | Minimal                |
|  | Fibroadenoma | Multiple               |
|  | Necrosis     | Mild                   |
|  | Adenoma      |                        |
|  | Inflammation | Chronic Active, Marked |
|  | Hyperplasia  | Minimal                |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 112

TRT#: 2

SEX: Female

DAY ON TEST: 731

DOSE: Control

DISP: Terminal Sacrifice

HISTO: 56881

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                             |                          |                            |                           |
|-----------------------------|--------------------------|----------------------------|---------------------------|
| * Adrenal Medulla           | * Bone                   | * Bone Marrow              | * Brain                   |
| * Clitoral Gland            | * Esophagus              | * Eye                      | * Harderian Gland         |
| * Heart                     | * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum |
| * Intestine Small, Duodenum | * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      |
| * Kidney                    | * Lung                   | * Lymph Node, Mandibular   | * Lymph Node, Mediastinal |
| * Lymph Node, Mesenteric    | * Mammary Gland          | * Nose                     | * Parathyroid Gland       |
| * Salivary Glands           | * Skin                   | * Spleen                   | * Stomach, Forestomach    |
| * Stomach, Glandular        | * Thymus                 | * Trachea                  | * Urinary Bladder         |

MISSING

- \* Lymph Node, Bronchial

OBSERVATIONS

- |                              |               |                  |                       |
|------------------------------|---------------|------------------|-----------------------|
| * Adrenal Cortex             |               | Hyperplasia      | Mild                  |
|                              |               | Hypertrophy      | Mild                  |
| * Larynx                     |               | Metaplasia       | Squamous, Mild        |
| * Liver                      |               | Basophilic Focus |                       |
|                              |               | Clear Cell Focus |                       |
| Lymph Node                   | Renal         | Pigmentation     | Hemosiderin, Marked   |
|                              | Lumbar        | Pigmentation     | Hemosiderin, Moderate |
|                              |               |                  |                       |
|                              |               |                  |                       |
|                              |               |                  |                       |
| [ Pigmentation TGLs = 4-15 ] |               |                  |                       |
| [ Pigmentation TGLs = 5-16 ] |               |                  |                       |
| * Ovary                      |               | Carcinoma        |                       |
|                              |               |                  |                       |
| [ Carcinoma TGLs = 2-14 ]    |               |                  |                       |
| * Pancreas                   |               | Atrophy          | Minimal               |
| * Pituitary Gland            | Pars Distalis | Adenoma          |                       |
|                              |               |                  |                       |
| [ Adenoma TGLs = 1-10 ]      |               |                  |                       |
| * Thyroid Gland              | C Cell        | Hyperplasia      | Mild                  |
| * Uterus                     | Endometrium   | Hyperplasia      | Cystic, Marked        |
|                              |               |                  |                       |
| [ Hyperplasia TGLs = 3-10 ]  |               |                  |                       |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 113

TRT#: 2

SEX: Female

DAY ON TEST: 586

DOSE: Control

DISP: Moribund Sacrifice

HISTO: 56882

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                            |                           |                             |                           |
|----------------------------|---------------------------|-----------------------------|---------------------------|
| * Adrenal Cortex           | * Adrenal Medulla         | * Bone                      | * Bone Marrow             |
| * Esophagus                | * Eye                     | * Harderian Gland           | * Intestine Large, Cecum  |
| * Intestine Large, Colon   | * Intestine Large, Rectum | * Intestine Small, Duodenum | * Intestine Small, Ileum  |
| * Intestine Small, Jejunum | * Islets, Pancreatic      | * Kidney                    | * Larynx                  |
| * Lung                     | * Lymph Node, Bronchial   | * Lymph Node, Mandibular    | * Lymph Node, Mediastinal |
| * Lymph Node, Mesenteric   | * Mammary Gland           | * Nose                      | * Ovary                   |
| * Pancreas                 | * Parathyroid Gland       | * Pituitary Gland           | * Salivary Glands         |
| * Skin                     | * Spleen                  | * Stomach, Forestomach      | * Stomach, Glandular      |
| * Thymus                   | * Thyroid Gland           | * Trachea                   | * Urinary Bladder         |

OBSERVATIONS

- |                  |          |                  |                          |
|------------------|----------|------------------|--------------------------|
| * Brain          | Meninges | Hyperplasia      | Minimal                  |
| * Clitoral Gland |          | Inflammation     | Chronic Active, Moderate |
| * Heart          |          | Cardiomyopathy   | Minimal                  |
| * Liver          |          | Basophilic Focus |                          |
| * Uterus         |          | Sarcoma Stromal  |                          |

[ Sarcoma Stromal TGLs = 1-14+15 ]

PRIMARY CAUSE OF DEATH

- Uterus Sarcoma Stromal

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 114

TRT#: 2

SEX: Female

DAY ON TEST: 733

DOSE: Control

DISP: Terminal Sacrifice

HISTO: 56883

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                             |                           |                            |                           |
|-----------------------------|---------------------------|----------------------------|---------------------------|
| * Adrenal Medulla           | * Bone                    | * Bone Marrow              | * Brain                   |
| * Clitoral Gland            | * Esophagus               | * Eye                      | * Harderian Gland         |
| * Heart                     | * Intestine Large, Cecum  | * Intestine Large, Colon   | * Intestine Large, Rectum |
| * Intestine Small, Duodenum | * Intestine Small, Ileum  | * Intestine Small, Jejunum | * Islets, Pancreatic      |
| * Kidney                    | * Larynx                  | * Lung                     | * Lymph Node, Bronchial   |
| * Lymph Node, Mandibular    | * Lymph Node, Mediastinal | * Lymph Node, Mesenteric   | * Mammary Gland           |
| * Nose                      | * Ovary                   | * Pancreas                 | * Parathyroid Gland       |
| * Salivary Glands           | * Skin                    | * Spleen                   | * Stomach, Forestomach    |
| * Stomach, Glandular        | * Thymus                  | * Thyroid Gland            | * Trachea                 |
| * Urinary Bladder           |                           |                            |                           |

OBSERVATIONS

- |                          |               |                  |                  |
|--------------------------|---------------|------------------|------------------|
| * Adrenal Cortex         |               | Degeneration     | Cystic, Moderate |
| * Liver                  |               | Basophilic Focus |                  |
|                          |               | Cyst             | Mild             |
| [ Cyst TGLs = 1,2-6+14 ] |               |                  |                  |
| * Pituitary Gland        | Pars Distalis | Adenoma          |                  |
| [ Adenoma TGLs = 3-10 ]  |               |                  |                  |
| * Uterus                 | Endometrium   | Hyperplasia      | Cystic, Minimal  |

\* PROTOCOL REQUIRED TISSUE



TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 115

TRT#: 2

SEX: Female

DAY ON TEST: 731

DOSE: Control

DISP: Terminal Sacrifice

HISTO: 56884

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                             |                          |                            |                           |
|-----------------------------|--------------------------|----------------------------|---------------------------|
| * Adrenal Cortex            | * Adrenal Medulla        | * Bone                     | * Bone Marrow             |
| * Brain                     | * Esophagus              | * Eye                      | * Harderian Gland         |
| * Heart                     | * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum |
| * Intestine Small, Duodenum | * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      |
| * Kidney                    | * Larynx                 | * Lung                     | * Lymph Node, Mandibular  |
| * Lymph Node, Mediastinal   | * Lymph Node, Mesenteric | * Mammary Gland            | * Nose                    |
| * Pancreas                  | * Parathyroid Gland      | * Salivary Glands          | * Skin                    |
| * Spleen                    | * Stomach, Forestomach   | * Stomach, Glandular       | * Thymus                  |
| * Trachea                   | * Urinary Bladder        |                            |                           |

MISSING

- \* Lymph Node, Bronchial

OBSERVATIONS

- |                   |                               |                  |                          |
|-------------------|-------------------------------|------------------|--------------------------|
| * Clitoral Gland  |                               | Inflammation     | Chronic Active, Moderate |
| * Liver           |                               | Basophilic Focus |                          |
|                   |                               | Clear Cell Focus |                          |
| * Ovary           |                               | Cyst             | Minimal                  |
|                   | [ Cyst TGLs = 1-9 ]           |                  |                          |
| * Pituitary Gland | Pars Distalis                 | Hyperplasia      | Mild                     |
| * Thyroid Gland   | C Cell                        | Adenoma          |                          |
| * Uterus          | Endometrium                   | Hyperplasia      | Cystic, Mild             |
|                   | [ Polyp Stromal TGLs = 2-14 ] | Polyp Stromal    |                          |

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 116

TRT#: 2

SEX: Female

DAY ON TEST: 645

DOSE: Control

DISP: Moribund Sacrifice

HISTO: 56885

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                             |                           |                            |                           |
|-----------------------------|---------------------------|----------------------------|---------------------------|
| * Adrenal Medulla           | * Bone                    | * Bone Marrow              | * Brain                   |
| * Clitoral Gland            | * Esophagus               | * Eye                      | * Harderian Gland         |
| * Heart                     | * Intestine Large, Cecum  | * Intestine Large, Colon   | * Intestine Large, Rectum |
| * Intestine Small, Duodenum | * Intestine Small, Ileum  | * Intestine Small, Jejunum | * Islets, Pancreatic      |
| * Larynx                    | * Liver                   | * Lung                     | * Lymph Node, Bronchial   |
| * Lymph Node, Mandibular    | * Lymph Node, Mediastinal | * Lymph Node, Mesenteric   | * Nose                    |
| * Ovary                     | * Parathyroid Gland       | * Salivary Glands          | * Skin                    |
| * Spleen                    | * Stomach, Forestomach    | * Stomach, Glandular       | * Thymus                  |
| * Trachea                   | * Urinary Bladder         | * Uterus                   |                           |

OBSERVATIONS

- |                         |               |              |                  |
|-------------------------|---------------|--------------|------------------|
| * Adrenal Cortex        |               | Degeneration | Cystic, Moderate |
| * Kidney                |               | Nephropathy  | Minimal          |
| * Mammary Gland         |               | Fibroadenoma |                  |
| * Pancreas              |               | Atrophy      | Mild             |
| * Pituitary Gland       | Pars Distalis | Adenoma      |                  |
| [ Adenoma TGLs = 1-10 ] |               |              |                  |
| * Thyroid Gland         | C Cell        | Hyperplasia  | Mild             |

PRIMARY CAUSE OF DEATH - Pituitary Gland Pars Distalis Adenoma

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 117

TRT#: 2

SEX: Female

DAY ON TEST: 732

DOSE: Control

DISP: Terminal Sacrifice

HISTO: 56886

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                             |                          |                            |                           |
|-----------------------------|--------------------------|----------------------------|---------------------------|
| * Adrenal Cortex            | * Adrenal Medulla        | * Bone                     | * Bone Marrow             |
| * Brain                     | * Clitoral Gland         | * Esophagus                | * Eye                     |
| * Harderian Gland           | * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum |
| * Intestine Small, Duodenum | * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      |
| * Kidney                    | * Larynx                 | * Liver                    | * Lung                    |
| * Lymph Node, Bronchial     | * Lymph Node, Mandibular | * Lymph Node, Mesenteric   | * Mammary Gland           |
| * Nose                      | * Pancreas               | * Parathyroid Gland        | * Salivary Glands         |
| * Skin                      | * Spleen                 | * Stomach, Forestomach     | * Stomach, Glandular      |
| * Thymus                    | * Thyroid Gland          | * Trachea                  | * Urinary Bladder         |

MISSING

- \* Lymph Node, Mediastinal

OBSERVATIONS

- |                   |                             |                |         |
|-------------------|-----------------------------|----------------|---------|
| * Heart           |                             | Cardiomyopathy | Minimal |
| Mesentery         | Fat                         | Necrosis       | Mild    |
|                   | [ Necrosis TGLs = 2-14 ]    |                |         |
| * Ovary           |                             | Cyst           | Mild    |
|                   | [ Cyst TGLs = 1-9 ]         |                |         |
| * Pituitary Gland | Pars Distalis               | Hyperplasia    | Mild    |
| * Uterus          | Cervix                      | Hypertrophy    | Mild    |
|                   | [ Hypertrophy TGLs = 3-14 ] |                |         |

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 118

TRT#: 2

SEX: Female

DAY ON TEST: 732

DOSE: Control

DISP: Terminal Sacrifice

HISTO: 56887

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                            |                           |                             |                           |
|----------------------------|---------------------------|-----------------------------|---------------------------|
| * Adrenal Medulla          | * Bone                    | * Bone Marrow               | * Clitoral Gland          |
| * Esophagus                | * Eye                     | * Harderian Gland           | * Intestine Large, Cecum  |
| * Intestine Large, Colon   | * Intestine Large, Rectum | * Intestine Small, Duodenum | * Intestine Small, Ileum  |
| * Intestine Small, Jejunum | * Islets, Pancreatic      | * Kidney                    | * Larynx                  |
| * Lung                     | * Lymph Node, Bronchial   | * Lymph Node, Mandibular    | * Lymph Node, Mediastinal |
| * Lymph Node, Mesenteric   | * Mammary Gland           | * Nose                      | * Ovary                   |
| * Pancreas                 | * Parathyroid Gland       | * Salivary Glands           | * Skin                    |
| * Spleen                   | * Stomach, Forestomach    | * Stomach, Glandular        | * Thymus                  |
| * Trachea                  | * Urinary Bladder         | * Uterus                    |                           |

OBSERVATIONS

- |                                  |               |                            |         |
|----------------------------------|---------------|----------------------------|---------|
| * Adrenal Cortex                 |               | Hypertrophy                | Mild    |
| * Brain                          |               | Granular Cell Tumor Benign |         |
| * Heart                          |               | Cardiomyopathy             | Minimal |
| * Liver                          |               | Basophilic Focus           |         |
|                                  |               | Clear Cell Focus           |         |
| [ Clear Cell Focus TGLs = 2-14 ] |               |                            |         |
| * Pituitary Gland                | Pars Distalis | Adenoma                    |         |
| [ Adenoma TGLs = 1-10 ]          |               |                            |         |
| * Thyroid Gland                  | C Cell        | Hyperplasia                | Minimal |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 119

TRT#: 2

SEX: Female

DAY ON TEST: 731

DOSE: Control

DISP: Terminal Sacrifice

HISTO: 56888

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                            |                           |                             |                          |
|----------------------------|---------------------------|-----------------------------|--------------------------|
| * Bone                     | * Bone Marrow             | * Brain                     | * Clitoral Gland         |
| * Esophagus                | * Eye                     | * Harderian Gland           | * Intestine Large, Cecum |
| * Intestine Large, Colon   | * Intestine Large, Rectum | * Intestine Small, Duodenum | * Intestine Small, Ileum |
| * Intestine Small, Jejunum | * Islets, Pancreatic      | * Kidney                    | * Larynx                 |
| * Lymph Node, Bronchial    | * Lymph Node, Mandibular  | * Lymph Node, Mediastinal   | * Lymph Node, Mesenteric |
| * Nose                     | * Pancreas                | * Parathyroid Gland         | * Salivary Glands        |
| * Skin                     | * Spleen                  | * Stomach, Forestomach      | * Stomach, Glandular     |
| * Thymus                   | * Trachea                 | * Urinary Bladder           | * Uterus                 |

MISSING

- \* Adrenal Medulla

OBSERVATIONS

- |                   |                              |              |                |
|-------------------|------------------------------|--------------|----------------|
| * Adrenal Cortex  |                              | Degeneration | Cystic, Marked |
| * Heart           | Endocardium                  | Hyperplasia  | Moderate       |
| * Liver           |                              | Fatty Change | Moderate       |
|                   | [ Fatty Change TGLs = 3-14 ] |              |                |
| * Lung            | Alveolar Epith               | Hyperplasia  | Minimal        |
| * Mammary Gland   |                              | Fibroadenoma |                |
| * Ovary           |                              | Cyst         | Mild           |
|                   | [ Cyst TGLs = 2-9 ]          |              |                |
| * Pituitary Gland | Pars Distalis                | Adenoma      |                |
|                   | [ Adenoma TGLs = 1-10 ]      |              |                |
| * Thyroid Gland   | C Cell                       | Hyperplasia  | Mild           |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 120

TRT#: 2

SEX: Female

DAY ON TEST: 732

DOSE: Control

DISP: Terminal Sacrifice

HISTO: 56889

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                          |                            |                           |                             |
|--------------------------|----------------------------|---------------------------|-----------------------------|
| * Adrenal Medulla        | * Bone                     | * Bone Marrow             | * Brain                     |
| * Clitoral Gland         | * Esophagus                | * Eye                     | * Harderian Gland           |
| * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum | * Intestine Small, Duodenum |
| * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      | * Larynx                    |
| * Lung                   | * Lymph Node, Bronchial    | * Lymph Node, Mandibular  | * Lymph Node, Mediastinal   |
| * Lymph Node, Mesenteric | * Nose                     | * Ovary                   | * Pancreas                  |
| * Parathyroid Gland      | * Salivary Glands          | * Skin                    | * Spleen                    |
| * Stomach, Forestomach   | * Stomach, Glandular       | * Thymus                  | * Trachea                   |
| * Urinary Bladder        | * Uterus                   |                           |                             |

OBSERVATIONS

- |                                  |               |  |                              |
|----------------------------------|---------------|--|------------------------------|
| * Adrenal Cortex                 |               | Degeneration<br>Hyperplasia<br>Hypertrophy | Cystic, Mild<br>Mild<br>Mild |
| [ Degeneration TGLs = 4-7 ]      |               |  |                              |
| * Heart                          |               | Cardiomyopathy                             | Minimal                      |
| * Kidney                         |               | Nephropathy                                | Minimal                      |
| * Liver                          |               | Basophilic Focus                           |                              |
| [ Basophilic Focus TGLs = 3-15 ] |               |  |                              |
| * Mammary Gland                  |               | Carcinoma                                  |                              |
| [ Carcinoma TGLs = 1-14 ]        |               |  |                              |
| * Pituitary Gland                | Pars Distalis | Adenoma                                    |                              |
| [ Adenoma TGLs = 2-10 ]          |               |  |                              |
| * Thyroid Gland                  | C Cell        | Hyperplasia                                | Mild                         |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 121

TRT#: 2

SEX: Female

DAY ON TEST: 733

DOSE: Control

DISP: Terminal Sacrifice

HISTO: 56890

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                             |                          |                          |                           |
|-----------------------------|--------------------------|--------------------------|---------------------------|
| * Adrenal Medulla           | * Bone                   | * Bone Marrow            | * Brain                   |
| * Clitoral Gland            | * Esophagus              | * Eye                    | * Harderian Gland         |
| * Heart                     | * Intestine Large, Cecum | * Intestine Large, Colon | * Intestine Large, Rectum |
| * Intestine Small, Duodenum | * Intestine Small, Ileum | * Islets, Pancreatic     | * Kidney                  |
| * Larynx                    | * Lung                   | * Lymph Node, Bronchial  | * Lymph Node, Mandibular  |
| * Lymph Node, Mediastinal   | * Lymph Node, Mesenteric | * Mammary Gland          | * Nose                    |
| * Ovary                     | * Pancreas               | * Parathyroid Gland      | * Salivary Glands         |
| * Skin                      | * Spleen                 | * Stomach, Forestomach   | * Stomach, Glandular      |
| * Thymus                    | * Trachea                | * Urinary Bladder        | * Uterus                  |

OBSERVATIONS

- |                            |                              |                  |                 |
|----------------------------|------------------------------|------------------|-----------------|
| * Adrenal Cortex           |                              | Adenoma          |                 |
|                            |                              | Degeneration     | Cystic, Minimal |
|                            | [ Degeneration TGLs = 2-7 ]  |                  |                 |
| * Intestine Small, Jejunum |                              | Diverticulum     | Mild            |
|                            | [ Diverticulum TGLs = 4-16 ] |                  |                 |
| * Liver                    |                              | Angiectasis      | Minimal         |
|                            |                              | Basophilic Focus |                 |
|                            |                              | Clear Cell Focus |                 |
|                            | [ Angiectasis TGLs = 1-14 ]  |                  |                 |
| Mesentery                  | Fat                          | Necrosis         | Mild            |
|                            | [ Necrosis TGLs = 3-15 ]     |                  |                 |
| * Pituitary Gland          | Pars Distalis                | Adenoma          |                 |
| * Thyroid Gland            | C Cell                       | Hyperplasia      | Mild            |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 122

TRT#: 2

SEX: Female

DAY ON TEST: 731

DOSE: Control

DISP: Terminal Sacrifice

HISTO: 56891

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                             |                          |                            |                           |
|-----------------------------|--------------------------|----------------------------|---------------------------|
| * Adrenal Medulla           | * Bone                   | * Bone Marrow              | * Brain                   |
| * Clitoral Gland            | * Esophagus              | * Eye                      | * Harderian Gland         |
| * Heart                     | * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum |
| * Intestine Small, Duodenum | * Intestine Small, Ileum | * Intestine Small, Jejunum | * Kidney                  |
| * Larynx                    | * Lung                   | * Lymph Node, Mandibular   | * Lymph Node, Mediastinal |
| * Lymph Node, Mesenteric    | * Mammary Gland          | * Nose                     | * Pancreas                |
| * Parathyroid Gland         | * Pituitary Gland        | * Salivary Glands          | * Skin                    |
| * Spleen                    | * Stomach, Forestomach   | * Stomach, Glandular       | * Thymus                  |
| * Thyroid Gland             | * Trachea                | * Urinary Bladder          |                           |

MISSING

- \* Lymph Node, Bronchial

OBSERVATIONS

- |                           |           |                  |          |
|---------------------------|-----------|------------------|----------|
| * Adrenal Cortex          |           | Hyperplasia      | Mild     |
| * Islets, Pancreatic      |           | Carcinoma        |          |
| [ Carcinoma TGLs = 3-14 ] |           |                  |          |
| * Liver                   |           | Basophilic Focus |          |
|                           | Bile Duct | Hyperplasia      | Minimal  |
| * Ovary                   |           | Cyst             | Moderate |
| [ Cyst TGLs = 1-9 ]       |           |                  |          |
| * Uterus                  |           | Polyp Stromal    |          |

\* PROTOCOL REQUIRED TISSUE



TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 123

TRT#: 2

SEX: Female

DAY ON TEST: 698

DOSE: Control

DISP: Moribund Sacrifice

HISTO: 56892

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                           |                            |                           |                             |
|---------------------------|----------------------------|---------------------------|-----------------------------|
| * Adrenal Medulla         | * Bone                     | * Bone Marrow             | * Brain                     |
| * Esophagus               | * Eye                      | * Harderian Gland         | * Heart                     |
| * Intestine Large, Cecum  | * Intestine Large, Colon   | * Intestine Large, Rectum | * Intestine Small, Duodenum |
| * Intestine Small, Ileum  | * Intestine Small, Jejunum | * Islets, Pancreatic      | * Kidney                    |
| * Larynx                  | * Lung                     | * Lymph Node, Bronchial   | * Lymph Node, Mandibular    |
| * Lymph Node, Mediastinal | * Nose                     | * Ovary                   | * Pancreas                  |
| * Parathyroid Gland       | * Salivary Glands          | * Skin                    | * Spleen                    |
| * Thymus                  | * Trachea                  | * Urinary Bladder         | * Uterus                    |

OBSERVATIONS

- |  |                  |                          |
|--|------------------|--------------------------|
| * Adrenal Cortex                       | Degeneration     | Cystic, Minimal          |
|  | Hyperplasia      | Mild                     |
| * Clitoral Gland                       | Inflammation     | Chronic Active, Moderate |
| * Liver                                | Angiectasis      | Mild                     |
|  | Basophilic Focus |                          |
| [ Angiectasis TGLs = 4-14 ]            |                  |                          |
| * Lymph Node, Mesenteric               | Ectasia          | Moderate                 |
| [ Ectasia TGLs = 7-20 ]                |                  |                          |
| * Mammary Gland                        | Carcinoma        |                          |
|  | Fibroadenoma     | Multiple                 |
| [ Carcinoma TGLs = 2-16 ]              |                  |                          |
| [ Fibroadenoma TGLs = 2,3,8-16+17+21 ] |                  |                          |
| * Pituitary Gland                      | Pars Distalis    | Adenoma                  |
| [ Adenoma TGLs = 6-10 ]                |                  |                          |
| * Stomach, Forestomach                 |                  | Leiomyosarcoma           |
| [ Leiomyosarcoma TGLs = 5-18+19 ]      |                  |                          |
| * Stomach, Glandular                   |                  | Leiomyosarcoma           |
| [ Leiomyosarcoma TGLs = 5-18+19 ]      |                  |                          |
| * Thyroid Gland                        | C Cell           | Hyperplasia              |
|  |                  | Moderate                 |

PRIMARY CAUSE OF DEATH - Stomach, Glandular Leiomyosarcoma

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 124

TRT#: 2

SEX: Female

DAY ON TEST: 703

DOSE: Control

DISP: Moribund Sacrifice

HISTO: 56893

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                             |                           |                            |                           |
|-----------------------------|---------------------------|----------------------------|---------------------------|
| * Adrenal Medulla           | * Bone                    | * Bone Marrow              | * Brain                   |
| * Clitoral Gland            | * Esophagus               | * Eye                      | * Harderian Gland         |
| * Heart                     | * Intestine Large, Cecum  | * Intestine Large, Colon   | * Intestine Large, Rectum |
| * Intestine Small, Duodenum | * Intestine Small, Ileum  | * Intestine Small, Jejunum | * Islets, Pancreatic      |
| * Kidney                    | * Larynx                  | * Lung                     | * Lymph Node, Bronchial   |
| * Lymph Node, Mandibular    | * Lymph Node, Mediastinal | * Lymph Node, Mesenteric   | * Mammary Gland           |
| * Ovary                     | * Pancreas                | * Parathyroid Gland        | * Salivary Glands         |
| * Skin                      | * Spleen                  | * Stomach, Forestomach     | * Stomach, Glandular      |
| * Thymus                    | * Trachea                 | * Urinary Bladder          | * Uterus                  |

OBSERVATIONS

- |                         |               |                               |                 |
|-------------------------|---------------|-------------------------------|-----------------|
| * Adrenal Cortex        |               | Degeneration                  | Cystic, Minimal |
| * Liver                 |               | Basophilic Focus              |                 |
| * Nose                  |               | Accumulation, Hyaline Droplet | Mild            |
| * Pituitary Gland       | Pars Distalis | Adenoma                       |                 |
| [ Adenoma TGLs = 1-10 ] |               |                               |                 |
| * Thyroid Gland         | C Cell        | Hyperplasia                   | Mild            |

PRIMARY CAUSE OF DEATH - Pituitary Gland Pars Distalis Adenoma

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 125

TRT#: 2

SEX: Female

DAY ON TEST: 733

DOSE: Control

DISP: Terminal Sacrifice

HISTO: 56894

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                             |                          |                            |                           |
|-----------------------------|--------------------------|----------------------------|---------------------------|
| * Adrenal Medulla           | * Bone                   | * Bone Marrow              | * Brain                   |
| * Clitoral Gland            | * Esophagus              | * Eye                      | * Harderian Gland         |
| * Heart                     | * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum |
| * Intestine Small, Duodenum | * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      |
| * Larynx                    | * Lung                   | * Lymph Node, Bronchial    | * Lymph Node, Mediastinal |
| * Mammary Gland             | * Ovary                  | * Pancreas                 | * Parathyroid Gland       |
| * Salivary Glands           | * Skin                   | * Spleen                   | * Stomach, Forestomach    |
| * Stomach, Glandular        | * Thymus                 | * Trachea                  | * Urinary Bladder         |
| * Uterus                    |                          |                            |                           |

MISSING

- \* Lymph Node, Mandibular

OBSERVATIONS

- |                          |                                 |                               |         |
|--------------------------|---------------------------------|-------------------------------|---------|
| * Adrenal Cortex         |                                 | Hyperplasia                   | Mild    |
| * Kidney                 |                                 | Nephropathy                   | Minimal |
| * Liver                  |                                 | Basophilic Focus              |         |
|                          | Bile Duct                       | Hyperplasia                   | Mild    |
| * Lymph Node, Mesenteric |                                 | Hemangiosarcoma               |         |
|                          | [ Hemangiosarcoma TGLs = 2-14 ] |                               |         |
| * Nose                   |                                 | Accumulation, Hyaline Droplet | Minimal |
| * Pituitary Gland        | Pars Distalis                   | Adenoma                       |         |
|                          | [ Adenoma TGLs = 1-10 ]         |                               |         |
| * Thyroid Gland          | C Cell                          | Hyperplasia                   | Minimal |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 126

TRT#: 2

SEX: Female

DAY ON TEST: 733

DOSE: Control

DISP: Terminal Sacrifice

HISTO: 56895

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                           |                            |                           |                             |
|---------------------------|----------------------------|---------------------------|-----------------------------|
| * Adrenal Medulla         | * Bone                     | * Bone Marrow             | * Brain                     |
| * Clitoral Gland          | * Esophagus                | * Eye                     | * Harderian Gland           |
| * Intestine Large, Cecum  | * Intestine Large, Colon   | * Intestine Large, Rectum | * Intestine Small, Duodenum |
| * Intestine Small, Ileum  | * Intestine Small, Jejunum | * Islets, Pancreatic      | * Kidney                    |
| * Larynx                  | * Lung                     | * Lymph Node, Bronchial   | * Lymph Node, Mandibular    |
| * Lymph Node, Mediastinal | * Lymph Node, Mesenteric   | * Mammary Gland           | * Nose                      |
| * Pancreas                | * Parathyroid Gland        | * Salivary Glands         | * Skin                      |
| * Spleen                  | * Stomach, Forestomach     | * Stomach, Glandular      | * Thymus                    |
| * Thyroid Gland           | * Trachea                  | * Urinary Bladder         | * Uterus                    |

OBSERVATIONS

- |                         |               |                             |              |
|-------------------------|---------------|-----------------------------|--------------|
| * Adrenal Cortex        |               | Degeneration                | Cystic, Mild |
| * Heart                 |               | Cardiomyopathy              | Minimal      |
| * Liver                 |               | Basophilic Focus            |              |
|                         |               | Clear Cell Focus            |              |
| * Ovary                 |               | Granulosa Cell Tumor Benign |              |
| * Pituitary Gland       | Pars Distalis | Adenoma                     |              |
| [ Adenoma TGLs = 1-10 ] |               |                             |              |

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 127

TRT#: 2

SEX: Female

DAY ON TEST: 732

DOSE: Control

DISP: Terminal Sacrifice

HISTO: 56896

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                             |                           |                            |                           |
|-----------------------------|---------------------------|----------------------------|---------------------------|
| * Adrenal Medulla           | * Bone                    | * Bone Marrow              | * Brain                   |
| * Clitoral Gland            | * Esophagus               | * Eye                      | * Harderian Gland         |
| * Heart                     | * Intestine Large, Cecum  | * Intestine Large, Colon   | * Intestine Large, Rectum |
| * Intestine Small, Duodenum | * Intestine Small, Ileum  | * Intestine Small, Jejunum | * Islets, Pancreatic      |
| * Kidney                    | * Larynx                  | * Lung                     | * Lymph Node, Bronchial   |
| * Lymph Node, Mandibular    | * Lymph Node, Mediastinal | * Lymph Node, Mesenteric   | * Mammary Gland           |
| * Nose                      | * Ovary                   | * Pancreas                 | * Parathyroid Gland       |
| * Salivary Glands           | * Spleen                  | * Stomach, Forestomach     | * Stomach, Glandular      |
| * Thymus                    | * Trachea                 | * Urinary Bladder          | * Uterus                  |

OBSERVATIONS

- |                              |               |                  |                          |
|------------------------------|---------------|------------------|--------------------------|
| * Adrenal Cortex             |               | Hyperplasia      | Mild                     |
| * Liver                      |               | Clear Cell Focus |                          |
| Mesentery                    | Fat           | Necrosis         | Mild                     |
| [ Necrosis TGLs = 2-15 ]     |               |                  |                          |
| * Pituitary Gland            | Pars Distalis | Adenoma          |                          |
| * Skin                       |               | Inflammation     | Chronic Active, Moderate |
| [ Inflammation TGLs = 1-14 ] |               |                  |                          |
| * Thyroid Gland              | C Cell        | Hyperplasia      | Moderate                 |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 128

TRT#: 2

SEX: Female

DAY ON TEST: 499

DOSE: Control

DISP: Moribund Sacrifice

HISTO: 56897

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Cortex
- \* Brain
- \* Harderian Gland
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Lymph Node, Bronchial
- \* Mammary Gland
- \* Salivary Glands
- \* Stomach, Glandular
- \* Uterus
- \* Adrenal Medulla
- \* Clitoral Gland
- \* Heart
- \* Intestine Small, Duodenum
- \* Kidney
- \* Lymph Node, Mandibular
- \* Ovary
- \* Skin
- \* Thymus
- \* Bone
- \* Esophagus
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Larynx
- \* Lymph Node, Mediastinal
- \* Pancreas
- \* Spleen
- \* Trachea
- \* Bone Marrow
- \* Eye
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Lung
- \* Lymph Node, Mesenteric
- \* Parathyroid Gland
- \* Stomach, Forestomach
- \* Urinary Bladder

OBSERVATIONS

- \* Liver
- \* Nose
- \* Pituitary Gland
- [ Adenoma TGLs = 1-10 ]
- \* Thyroid Gland
- Pars Distalis
- C Cell
- Fatty Change
- Thrombosis
- Adenoma
- Hyperplasia
- Mild
- Mild
- Minimal

PRIMARY CAUSE OF DEATH - Pituitary Gland Pars Distalis Adenoma

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 129

TRT#: 2

SEX: Female

DAY ON TEST: 733

DOSE: Control

DISP: Terminal Sacrifice

HISTO: 56898

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

* Adrenal Medulla	* Bone	* Bone Marrow	* Brain
* Clitoral Gland	* Esophagus	* Eye	* Intestine Large, Cecum
* Intestine Large, Colon	* Intestine Large, Rectum	* Intestine Small, Duodenum	* Intestine Small, Ileum
* Intestine Small, Jejunum	* Islets, Pancreatic	* Larynx	* Lung
* Lymph Node, Bronchial	* Lymph Node, Mandibular	* Lymph Node, Mediastinal	* Lymph Node, Mesenteric
* Nose	* Pancreas	* Parathyroid Gland	* Salivary Glands
* Skin	* Spleen	* Stomach, Forestomach	* Stomach, Glandular
* Thymus	* Trachea	* Urinary Bladder	

OBSERVATIONS

* Adrenal Cortex		Degeneration	Cystic, Mild
		Hypertrophy	Mild
* Harderian Gland		Hyperplasia	Mild
* Heart		Cardiomyopathy	Minimal
* Kidney	Transit Epithe	Hyperplasia	Marked
		Nephropathy	Minimal
* Liver		Basophilic Focus	
	Bile Duct	Hyperplasia	Minimal
* Mammary Gland		Carcinoma	Multiple
		Fibroadenoma	Multiple
	[ Carcinoma TGLs = 2,3-15+16 ]		
	[ Fibroadenoma TGLs = 1,3-14+16 ]		
* Ovary		Cyst	Moderate
	[ Cyst TGLs = 5-9 ]		
* Pituitary Gland	Pars Distalis	Adenoma	
	[ Adenoma TGLs = 4-10 ]		
* Thyroid Gland	C Cell	Hyperplasia	Mild
* Uterus	Endometrium	Hyperplasia	Cystic, Mild

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 130

TRT#: 2

SEX: Female

DAY ON TEST: 610

DOSE: Control

DISP: Moribund Sacrifice

HISTO: 56899

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                           |                             |                           |                            |
|---------------------------|-----------------------------|---------------------------|----------------------------|
| * Adrenal Cortex          | * Adrenal Medulla           | * Bone                    | * Bone Marrow              |
| * Brain                   | * Clitoral Gland            | * Esophagus               | * Eye                      |
| * Harderian Gland         | * Heart                     | * Intestine Large, Cecum  | * Intestine Large, Colon   |
| * Intestine Large, Rectum | * Intestine Small, Duodenum | * Intestine Small, Ileum  | * Intestine Small, Jejunum |
| * Islets, Pancreatic      | * Kidney                    | * Larynx                  | * Liver                    |
| * Lung                    | * Lymph Node, Mandibular    | * Lymph Node, Mediastinal | * Lymph Node, Mesenteric   |
| * Mammary Gland           | * Ovary                     | * Parathyroid Gland       | * Salivary Glands          |
| * Skin                    | * Spleen                    | * Stomach, Forestomach    | * Stomach, Glandular       |
| * Thymus                  | * Trachea                   | * Urinary Bladder         | * Uterus                   |

MISSING

- \* Lymph Node, Bronchial

OBSERVATIONS

- |                         |               |                               |          |
|-------------------------|---------------|-------------------------------|----------|
| * Nose                  |               | Accumulation, Hyaline Droplet | Moderate |
| * Pancreas              |               | Atrophy                       | Minimal  |
| * Pituitary Gland       | Pars Distalis | Adenoma                       |          |
| [ Adenoma TGLs = 4-10 ] |               |                               |          |
| * Thyroid Gland         | C Cell        | Hyperplasia                   | Minimal  |

PRIMARY CAUSE OF DEATH - Pituitary Gland Pars Distalis Adenoma

\* PROTOCOL REQUIRED TISSUE



TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 131

TRT#: 2

SEX: Female

DAY ON TEST: 731

DOSE: Control

DISP: Terminal Sacrifice

HISTO: 56900

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                          |                            |                           |                             |
|--------------------------|----------------------------|---------------------------|-----------------------------|
| * Adrenal Medulla        | * Bone                     | * Bone Marrow             | * Brain                     |
| * Clitoral Gland         | * Esophagus                | * Eye                     | * Harderian Gland           |
| * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum | * Intestine Small, Duodenum |
| * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      | * Larynx                    |
| * Lung                   | * Lymph Node, Bronchial    | * Lymph Node, Mandibular  | * Lymph Node, Mediastinal   |
| * Lymph Node, Mesenteric | * Mammary Gland            | * Ovary                   | * Pancreas                  |
| * Parathyroid Gland      | * Salivary Glands          | * Skin                    | * Spleen                    |
| * Stomach, Forestomach   | * Stomach, Glandular       | * Thymus                  | * Trachea                   |
| * Urinary Bladder        | * Uterus                   |                           |                             |

OBSERVATIONS

- |                   |  |  |                          |
|-------------------|--|--|--------------------------|
| * Adrenal Cortex  |  | Degeneration<br>Hypertrophy                    | Cystic, Moderate<br>Mild |
|                   | [ Degeneration TGLs = 4-7 ]                |  |                          |
| * Heart           |  | Cardiomyopathy                                 | Minimal                  |
| * Kidney          |  | Nephropathy                                    | Minimal                  |
| * Liver           |  | Basophilic Focus<br>Hepatodiaphragmatic Nodule |                          |
|                   | [ Hepatodiaphragmatic Nodule TGLs = 2-14 ] |  |                          |
| * Nose            |  | Accumulation, Hyaline Droplet                  | Minimal                  |
| * Pituitary Gland | Pars Distalis                              | Adenoma  |                          |
|                   | [ Adenoma TGLs = 1-10 ]                    |  |                          |
| * Thyroid Gland   | C Cell                                     | Hyperplasia                                    | Mild                     |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 132

TRT#: 2

SEX: Female

DAY ON TEST: 732

DOSE: Control

DISP: Terminal Sacrifice

HISTO: 56901

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                             |                           |                            |                           |
|-----------------------------|---------------------------|----------------------------|---------------------------|
| * Adrenal Cortex            | * Adrenal Medulla         | * Bone                     | * Bone Marrow             |
| * Brain                     | * Clitoral Gland          | * Esophagus                | * Eye                     |
| * Heart                     | * Intestine Large, Cecum  | * Intestine Large, Colon   | * Intestine Large, Rectum |
| * Intestine Small, Duodenum | * Intestine Small, Ileum  | * Intestine Small, Jejunum | * Islets, Pancreatic      |
| * Kidney                    | * Larynx                  | * Lung                     | * Lymph Node, Bronchial   |
| * Lymph Node, Mandibular    | * Lymph Node, Mediastinal | * Lymph Node, Mesenteric   | * Mammary Gland           |
| * Ovary                     | * Pancreas                | * Parathyroid Gland        | * Pituitary Gland         |
| * Salivary Glands           | * Skin                    | * Spleen                   | * Stomach, Forestomach    |
| * Stomach, Glandular        | * Thymus                  | * Trachea                  | * Urinary Bladder         |

OBSERVATIONS

- |                   |                             |                               |              |
|-------------------|-----------------------------|-------------------------------|--------------|
| * Harderian Gland |                             | Hyperplasia                   | Mild         |
| * Liver           |                             | Angiectasis                   | Moderate     |
|                   |                             | Basophilic Focus              |              |
|                   | [ Angiectasis TGLs = 2-14 ] |                               |              |
| * Nose            |                             | Accumulation, Hyaline Droplet | Minimal      |
| * Thyroid Gland   | C Cell                      | Hyperplasia                   | Mild         |
|                   | Follicular Cel              | Hyperplasia                   | Minimal      |
| * Uterus          | Endometrium                 | Hyperplasia                   | Cystic, Mild |
|                   | [ Hyperplasia TGLs = 1-10 ] |                               |              |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 133

TRT#: 2

SEX: Female

DAY ON TEST: 619

DOSE: Control

DISP: Moribund Sacrifice

HISTO: 56902

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                          |                            |                           |                             |
|--------------------------|----------------------------|---------------------------|-----------------------------|
| * Adrenal Cortex         | * Bone                     | * Bone Marrow             | * Brain                     |
| * Clitoral Gland         | * Esophagus                | * Harderian Gland         | * Heart                     |
| * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum | * Intestine Small, Duodenum |
| * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      | * Kidney                    |
| * Larynx                 | * Liver                    | * Lung                    | * Lymph Node, Bronchial     |
| * Lymph Node, Mandibular | * Lymph Node, Mediastinal  | * Lymph Node, Mesenteric  | * Mammary Gland             |
| * Ovary                  | * Parathyroid Gland        | * Salivary Glands         | * Skin                      |
| * Spleen                 | * Stomach, Forestomach     | * Stomach, Glandular      | * Thymus                    |
| * Trachea                | * Urinary Bladder          |                           |                             |

OBSERVATIONS

- |                             |               |                               |          |
|-----------------------------|---------------|-------------------------------|----------|
| * Adrenal Medulla           |               | Hyperplasia                   | Minimal  |
| * Eye                       | Retina        | Atrophy                       | Minimal  |
| * Nose                      |               | Accumulation, Hyaline Droplet | Minimal  |
| * Pancreas                  |               | Atrophy                       | Minimal  |
| * Pituitary Gland           | Pars Distalis | Adenoma                       |          |
| [ Adenoma TGLs = 4-10 ]     |               |                               |          |
| * Thyroid Gland             | C Cell        | Hyperplasia                   | Minimal  |
| * Uterus                    | Cervix        | Hypertrophy                   | Moderate |
| [ Hypertrophy TGLs = 3-14 ] |               |                               |          |

PRIMARY CAUSE OF DEATH - Pituitary Gland Pars Distalis Adenoma

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 134

TRT#: 2

SEX: Female

DAY ON TEST: 732

DOSE: Control

DISP: Terminal Sacrifice

HISTO: 56903

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                             |                          |                            |                           |
|-----------------------------|--------------------------|----------------------------|---------------------------|
| * Adrenal Medulla           | * Bone                   | * Bone Marrow              | * Brain                   |
| * Clitoral Gland            | * Esophagus              | * Eye                      | * Harderian Gland         |
| * Heart                     | * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum |
| * Intestine Small, Duodenum | * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      |
| * Kidney                    | * Larynx                 | * Liver                    | * Lung                    |
| * Lymph Node, Bronchial     | * Lymph Node, Mandibular | * Lymph Node, Mediastinal  | * Lymph Node, Mesenteric  |
| * Mammary Gland             | * Nose                   | * Ovary                    | * Pancreas                |
| * Parathyroid Gland         | * Salivary Glands        | * Skin                     | * Spleen                  |
| * Stomach, Forestomach      | * Stomach, Glandular     | * Thymus                   | * Trachea                 |
| * Urinary Bladder           |                          |                            |                           |

OBSERVATIONS

- |                               |               |               |              |
|-------------------------------|---------------|---------------|--------------|
| * Adrenal Cortex              |               | Degeneration  | Cystic, Mild |
|                               |               | Hyperplasia   | Mild         |
|                               |               | Hypertrophy   | Mild         |
| Mesentery                     | Fat           | Necrosis      | Mild         |
| [ Necrosis TGLs = 1-15 ]      |               |               |              |
| * Pituitary Gland             | Pars Distalis | Hyperplasia   | Moderate     |
| * Thyroid Gland               | C Cell        | Hyperplasia   | Minimal      |
| * Uterus                      |               | Polyp Stromal | Multiple     |
| [ Polyp Stromal TGLs = 2-14 ] |               |               |              |

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 135

TRT#: 2

SEX: Female

DAY ON TEST: 732

DOSE: Control

DISP: Terminal Sacrifice

HISTO: 56904

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                             |                          |                            |                           |
|-----------------------------|--------------------------|----------------------------|---------------------------|
| * Adrenal Medulla           | * Bone                   | * Bone Marrow              | * Brain                   |
| * Clitoral Gland            | * Esophagus              | * Eye                      | * Harderian Gland         |
| * Heart                     | * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum |
| * Intestine Small, Duodenum | * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      |
| * Larynx                    | * Lung                   | * Lymph Node, Bronchial    | * Lymph Node, Mandibular  |
| * Lymph Node, Mediastinal   | * Lymph Node, Mesenteric | * Mammary Gland            | * Nose                    |
| * Ovary                     | * Pancreas               | * Parathyroid Gland        | * Pituitary Gland         |
| * Salivary Glands           | * Skin                   | * Spleen                   | * Stomach, Forestomach    |
| * Stomach, Glandular        | * Thymus                 | * Trachea                  | * Urinary Bladder         |
| * Uterus                    |                          |                            |                           |

OBSERVATIONS

- |                  |  |                                   |              |
|------------------|--|-----------------------------------|--------------|
| * Adrenal Cortex |  | Accessory Adrenal Cortical Nodule | Moderate     |
|                  |  | Degeneration                      | Cystic, Mild |
|                  |  | Hyperplasia                       | Mild         |
|                  |  | Hypertrophy                       | Mild         |
|                  | [ Accessory Adrenal Cortical Nodule TGLs = 3-7 ] |                                   |              |
| * Kidney         |  | Nephropathy                       | Mild         |
| * Liver          |  | Basophilic Focus                  |              |
|                  |  | Mixed Cell Focus                  |              |
|                  | [ Mixed Cell Focus TGLs = 2-14 ]                 |                                   |              |
| * Thyroid Gland  | C Cell   | Hyperplasia                       | Minimal      |

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 136

TRT#: 2

SEX: Female

DAY ON TEST: 732

DOSE: Control

DISP: Terminal Sacrifice

HISTO: 56905

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                          |                            |                           |                             |
|--------------------------|----------------------------|---------------------------|-----------------------------|
| * Adrenal Medulla        | * Bone                     | * Bone Marrow             | * Brain                     |
| * Clitoral Gland         | * Esophagus                | * Eye                     | * Harderian Gland           |
| * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum | * Intestine Small, Duodenum |
| * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      | * Kidney                    |
| * Larynx                 | * Lung                     | * Lymph Node, Mandibular  | * Lymph Node, Mediastinal   |
| * Lymph Node, Mesenteric | * Nose                     | * Ovary                   | * Pancreas                  |
| * Parathyroid Gland      | * Salivary Glands          | * Skin                    | * Spleen                    |
| * Stomach, Forestomach   | * Stomach, Glandular       | * Thymus                  | * Trachea                   |
| * Urinary Bladder        |                            |                           |                             |

MISSING

- \* Lymph Node, Bronchial

OBSERVATIONS

- |                             |               |                  |                  |
|-----------------------------|---------------|------------------|------------------|
| * Adrenal Cortex            |               | Degeneration     | Cystic, Moderate |
|                             |               | Hypertrophy      | Moderate         |
| * Heart                     |               | Cardiomyopathy   | Minimal          |
| * Liver                     |               | Angiectasis      | Mild             |
|                             |               | Basophilic Focus |                  |
|                             |               | Clear Cell Focus |                  |
| [ Angiectasis TGLs = 2-14 ] |               |                  |                  |
| * Mammary Gland             |               | Galactocele      | Moderate         |
|                             |               | Hyperplasia      | Mild             |
| [ Galactocele TGLs = 1-15 ] |               |                  |                  |
| * Pituitary Gland           | Pars Intermed | Hyperplasia      | Mild             |
| * Thyroid Gland             | C Cell        | Hyperplasia      | Moderate         |
| * Uterus                    | Endometrium   | Hyperplasia      | Cystic, Minimal  |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 137

TRT#: 2

SEX: Female

DAY ON TEST: 402

DOSE: Control

DISP: Natural Death

HISTO: 56906

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                          |                          |                           |                             |
|--------------------------|--------------------------|---------------------------|-----------------------------|
| * Adrenal Medulla        | * Bone                   | * Bone Marrow             | * Brain                     |
| * Clitoral Gland         | * Eye                    | * Harderian Gland         | * Heart                     |
| * Intestine Large, Cecum | * Intestine Large, Colon | * Intestine Large, Rectum | * Intestine Small, Duodenum |
| * Intestine Small, Ileum | * Islets, Pancreatic     | * Kidney                  | * Larynx                    |
| * Lymph Node, Bronchial  | * Lymph Node, Mandibular | * Lymph Node, Mediastinal | * Lymph Node, Mesenteric    |
| * Mammary Gland          | * Nose                   | * Ovary                   | * Pancreas                  |
| * Parathyroid Gland      | * Salivary Glands        | * Skin                    | * Spleen                    |
| * Thymus                 | * Thyroid Gland          | * Trachea                 | * Urinary Bladder           |
| * Uterus                 |                          |                           |                             |

OBSERVATIONS

- |                            |                |                  |                 |
|----------------------------|----------------|------------------|-----------------|
| * Adrenal Cortex           |                | Degeneration     | Cystic, Mild    |
| * Esophagus                |                | Inflammation     | Acute, Marked   |
|                            |                | Necrosis         | Marked          |
| * Intestine Small, Jejunum |                | Inflammation     | Acute, Marked   |
|                            |                | Necrosis         | Marked          |
| * Liver                    |                | Basophilic Focus |                 |
| * Lung                     | Alveolar Epith | Hyperplasia      | Minimal         |
| * Pituitary Gland          | Pars Distalis  | Hyperplasia      | Mild            |
| * Stomach, Forestomach     |                | Inflammation     | Acute, Moderate |
|                            |                | Ulcer            | Marked          |
| * Stomach, Glandular       |                | Inflammation     | Acute, Mild     |
|                            |                | Necrosis         | Mild            |

PRIMARY CAUSE OF DEATH - Esophagus Necrosis

CONTRIBUTORY CAUSE OF DEATH - Intestine Small, Jejunum Necrosis

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 138

TRT#: 2

SEX: Female

DAY ON TEST: 731

DOSE: Control

DISP: Terminal Sacrifice

HISTO: 56907

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                          |                            |                           |                             |
|--------------------------|----------------------------|---------------------------|-----------------------------|
| * Adrenal Medulla        | * Bone                     | * Bone Marrow             | * Brain                     |
| * Clitoral Gland         | * Esophagus                | * Eye                     | * Harderian Gland           |
| * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum | * Intestine Small, Duodenum |
| * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      | * Larynx                    |
| * Lung                   | * Ovary                    | * Pancreas                | * Parathyroid Gland         |
| * Salivary Glands        | * Skin                     | * Spleen                  | * Stomach, Forestomach      |
| * Stomach, Glandular     | * Trachea                  | * Urinary Bladder         |                             |

MISSING

- \* Lymph Node, Bronchial

OBSERVATIONS

- |                           |                                   |                               |                  |
|---------------------------|-----------------------------------|-------------------------------|------------------|
| * Adrenal Cortex          |                                   | Degeneration                  | Cystic, Moderate |
|                           |                                   | Hyperplasia                   | Mild             |
|                           |                                   | Hypertrophy                   | Mild             |
| * Heart                   |                                   | Cardiomyopathy                | Minimal          |
| * Kidney                  |                                   | Nephropathy                   | Minimal          |
| * Liver                   |                                   | Clear Cell Focus              |                  |
| * Lymph Node, Mandibular  |                                   | Lymphoma Malignant            |                  |
| * Lymph Node, Mediastinal |                                   | Lymphoma Malignant            |                  |
| * Lymph Node, Mesenteric  |                                   | Lymphoma Malignant            |                  |
| * Mammary Gland           |                                   | Carcinoma                     |                  |
|                           |                                   | Fibroadenoma                  |                  |
|                           | [ Carcinoma TGLs = 1-14 ]         |                               |                  |
| * Nose                    |                                   | Accumulation, Hyaline Droplet | Mild             |
| * Pituitary Gland         | Pars Distalis                     | Adenoma                       |                  |
|                           | [ Adenoma TGLs = 2-10 ]           |                               |                  |
| * Thymus                  |                                   | Lymphoma Malignant            |                  |
|                           | [ Lymphoma Malignant TGLs = 4-3 ] |                               |                  |
| * Thyroid Gland           | Follicular Cel                    | Adenoma                       |                  |
|                           | C Cell                            | Hyperplasia                   | Marked           |
| * Uterus                  | Endometrium                       | Carcinoma                     |                  |

\* PROTOCOL REQUIRED TISSUE



**TDMS No.** 20515 - 03

**Test Type:** CHRONIC

**Route:** RESPIRATORY EXPOSURE WHOLE BODY

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

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Metal working fluids (CIMSTAR 3800)

**CAS Number:** CIMSTAR3800

**Date Report Requested:** 01/21/2011

**Time Report Requested:** 07:49:51

**First Dose M/F:** 04/14/08 / 04/14/08

**Lab:** BNW

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**ANIMAL ID:** 138

**TRT#:** 2

**SEX:** Female

**DAY ON TEST:** 731

**DOSE:** Control

**DISP:** Terminal Sacrifice

**HISTO:** 56907

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**ORGAN AND ACCOUNTABLE SITE STATUS**

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[ Carcinoma TGLs = 3-14 ]

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TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 139

TRT#: 2

SEX: Female

DAY ON TEST: 733

DOSE: Control

DISP: Terminal Sacrifice

HISTO: 56908

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                          |                            |                           |                             |
|--------------------------|----------------------------|---------------------------|-----------------------------|
| * Adrenal Medulla        | * Bone                     | * Bone Marrow             | * Brain                     |
| * Clitoral Gland         | * Esophagus                | * Eye                     | * Harderian Gland           |
| * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum | * Intestine Small, Duodenum |
| * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      | * Kidney                    |
| * Larynx                 | * Lung                     | * Lymph Node, Mandibular  | * Lymph Node, Mediastinal   |
| * Lymph Node, Mesenteric | * Mammary Gland            | * Nose                    | * Pancreas                  |
| * Salivary Glands        | * Skin                     | * Spleen                  | * Stomach, Forestomach      |
| * Stomach, Glandular     | * Thymus                   | * Thyroid Gland           | * Trachea                   |
| * Urinary Bladder        |                            |                           |                             |

MISSING

- |                         |                     |
|-------------------------|---------------------|
| * Lymph Node, Bronchial | * Parathyroid Gland |
|-------------------------|---------------------|

OBSERVATIONS

- |                         |               |                  |                 |
|-------------------------|---------------|------------------|-----------------|
| * Adrenal Cortex        |               | Degeneration     | Cystic, Marked  |
| * Heart                 |               | Cardiomyopathy   | Minimal         |
| * Liver                 |               | Basophilic Focus |                 |
| * Ovary                 |               | Cyst             | Moderate        |
| [ Cyst TGLs = 2,3-9 ]   |               |                  |                 |
| * Pituitary Gland       | Pars Distalis | Adenoma          |                 |
| [ Adenoma TGLs = 1-10 ] |               |                  |                 |
| * Uterus                | Endometrium   | Hyperplasia      | Cystic, Minimal |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 140

TRT#: 2

SEX: Female

DAY ON TEST: 619

DOSE: Control

DISP: Moribund Sacrifice

HISTO: 56909

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                             |                          |                            |                           |
|-----------------------------|--------------------------|----------------------------|---------------------------|
| * Adrenal Cortex            | * Adrenal Medulla        | * Bone                     | * Bone Marrow             |
| * Brain                     | * Clitoral Gland         | * Esophagus                | * Harderian Gland         |
| * Heart                     | * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum |
| * Intestine Small, Duodenum | * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      |
| * Larynx                    | * Liver                  | * Lung                     | * Lymph Node, Mandibular  |
| * Lymph Node, Mediastinal   | * Lymph Node, Mesenteric | * Ovary                    | * Pancreas                |
| * Parathyroid Gland         | * Salivary Glands        | * Skin                     | * Spleen                  |
| * Stomach, Forestomach      | * Stomach, Glandular     | * Thymus                   | * Trachea                 |
| * Urinary Bladder           | * Uterus                 |                            |                           |

MISSING

- \* Lymph Node, Bronchial

OBSERVATIONS

- |                         |               |                               |         |
|-------------------------|---------------|-------------------------------|---------|
| * Eye                   | Retina        | Atrophy                       | Mild    |
| * Kidney                |               | Nephropathy                   | Minimal |
| * Mammary Gland         |               | Fibroadenoma                  |         |
| * Nose                  |               | Accumulation, Hyaline Droplet | Minimal |
| * Pituitary Gland       | Pars Distalis | Adenoma                       |         |
| [ Adenoma TGLs = 3-10 ] |               |                               |         |
| * Thyroid Gland         | C Cell        | Adenoma                       |         |

PRIMARY CAUSE OF DEATH - Pituitary Gland Pars Distalis Adenoma

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 141

TRT#: 2

SEX: Female

DAY ON TEST: 732

DOSE: Control

DISP: Terminal Sacrifice

HISTO: 56910

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                          |                            |                           |                             |
|--------------------------|----------------------------|---------------------------|-----------------------------|
| * Adrenal Medulla        | * Bone                     | * Bone Marrow             | * Clitoral Gland            |
| * Esophagus              | * Eye                      | * Harderian Gland         | * Heart                     |
| * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum | * Intestine Small, Duodenum |
| * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      | * Larynx                    |
| * Lung                   | * Lymph Node, Bronchial    | * Lymph Node, Mandibular  | * Lymph Node, Mediastinal   |
| * Lymph Node, Mesenteric | * Mammary Gland            | * Nose                    | * Ovary                     |
| * Pancreas               | * Parathyroid Gland        | * Salivary Glands         | * Skin                      |
| * Spleen                 | * Stomach, Forestomach     | * Stomach, Glandular      | * Thymus                    |
| * Trachea                | * Urinary Bladder          | * Uterus                  |                             |

OBSERVATIONS

- |                   |                                 |                            |                 |
|-------------------|---------------------------------|----------------------------|-----------------|
| * Adrenal Cortex  |                                 | Adenoma                    |                 |
|                   |                                 | Degeneration               | Cystic, Minimal |
|                   |                                 | Hyperplasia                | Mild            |
| * Brain           |                                 | Granular Cell Tumor Benign |                 |
| * Kidney          |                                 | Nephropathy                | Minimal         |
| * Liver           |                                 | Clear Cell Focus           |                 |
|                   | [ Clear Cell Focus TGLs = 1-6 ] |                            |                 |
| * Pituitary Gland | Pars Distalis                   | Hyperplasia                | Minimal         |
| * Thyroid Gland   | C Cell                          | Hyperplasia                | Minimal         |

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 142

TRT#: 2

SEX: Female

DAY ON TEST: 733

DOSE: Control

DISP: Terminal Sacrifice

HISTO: 56911

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                           |                            |                          |                             |
|---------------------------|----------------------------|--------------------------|-----------------------------|
| * Adrenal Medulla         | * Bone                     | * Bone Marrow            | * Brain                     |
| * Clitoral Gland          | * Esophagus                | * Eye                    | * Harderian Gland           |
| * Heart                   | * Intestine Large, Cecum   | * Intestine Large, Colon | * Intestine Small, Duodenum |
| * Intestine Small, Ileum  | * Intestine Small, Jejunum | * Islets, Pancreatic     | * Kidney                    |
| * Larynx                  | * Lung                     | * Lymph Node, Bronchial  | * Lymph Node, Mandibular    |
| * Lymph Node, Mediastinal | * Lymph Node, Mesenteric   | * Mammary Gland          | * Nose                      |
| * Ovary                   | * Pancreas                 | * Parathyroid Gland      | * Salivary Glands           |
| * Skin                    | * Spleen                   | * Stomach, Forestomach   | * Stomach, Glandular        |
| * Thymus                  | * Trachea                  | * Urinary Bladder        |                             |

INSUFFICIENT TISSUE

- \* Intestine Large, Rectum

OBSERVATIONS

- |                   |                              |                  |                          |
|-------------------|------------------------------|------------------|--------------------------|
| * Adrenal Cortex  |                              | Degeneration     | Cystic, Minimal          |
| * Liver           |                              | Basophilic Focus |                          |
|                   | Bile Duct                    | Inflammation     | Chronic Active, Moderate |
|                   | [ Inflammation TGLs = 2-14 ] |                  |                          |
| * Pituitary Gland | Pars Distalis                | Adenoma          |                          |
|                   | [ Adenoma TGLs = 1-10 ]      |                  |                          |
| * Thyroid Gland   | C Cell                       | Hyperplasia      | Minimal                  |
| * Uterus          | Endometrium                  | Hyperplasia      | Cystic, Mild             |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 143

TRT#: 2

SEX: Female

DAY ON TEST: 703

DOSE: Control

DISP: Moribund Sacrifice

HISTO: 56912

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                           |                             |                          |                            |
|---------------------------|-----------------------------|--------------------------|----------------------------|
| * Adrenal Cortex          | * Adrenal Medulla           | * Bone                   | * Bone Marrow              |
| * Brain                   | * Clitoral Gland            | * Esophagus              | * Eye                      |
| * Harderian Gland         | * Heart                     | * Intestine Large, Cecum | * Intestine Large, Colon   |
| * Intestine Large, Rectum | * Intestine Small, Duodenum | * Intestine Small, Ileum | * Intestine Small, Jejunum |
| * Islets, Pancreatic      | * Kidney                    | * Larynx                 | * Lung                     |
| * Lymph Node, Mandibular  | * Lymph Node, Mediastinal   | * Lymph Node, Mesenteric | * Nose                     |
| * Ovary                   | * Pancreas                  | * Parathyroid Gland      | Peripheral Nerve           |
| * Salivary Glands         | * Skin                      | Spinal Cord              | * Spleen                   |
| * Stomach, Forestomach    | * Stomach, Glandular        | * Thyroid Gland          | * Trachea                  |
| * Urinary Bladder         | * Uterus                    |                          |                            |

MISSING

- |                         |          |
|-------------------------|----------|
| * Lymph Node, Bronchial | * Thymus |
|-------------------------|----------|

OBSERVATIONS

- |                                  |               |                  |
|----------------------------------|---------------|------------------|
| * Liver                          |               | Basophilic Focus |
|                                  |               | Mixed Cell Focus |
| [ Basophilic Focus TGLs = 2-15 ] |               |                  |
| [ Mixed Cell Focus TGLs = 3-14 ] |               |                  |
| * Mammary Gland                  |               | Fibroadenoma     |
| [ Fibroadenoma TGLs = 1-16+17 ]  |               |                  |
| * Pituitary Gland                | Pars Distalis | Adenoma          |

PRIMARY CAUSE OF DEATH - Mammary Gland Fibroadenoma

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 144

TRT#: 2

SEX: Female

DAY ON TEST: 733

DOSE: Control

DISP: Terminal Sacrifice

HISTO: 56913

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                             |                          |                            |                           |
|-----------------------------|--------------------------|----------------------------|---------------------------|
| * Adrenal Medulla           | * Bone                   | * Bone Marrow              | * Brain                   |
| * Clitoral Gland            | * Esophagus              | * Eye                      | * Harderian Gland         |
| * Heart                     | * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum |
| * Intestine Small, Duodenum | * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      |
| * Larynx                    | * Lung                   | * Lymph Node, Bronchial    | * Lymph Node, Mandibular  |
| * Lymph Node, Mediastinal   | * Lymph Node, Mesenteric | * Ovary                    | * Pancreas                |
| * Parathyroid Gland         | * Salivary Glands        | * Skin                     | * Spleen                  |
| * Stomach, Glandular        | * Thymus                 | * Trachea                  | * Urinary Bladder         |

OBSERVATIONS

- |                        |                               |                               |                  |
|------------------------|-------------------------------|-------------------------------|------------------|
| * Adrenal Cortex       |                               | Degeneration                  | Cystic, Moderate |
| * Kidney               | Renal Tubule                  | Adenoma                       |                  |
| * Liver                | Bile Duct                     | Dilatation                    | Marked           |
|                        | Bile Duct                     | Hyperplasia                   | Mild             |
|                        | [ Dilatation TGLs = 2-16 ]    |                               |                  |
| * Mammary Gland        |                               | Galactocele                   | Mild             |
|                        | [ Galactocele TGLs = 1-14 ]   |                               |                  |
| * Nose                 |                               | Accumulation, Hyaline Droplet | Minimal          |
| * Pituitary Gland      | Pars Distalis                 | Adenoma                       |                  |
| * Stomach, Forestomach |                               | Hyperplasia                   | Squamous, Mild   |
| * Thyroid Gland        | C Cell                        | Hyperplasia                   | Mild             |
| * Uterus               |                               | Polyp Stromal                 |                  |
|                        | [ Polyp Stromal TGLs = 3-15 ] |                               |                  |

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 145

TRT#: 2

SEX: Female

DAY ON TEST: 732

DOSE: Control

DISP: Terminal Sacrifice

HISTO: 56914

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                             |                           |                            |                           |
|-----------------------------|---------------------------|----------------------------|---------------------------|
| * Adrenal Cortex            | * Adrenal Medulla         | * Bone                     | * Bone Marrow             |
| * Brain                     | * Esophagus               | * Eye                      | * Harderian Gland         |
| * Heart                     | * Intestine Large, Cecum  | * Intestine Large, Colon   | * Intestine Large, Rectum |
| * Intestine Small, Duodenum | * Intestine Small, Ileum  | * Intestine Small, Jejunum | * Islets, Pancreatic      |
| * Kidney                    | * Larynx                  | * Lung                     | * Lymph Node, Bronchial   |
| * Lymph Node, Mandibular    | * Lymph Node, Mediastinal | * Lymph Node, Mesenteric   | * Ovary                   |
| * Pancreas                  | * Parathyroid Gland       | * Salivary Glands          | * Spleen                  |
| * Stomach, Forestomach      | * Stomach, Glandular      | * Thymus                   | * Trachea                 |
| * Urinary Bladder           |                           |                            |                           |

OBSERVATIONS

- |                   |                                  |                               |                          |
|-------------------|----------------------------------|-------------------------------|--------------------------|
| * Clitoral Gland  |                                  | Inflammation                  | Chronic Active, Moderate |
| * Liver           |                                  | Basophilic Focus              |                          |
| * Mammary Gland   |                                  | Fibroadenoma                  |                          |
|                   | [ Fibroadenoma TGLs = 3-15 ]     |                               |                          |
| * Nose            |                                  | Accumulation, Hyaline Droplet | Minimal                  |
| * Pituitary Gland | Pars Distalis                    | Adenoma                       |                          |
|                   | [ Adenoma TGLs = 1-10 ]          |                               |                          |
| * Skin            | Subcut Tiss                      | Liposarcoma                   |                          |
|                   | [ Liposarcoma TGLs = 2,4-14+16 ] |                               |                          |
| * Thyroid Gland   | Follicular Cel                   | Hyperplasia                   | Mild                     |
|                   | C Cell                           | Hyperplasia                   | Mild                     |
| * Uterus          | Endometrium                      | Hyperplasia                   | Cystic, Minimal          |

\* PROTOCOL REQUIRED TISSUE



TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 146

TRT#: 2

SEX: Female

DAY ON TEST: 731

DOSE: Control

DISP: Terminal Sacrifice

HISTO: 56915

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                          |                            |                           |                             |
|--------------------------|----------------------------|---------------------------|-----------------------------|
| * Adrenal Medulla        | * Bone                     | * Bone Marrow             | * Brain                     |
| * Clitoral Gland         | * Esophagus                | * Eye                     | * Harderian Gland           |
| * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum | * Intestine Small, Duodenum |
| * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      | * Kidney                    |
| * Larynx                 | * Lymph Node, Mandibular   | * Lymph Node, Mediastinal | * Lymph Node, Mesenteric    |
| * Nose                   | * Pancreas                 | * Parathyroid Gland       | * Salivary Glands           |
| * Skin                   | * Spleen                   | * Stomach, Forestomach    | * Stomach, Glandular        |
| * Thymus                 | * Trachea                  | * Urinary Bladder         |                             |

MISSING

- \* Lymph Node, Bronchial

OBSERVATIONS

- |                   |                         |                  |                 |
|-------------------|-------------------------|------------------|-----------------|
| * Adrenal Cortex  |                         | Hyperplasia      | Mild            |
| * Heart           |                         | Cardiomyopathy   | Minimal         |
| * Liver           |                         | Basophilic Focus |                 |
| * Lung            | Alveolar Epith          | Hyperplasia      | Minimal         |
| * Mammary Gland   |                         | Fibroadenoma     |                 |
| * Ovary           |                         | Cyst             | Moderate        |
|                   | [ Cyst TGLs = 3-9 ]     |                  |                 |
| * Pituitary Gland | Pars Distalis           | Adenoma          |                 |
|                   | [ Adenoma TGLs = 1-10 ] |                  |                 |
| * Thyroid Gland   | C Cell                  | Hyperplasia      | Minimal         |
| * Uterus          | Endometrium             | Hyperplasia      | Cystic, Minimal |

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 147

TRT#: 2

SEX: Female

DAY ON TEST: 732

DOSE: Control

DISP: Terminal Sacrifice

HISTO: 56916

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                             |                          |                            |                           |
|-----------------------------|--------------------------|----------------------------|---------------------------|
| * Adrenal Medulla           | * Bone                   | * Bone Marrow              | * Brain                   |
| * Clitoral Gland            | * Esophagus              | * Eye                      | * Harderian Gland         |
| * Heart                     | * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum |
| * Intestine Small, Duodenum | * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      |
| * Larynx                    | * Lung                   | * Lymph Node, Bronchial    | * Lymph Node, Mandibular  |
| * Lymph Node, Mediastinal   | * Lymph Node, Mesenteric | * Ovary                    | * Pancreas                |
| * Parathyroid Gland         | * Salivary Glands        | * Skin                     | * Spleen                  |
| * Stomach, Forestomach      | * Stomach, Glandular     | * Trachea                  | * Urinary Bladder         |
| * Uterus                    |                          |                            |                           |

MISSING

- \* Thymus

OBSERVATIONS

- |                   |                              |                               |                  |
|-------------------|------------------------------|-------------------------------|------------------|
| * Adrenal Cortex  |                              | Degeneration                  | Cystic, Moderate |
|                   |                              | Hyperplasia                   | Moderate         |
| * Kidney          |                              | Nephropathy                   | Minimal          |
| * Liver           |                              | Basophilic Focus              |                  |
| * Mammary Gland   |                              | Fibroadenoma                  |                  |
|                   | [ Fibroadenoma TGLs = 1-14 ] |                               |                  |
| * Nose            |                              | Accumulation, Hyaline Droplet | Mild             |
| * Pituitary Gland | Pars Distalis                | Adenoma                       |                  |
|                   | Pars Intermed                | Adenoma                       |                  |
| * Thyroid Gland   | C Cell                       | Hyperplasia                   | Minimal          |

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 148

TRT#: 2

SEX: Female

DAY ON TEST: 732

DOSE: Control

DISP: Terminal Sacrifice

HISTO: 56917

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                             |                           |                            |                           |
|-----------------------------|---------------------------|----------------------------|---------------------------|
| * Adrenal Medulla           | * Bone                    | * Bone Marrow              | * Brain                   |
| * Clitoral Gland            | * Esophagus               | * Eye                      | * Harderian Gland         |
| * Heart                     | * Intestine Large, Cecum  | * Intestine Large, Colon   | * Intestine Large, Rectum |
| * Intestine Small, Duodenum | * Intestine Small, Ileum  | * Intestine Small, Jejunum | * Islets, Pancreatic      |
| * Kidney                    | * Larynx                  | * Lung                     | * Lymph Node, Bronchial   |
| * Lymph Node, Mandibular    | * Lymph Node, Mediastinal | * Lymph Node, Mesenteric   | * Mammary Gland           |
| * Pancreas                  | * Parathyroid Gland       | * Salivary Glands          | * Skin                    |
| * Spleen                    | * Stomach, Forestomach    | * Stomach, Glandular       | * Thymus                  |
| * Trachea                   | * Urinary Bladder         | * Uterus                   |                           |

OBSERVATIONS

- |                   |                         |                               |              |
|-------------------|-------------------------|-------------------------------|--------------|
| * Adrenal Cortex  |                         | Degeneration                  | Cystic, Mild |
|                   |                         | Hypertrophy                   | Mild         |
| * Liver           |                         | Clear Cell Focus              |              |
| * Nose            |                         | Accumulation, Hyaline Droplet | Mild         |
| * Ovary           |                         | Cyst                          | Mild         |
|                   | [ Cyst TGLs = 2-9 ]     |                               |              |
| * Pituitary Gland | Pars Distalis           | Adenoma                       |              |
|                   | [ Adenoma TGLs = 1-10 ] |                               |              |
| * Thyroid Gland   | C Cell                  | Hyperplasia                   | Minimal      |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 149

TRT#: 2

SEX: Female

DAY ON TEST: 709

DOSE: Control

DISP: Moribund Sacrifice

HISTO: 56918

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                          |                            |                           |                             |
|--------------------------|----------------------------|---------------------------|-----------------------------|
| * Adrenal Medulla        | * Bone                     | * Bone Marrow             | * Brain                     |
| * Clitoral Gland         | * Esophagus                | * Eye                     | * Harderian Gland           |
| * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum | * Intestine Small, Duodenum |
| * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      | * Larynx                    |
| * Lung                   | * Lymph Node, Bronchial    | * Lymph Node, Mandibular  | * Lymph Node, Mediastinal   |
| * Lymph Node, Mesenteric | * Mammary Gland            | * Nose                    | * Ovary                     |
| * Pancreas               | * Salivary Glands          | * Skin                    | * Stomach, Forestomach      |
| * Thymus                 | * Trachea                  | * Urinary Bladder         |                             |

MISSING

- \* Parathyroid Gland

OBSERVATIONS

- |                      |   |                                  |              |
|----------------------|---|----------------------------------|--------------|
| * Adrenal Cortex     |   | Degeneration                     | Cystic, Mild |
|                      |   | Hypertrophy                      | Mild         |
| * Heart              |   | Cardiomyopathy                   | Minimal      |
| * Kidney             |   | Nephropathy                      | Minimal      |
| * Liver              |   | Basophilic Focus                 |              |
|                      |   | Hematopoietic Cell Proliferation | Mild         |
|                      |   | Necrosis                         | Minimal      |
| * Pituitary Gland    | Pars Distalis                                   | Hyperplasia                      | Moderate     |
| * Spleen             |   | Hematopoietic Cell Proliferation | Marked       |
|                      | [ Hematopoietic Cell Proliferation TGLs = 1-6 ] |                                  |              |
| * Stomach, Glandular |   | Necrosis                         | Minimal      |
|                      | [ Necrosis TGLs = 3-10 ]                        |                                  |              |
| * Thyroid Gland      | C Cell  | Hyperplasia                      | Mild         |
| * Uterus             |   | Polyp Stromal                    |              |
|                      |   | Sarcoma Stromal                  |              |
|                      | [ Sarcoma Stromal TGLs = 2-14+15 ]              |                                  |              |

PRIMARY CAUSE OF DEATH

- Uterus Sarcoma Stromal

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 150

TRT#: 2

SEX: Female

DAY ON TEST: 733

DOSE: Control

DISP: Terminal Sacrifice

HISTO: 56919

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                             |                          |                            |                           |
|-----------------------------|--------------------------|----------------------------|---------------------------|
| * Adrenal Medulla           | * Bone                   | * Bone Marrow              | * Brain                   |
| * Clitoral Gland            | * Esophagus              | * Eye                      | * Harderian Gland         |
| * Heart                     | * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum |
| * Intestine Small, Duodenum | * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      |
| * Kidney                    | * Larynx                 | * Liver                    | * Lung                    |
| * Lymph Node, Bronchial     | * Lymph Node, Mandibular | * Lymph Node, Mediastinal  | * Lymph Node, Mesenteric  |
| * Mammary Gland             | * Nose                   | * Ovary                    | * Pancreas                |
| * Parathyroid Gland         | * Salivary Glands        | * Skin                     | * Spleen                  |
| * Stomach, Forestomach      | * Stomach, Glandular     | * Thymus                   | * Trachea                 |
| * Urinary Bladder           | * Uterus                 |                            |                           |

OBSERVATIONS

- |                   |                |              |                  |
|-------------------|----------------|--------------|------------------|
| * Adrenal Cortex  |                | Degeneration | Cystic, Moderate |
|                   |                | Hyperplasia  | Mild             |
|                   |                | Hypertrophy  | Mild             |
| * Pituitary Gland | Pars Distalis  | Adenoma      |                  |
| * Thyroid Gland   | Follicular Cel | Carcinoma    |                  |
|                   | C Cell         | Hyperplasia  | Moderate         |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 301

TRT#: 4

SEX: Female

DAY ON TEST: 733

DOSE: 10 mg/m3

DISP: Terminal Sacrifice

HISTO: 57170

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                            |                           |                             |                          |
|----------------------------|---------------------------|-----------------------------|--------------------------|
| * Bone                     | * Bone Marrow             | * Brain                     | * Clitoral Gland         |
| * Esophagus                | * Eye                     | * Harderian Gland           | * Intestine Large, Cecum |
| * Intestine Large, Colon   | * Intestine Large, Rectum | * Intestine Small, Duodenum | * Intestine Small, Ileum |
| * Intestine Small, Jejunum | * Islets, Pancreatic      | * Lung                      | * Lymph Node, Mandibular |
| * Lymph Node, Mediastinal  | * Lymph Node, Mesenteric  | * Mammary Gland             | * Pancreas               |
| * Parathyroid Gland        | * Pituitary Gland         | * Salivary Glands           | * Skin                   |
| * Spleen                   | * Stomach, Forestomach    | * Stomach, Glandular        | * Thymus                 |
| * Trachea                  | * Urinary Bladder         | * Uterus                    |                          |

MISSING

- \* Lymph Node, Bronchial

OBSERVATIONS

- |                     |        |                               |                   |
|---------------------|--------|-------------------------------|-------------------|
| * Adrenal Cortex    |        | Degeneration                  | Cystic, Minimal   |
| * Adrenal Medulla   |        | Hyperplasia                   | Mild              |
| * Heart             |        | Cardiomyopathy                | Minimal           |
| * Kidney            |        | Nephropathy                   | Minimal           |
| * Larynx            |        | Metaplasia                    | Squamous, Minimal |
| * Liver             |        | Basophilic Focus              |                   |
| * Nose              |        | Accumulation, Hyaline Droplet | Mild              |
| * Ovary             |        | Cyst                          | Marked            |
| [ Cyst TGLs = 1-9 ] |        |                               |                   |
| * Thyroid Gland     | C Cell | Hyperplasia                   | Minimal           |

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 302

TRT#: 4

SEX: Female

DAY ON TEST: 703

DOSE: 10 mg/m3

DISP: Moribund Sacrifice

HISTO: 57171

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                          |                            |                           |                             |
|--------------------------|----------------------------|---------------------------|-----------------------------|
| * Adrenal Medulla        | * Bone                     | * Bone Marrow             | * Brain                     |
| * Esophagus              | * Eye                      | * Harderian Gland         | * Heart                     |
| * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum | * Intestine Small, Duodenum |
| * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      | * Kidney                    |
| * Lymph Node, Bronchial  | * Lymph Node, Mandibular   | * Lymph Node, Mediastinal | * Lymph Node, Mesenteric    |
| * Ovary                  | * Pancreas                 | * Parathyroid Gland       | * Salivary Glands           |
| * Skin                   | * Spleen                   | * Stomach, Forestomach    | * Stomach, Glandular        |
| * Thymus                 | * Trachea                  | * Urinary Bladder         | * Uterus                    |

OBSERVATIONS

- |                   |  |                               |                        |
|-------------------|--|-------------------------------|------------------------|
| * Adrenal Cortex  |  | Degeneration                  | Cystic, Moderate       |
| * Clitoral Gland  |  | Inflammation                  | Chronic Active, Marked |
| * Larynx          |  | Metaplasia                    | Squamous, Mild         |
| * Liver           |  | Basophilic Focus              |                        |
|                   | [ Hepatocellular Adenoma TGLs = 4-14 ] | Hepatocellular Adenoma        |                        |
| * Lung            | Alveolar Epith                         | Hyperplasia                   | Minimal                |
|                   |  | Inflammation                  | Granulomatous, Minimal |
| * Mammary Gland   |  | Carcinoma                     |                        |
|                   | [ Carcinoma TGLs = 1,2-15 ]            |                               |                        |
| * Nose            |  | Accumulation, Hyaline Droplet | Marked                 |
|                   | Glands, Olfactory Epi                  | Hyperplasia                   | Minimal                |
| * Pituitary Gland | Pars Distalis                          | Adenoma                       |                        |
|                   | [ Adenoma TGLs = 3-10 ]                |                               |                        |
| * Thyroid Gland   | C Cell                                 | Hyperplasia                   | Moderate               |

PRIMARY CAUSE OF DEATH - Pituitary Gland Pars Distalis Adenoma

CONTRIBUTORY CAUSE OF DEATH - Mammary Gland Carcinoma

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 303

TRT#: 4

SEX: Female

DAY ON TEST: 633

DOSE: 10 mg/m3

DISP: Moribund Sacrifice

HISTO: 57172

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                             |                          |                            |                           |
|-----------------------------|--------------------------|----------------------------|---------------------------|
| * Adrenal Medulla           | * Bone                   | * Bone Marrow              | * Brain                   |
| * Clitoral Gland            | * Esophagus              | * Eye                      | * Harderian Gland         |
| * Heart                     | * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum |
| * Intestine Small, Duodenum | * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      |
| * Lung                      | * Lymph Node, Bronchial  | * Lymph Node, Mandibular   | * Lymph Node, Mediastinal |
| * Lymph Node, Mesenteric    | * Ovary                  | * Pancreas                 | * Parathyroid Gland       |
| Peripheral Nerve            | * Salivary Glands        | * Skin                     | Spinal Cord               |
| * Spleen                    | * Stomach, Forestomach   | * Stomach, Glandular       | * Thymus                  |
| * Trachea                   | * Urinary Bladder        | * Uterus                   |                           |

OBSERVATIONS

- |                   |                               |                               |                |
|-------------------|-------------------------------|-------------------------------|----------------|
| * Adrenal Cortex  |                               | Hyperplasia                   | Mild           |
|                   |                               | Hypertrophy                   | Mild           |
| * Kidney          |                               | Hydronephrosis                | Moderate       |
|                   |                               | Nephropathy                   | Moderate       |
|                   | [ Hydronephrosis TGLs = 3-7 ] |                               |                |
|                   | [ Nephropathy TGLs = 4-14 ]   |                               |                |
| * Larynx          |                               | Metaplasia                    | Squamous, Mild |
| * Liver           |                               | Basophilic Focus              |                |
|                   |                               | Fatty Change                  | Mild           |
|                   | Bile Duct                     | Hyperplasia                   | Minimal        |
| * Mammary Gland   |                               | Fibroadenoma                  |                |
| Mesentery         | Fat                           | Necrosis                      | Mild           |
|                   | [ Necrosis TGLs = 1-14 ]      |                               |                |
| * Nose            |                               | Accumulation, Hyaline Droplet | Moderate       |
|                   | Glands, Olfactory Epi         | Hyperplasia                   | Mild           |
| * Pituitary Gland | Pars Distalis                 | Adenoma                       |                |
|                   | [ Adenoma TGLs = 2-10 ]       |                               |                |
| * Thyroid Gland   | C Cell                        | Adenoma                       |                |
|                   | C Cell                        | Hyperplasia                   | Moderate       |

PRIMARY CAUSE OF DEATH - Pituitary Gland Pars Distalis Adenoma

\* PROTOCOL REQUIRED TISSUE



TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 304

TRT#: 4

SEX: Female

DAY ON TEST: 683

DOSE: 10 mg/m3

DISP: Moribund Sacrifice

HISTO: 57173

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Cortex
- \* Brain
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Lung
- \* Pancreas
- \* Skin
- \* Stomach, Glandular
- \* Uterus
- \* Adrenal Medulla
- \* Esophagus
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Lymph Node, Bronchial
- \* Parathyroid Gland
- Spinal Cord
- \* Thymus
- \* Bone
- \* Eye
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Lymph Node, Mediastinal
- Peripheral Nerve
- \* Spleen
- \* Trachea
- \* Bone Marrow
- \* Harderian Gland
- \* Intestine Small, Duodenum
- \* Kidney
- \* Lymph Node, Mesenteric
- \* Salivary Glands
- \* Stomach, Forestomach
- \* Urinary Bladder

MISSING

- \* Lymph Node, Mandibular

OBSERVATIONS

- \* Clitoral Gland
- \* Heart
- \* Larynx
- \* Liver
- [ Angiectasis TGLs = 7-14 ]
- Lymph Node
- [ Ectasia TGLs = 6-14 ]
- \* Mammary Gland
- [ Carcinoma TGLs = 3-15 ]
- \* Nose
- \* Ovary
- [ Cyst TGLs = 5-9 ]
- \* Pituitary Gland
- [ Adenoma TGLs = 4-10 ]
- \* Thyroid Gland
- Inflammation
- Cardiomyopathy
- Metaplasia
- Angiectasis
- Basophilic Focus
- Ectasia
- Carcinoma
- Accumulation, Hyaline Droplet
- Cyst
- Adenoma
- Hyperplasia
- Chronic Active, Moderate
- Minimal
- Squamous, Minimal
- Minimal
- Mild
- Mild
- Moderate
- Moderate

PRIMARY CAUSE OF DEATH - Pituitary Gland Pars Distalis Adenoma

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 305

TRT#: 4

SEX: Female

DAY ON TEST: 683

DOSE: 10 mg/m3

DISP: Moribund Sacrifice

HISTO: 57174

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Medulla
- \* Clitoral Gland
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Lymph Node, Bronchial
- \* Ovary
- \* Salivary Glands
- \* Stomach, Forestomach
- \* Urinary Bladder
- \* Bone
- \* Esophagus
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Lymph Node, Mediastinal
- \* Pancreas
- \* Skin
- \* Stomach, Glandular
- \* Uterus
- \* Bone Marrow
- \* Eye
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Lymph Node, Mesenteric
- \* Parathyroid Gland
- \* Spinal Cord
- \* Thymus
- \* Brain
- \* Harderian Gland
- \* Intestine Small, Duodenum
- \* Lung
- \* Mammary Gland
- \* Peripheral Nerve
- \* Spleen
- \* Trachea

MISSING

- \* Lymph Node, Mandibular

OBSERVATIONS

- \* Adrenal Cortex
- \* Heart
- \* Kidney
- \* Larynx
- \* Liver
- \* Nose
- \* Pituitary Gland
- [ Adenoma TGLs = 3-10 ]
- \* Thyroid Gland
- Hyperplasia
- Cardiomyopathy
- Inflammation
- Metaplasia
- Basophilic Focus
- Accumulation, Hyaline Droplet
- Glands, Olfactory Epi
- Pars Distalis
- C Cell
- Hyperplasia
- Mild
- Minimal
- Suppurative, Mild
- Squamous, Mild
- Mild
- Minimal
- Mild

PRIMARY CAUSE OF DEATH - Pituitary Gland Pars Distalis Adenoma

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 306

TRT#: 4

SEX: Female

DAY ON TEST: 481

DOSE: 10 mg/m3

DISP: Moribund Sacrifice

HISTO: 57175

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Cortex
- \* Brain
- \* Harderian Gland
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Lymph Node, Mandibular
- \* Ovary
- \* Stomach, Forestomach
- \* Urinary Bladder
- \* Adrenal Medulla
- \* Clitoral Gland
- \* Heart
- \* Intestine Small, Duodenum
- \* Kidney
- \* Lymph Node, Mediastinal
- \* Pancreas
- \* Stomach, Glandular
- \* Uterus
- \* Bone
- \* Esophagus
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Lung
- \* Lymph Node, Mesenteric
- \* Pituitary Gland
- \* Thymus
- \* Bone Marrow
- \* Eye
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Lymph Node, Bronchial
- \* Mammary Gland
- \* Salivary Glands
- \* Trachea

MISSING

- \* Parathyroid Gland

OBSERVATIONS

- \* Larynx
  - \* Liver
  - [ Necrosis TGLs = 3-6 ]
  - \* Nose
  - \* Skin
  - [ Sarcoma TGLs = 1-15 ]
  - \* Spleen
  - [ Hematopoietic Cell Proliferation TGLs = 2-14 ]
  - \* Thyroid Gland
- |             |                                  |                |
|-------------|----------------------------------|----------------|
|             | Metaplasia                       | Squamous, Mild |
|             | Basophilic Focus                 |                |
|             | Necrosis                         | Moderate       |
|             | Accumulation, Hyaline Droplet    | Moderate       |
| Subcut Tiss | Sarcoma                          |                |
|             | Hematopoietic Cell Proliferation | Marked         |
| C Cell      | Hyperplasia                      | Minimal        |

PRIMARY CAUSE OF DEATH - Skin Subcut Tiss Sarcoma

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 307

TRT#: 4

SEX: Female

DAY ON TEST: 732

DOSE: 10 mg/m3

DISP: Terminal Sacrifice

HISTO: 57176

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Medulla
- \* Esophagus
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Lymph Node, Mandibular
- \* Parathyroid Gland
- \* Stomach, Forestomach
- \* Urinary Bladder
- \* Bone
- \* Eye
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Lymph Node, Mediastinal
- \* Salivary Glands
- \* Stomach, Glandular
- \* Uterus
- \* Bone Marrow
- \* Harderian Gland
- \* Intestine Small, Duodenum
- \* Lung
- \* Lymph Node, Mesenteric
- \* Skin
- \* Thymus
- \* Brain
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Lymph Node, Bronchial
- \* Pancreas
- \* Spleen
- \* Trachea

OBSERVATIONS

- \* Adrenal Cortex Hyperplasia Mild
- \* Clitoral Gland Inflammation Chronic Active, Moderate
  - [ Inflammation TGLs = 1-15 ]
- \* Heart Cardiomyopathy Minimal
- \* Kidney Nephropathy Minimal
- \* Larynx Metaplasia Squamous, Mild
- \* Liver Basophilic Focus
- Clear Cell Focus
- \* Mammary Gland Carcinoma
  - [ Carcinoma TGLs = 2-16 ]
- Mesentery Fat Necrosis Moderate
  - [ Necrosis TGLs = 4-17 ]
- \* Nose Accumulation, Hyaline Droplet Mild
- Glands, Olfactory Epi Hyperplasia Minimal
- \* Ovary Cyst Mild
  - [ Cyst TGLs = 3-9 ]
- \* Pituitary Gland Pars Distalis Adenoma
- [ Adenoma TGLs = 7-10 ]
- \* Thyroid Gland C Cell Hyperplasia Mild

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 308

TRT#: 4

SEX: Female

DAY ON TEST: 732

DOSE: 10 mg/m3

DISP: Terminal Sacrifice

HISTO: 57177

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                           |                             |                          |                            |
|---------------------------|-----------------------------|--------------------------|----------------------------|
| * Adrenal Cortex          | * Adrenal Medulla           | * Bone                   | * Bone Marrow              |
| * Brain                   | * Clitoral Gland            | * Esophagus              | * Eye                      |
| * Harderian Gland         | * Heart                     | * Intestine Large, Cecum | * Intestine Large, Colon   |
| * Intestine Large, Rectum | * Intestine Small, Duodenum | * Intestine Small, Ileum | * Intestine Small, Jejunum |
| * Islets, Pancreatic      | * Kidney                    | * Lung                   | * Lymph Node, Bronchial    |
| * Lymph Node, Mandibular  | * Lymph Node, Mediastinal   | * Lymph Node, Mesenteric | * Mammary Gland            |
| * Ovary                   | * Pancreas                  | * Parathyroid Gland      | * Skin                     |
| * Spleen                  | * Stomach, Forestomach      | * Stomach, Glandular     | * Thymus                   |
| * Trachea                 | * Urinary Bladder           | * Uterus                 |                            |

OBSERVATIONS

- |                         |                       |                               |                |
|-------------------------|-----------------------|-------------------------------|----------------|
| * Larynx                |                       | Metaplasia                    | Squamous, Mild |
| * Liver                 | Bile Duct             | Hyperplasia                   | Minimal        |
| * Nose                  |                       | Accumulation, Hyaline Droplet | Moderate       |
|                         | Glands, Olfactory Epi | Hyperplasia                   | Minimal        |
| * Pituitary Gland       | Pars Distalis         | Adenoma                       |                |
| [ Adenoma TGLs = 1-10 ] |                       |                               |                |
| * Salivary Glands       |                       | Basophilic Focus              |                |
| * Thyroid Gland         | C Cell                | Hyperplasia                   | Mild           |

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 309

TRT#: 4

SEX: Female

DAY ON TEST: 568

DOSE: 10 mg/m3

DISP: Moribund Sacrifice

HISTO: 57178

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                             |                          |                            |                           |
|-----------------------------|--------------------------|----------------------------|---------------------------|
| * Adrenal Cortex            | * Adrenal Medulla        | * Bone                     | * Bone Marrow             |
| * Brain                     | * Clitoral Gland         | * Esophagus                | * Eye                     |
| * Harderian Gland           | * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum |
| * Intestine Small, Duodenum | * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      |
| * Kidney                    | * Lung                   | * Lymph Node, Bronchial    | * Lymph Node, Mandibular  |
| * Lymph Node, Mediastinal   | * Lymph Node, Mesenteric | * Mammary Gland            | * Ovary                   |
| * Pancreas                  | * Parathyroid Gland      | * Salivary Glands          | * Skin                    |
| * Spleen                    | * Stomach, Forestomach   | * Stomach, Glandular       | * Thymus                  |
| * Trachea                   | * Urinary Bladder        | * Uterus                   |                           |

OBSERVATIONS

- |                   |                            |                               |                |
|-------------------|----------------------------|-------------------------------|----------------|
| * Heart           |                            | Cardiomyopathy                | Minimal        |
| * Larynx          |                            | Metaplasia                    | Squamous, Mild |
| * Liver           |                            | Angiectasis                   | Minimal        |
|                   | [ Angiectasis TGLs = 4-6 ] |                               |                |
| * Nose            |                            | Accumulation, Hyaline Droplet | Moderate       |
|                   | Glands, Olfactory Epi      | Hyperplasia                   | Minimal        |
| * Pituitary Gland | Pars Distalis              | Adenoma                       |                |
|                   | [ Adenoma TGLs = 3-10 ]    |                               |                |
| * Thyroid Gland   | C Cell                     | Adenoma                       |                |

PRIMARY CAUSE OF DEATH - Pituitary Gland Pars Distalis Adenoma

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 310

TRT#: 4

SEX: Female

DAY ON TEST: 731

DOSE: 10 mg/m3

DISP: Terminal Sacrifice

HISTO: 57179

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                             |                          |                            |                           |
|-----------------------------|--------------------------|----------------------------|---------------------------|
| * Adrenal Medulla           | * Bone                   | * Bone Marrow              | * Brain                   |
| * Clitoral Gland            | * Esophagus              | * Eye                      | * Harderian Gland         |
| * Heart                     | * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum |
| * Intestine Small, Duodenum | * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      |
| * Liver                     | * Lymph Node, Bronchial  | * Lymph Node, Mandibular   | * Lymph Node, Mediastinal |
| * Lymph Node, Mesenteric    | * Mammary Gland          | * Ovary                    | * Pancreas                |
| * Salivary Glands           | * Skin                   | * Spleen                   | * Stomach, Forestomach    |
| * Stomach, Glandular        | * Thymus                 | * Trachea                  | * Urinary Bladder         |
| * Uterus                    |                          |                            |                           |

MISSING

- \* Parathyroid Gland

OBSERVATIONS

- |                          |                       |                               |                        |
|--------------------------|-----------------------|-------------------------------|------------------------|
| * Adrenal Cortex         |                       | Hyperplasia                   | Mild                   |
| * Kidney                 |                       | Nephropathy                   | Minimal                |
| * Larynx                 |                       | Metaplasia                    | Squamous, Mild         |
| * Lung                   | Bronchiole            | Hyperplasia                   | Minimal                |
|                          |                       | Inflammation                  | Granulomatous, Minimal |
| Mesentery                | Fat                   | Necrosis                      | Mild                   |
| [ Necrosis TGLs = 2-14 ] |                       |                               |                        |
| * Nose                   |                       | Accumulation, Hyaline Droplet | Marked                 |
|                          | Glands, Olfactory Epi | Hyperplasia                   | Mild                   |
| * Pituitary Gland        | Pars Distalis         | Adenoma                       |                        |
| [ Adenoma TGLs = 1-10 ]  |                       |                               |                        |
| * Thyroid Gland          | C Cell                | Hyperplasia                   | Moderate               |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 311

TRT#: 4

SEX: Female

DAY ON TEST: 732

DOSE: 10 mg/m3

DISP: Terminal Sacrifice

HISTO: 57180

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Medulla
- \* Clitoral Gland
- \* Heart
- \* Intestine Small, Duodenum
- \* Kidney
- \* Lymph Node, Mesenteric
- \* Salivary Glands
- \* Stomach, Glandular
- \* Uterus
- \* Bone
- \* Esophagus
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Lymph Node, Bronchial
- \* Mammary Gland
- \* Skin
- \* Thymus
- \* Bone Marrow
- \* Eye
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Lymph Node, Mandibular
- \* Ovary
- \* Spleen
- \* Trachea
- \* Brain
- \* Harderian Gland
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Lymph Node, Mediastinal
- \* Pancreas
- \* Stomach, Forestomach
- \* Urinary Bladder

MISSING

- \* Parathyroid Gland

OBSERVATIONS

- |                   |                       |                               |                        |
|-------------------|-----------------------|-------------------------------|------------------------|
| * Adrenal Cortex  |                       | Angiectasis                   | Mild                   |
| * Larynx          |                       | Metaplasia                    | Squamous, Minimal      |
| * Liver           |                       | Basophilic Focus              |                        |
|                   |                       | Clear Cell Focus              |                        |
| * Lung            |                       | Inflammation                  | Granulomatous, Minimal |
| * Nose            |                       | Accumulation, Hyaline Droplet | Mild                   |
|                   | Glands, Olfactory Epi | Hyperplasia                   | Minimal                |
| * Pituitary Gland | Pars Distalis         | Hyperplasia                   | Mild                   |
| * Thyroid Gland   | C Cell                | Hyperplasia                   | Minimal                |

\* PROTOCOL REQUIRED TISSUE



TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 312

TRT#: 4

SEX: Female

DAY ON TEST: 731

DOSE: 10 mg/m3

DISP: Terminal Sacrifice

HISTO: 57181

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                             |                          |                            |                           |
|-----------------------------|--------------------------|----------------------------|---------------------------|
| * Adrenal Cortex            | * Adrenal Medulla        | * Bone                     | * Bone Marrow             |
| * Brain                     | * Clitoral Gland         | * Esophagus                | * Eye                     |
| * Harderian Gland           | * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum |
| * Intestine Small, Duodenum | * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      |
| * Liver                     | * Lung                   | * Lymph Node, Bronchial    | * Lymph Node, Mandibular  |
| * Lymph Node, Mediastinal   | * Lymph Node, Mesenteric | * Ovary                    | * Pancreas                |
| * Parathyroid Gland         | * Salivary Glands        | * Skin                     | * Spleen                  |
| * Stomach, Forestomach      | * Stomach, Glandular     | * Thymus                   | * Trachea                 |
| * Urinary Bladder           | * Uterus                 |                            |                           |

OBSERVATIONS

- |                   |                              |                               |                   |
|-------------------|------------------------------|-------------------------------|-------------------|
| * Heart           |                              | Cardiomyopathy                | Minimal           |
| * Kidney          |                              | Nephropathy                   | Minimal           |
| * Larynx          |                              | Metaplasia                    | Squamous, Minimal |
| * Mammary Gland   |                              | Fibroadenoma                  | Multiple          |
|                   | [ Fibroadenoma TGLs = 1-15 ] |                               |                   |
| * Nose            |                              | Accumulation, Hyaline Droplet | Moderate          |
|                   | Glands, Olfactory Epi        | Hyperplasia                   | Mild              |
| * Pituitary Gland |                              | Adenoma                       |                   |
|                   | [ Adenoma TGLs = 2-10 ]      |                               |                   |
| * Thyroid Gland   | C Cell                       | Hyperplasia                   | Minimal           |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 313

TRT#: 4

SEX: Female

DAY ON TEST: 732

DOSE: 10 mg/m3

DISP: Terminal Sacrifice

HISTO: 57182

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                          |                            |                           |                             |
|--------------------------|----------------------------|---------------------------|-----------------------------|
| * Adrenal Medulla        | * Bone                     | * Bone Marrow             | * Brain                     |
| * Clitoral Gland         | * Esophagus                | * Harderian Gland         | * Heart                     |
| * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum | * Intestine Small, Duodenum |
| * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      | * Liver                     |
| * Lung                   | * Lymph Node, Bronchial    | * Lymph Node, Mandibular  | * Lymph Node, Mediastinal   |
| * Lymph Node, Mesenteric | * Mammary Gland            | * Ovary                   | * Pancreas                  |
| * Parathyroid Gland      | * Salivary Glands          | * Skin                    | * Spleen                    |
| * Stomach, Forestomach   | * Stomach, Glandular       | * Thymus                  | * Trachea                   |
| * Urinary Bladder        |                            |                           |                             |

OBSERVATIONS

- |                   |                       |                               |                    |
|-------------------|-----------------------|-------------------------------|--------------------|
| * Adrenal Cortex  |                       | Degeneration                  | Cystic, Moderate   |
|                   |                       | Hyperplasia                   | Mild               |
|                   |                       | Hypertrophy                   | Moderate           |
| * Eye             | Retina                | Atrophy                       | Mild               |
| * Kidney          |                       | Nephropathy                   | Minimal            |
| * Larynx          |                       | Metaplasia                    | Squamous, Moderate |
| * Nose            |                       | Accumulation, Hyaline Droplet | Moderate           |
|                   | Glands, Olfactory Epi | Hyperplasia                   | Mild               |
| * Pituitary Gland | Pars Distalis         | Hyperplasia                   | Minimal            |
| * Thyroid Gland   | C Cell                | Hyperplasia                   | Mild               |
| * Uterus          | Endometrium           | Carcinoma                     |                    |
|                   |                       | Polyp Stromal                 |                    |

[ Carcinoma TGLs = 1-10 ]

[ Polyp Stromal TGLs = 2-14 ]

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 314

TRT#: 4

SEX: Female

DAY ON TEST: 733

DOSE: 10 mg/m3

DISP: Terminal Sacrifice

HISTO: 57183

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                          |                            |                           |                             |
|--------------------------|----------------------------|---------------------------|-----------------------------|
| * Adrenal Cortex         | * Adrenal Medulla          | * Bone                    | * Bone Marrow               |
| * Brain                  | * Clitoral Gland           | * Esophagus               | * Eye                       |
| * Harderian Gland        | * Intestine Large, Cecum   | * Intestine Large, Rectum | * Intestine Small, Duodenum |
| * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      | * Kidney                    |
| * Lung                   | * Lymph Node, Bronchial    | * Lymph Node, Mandibular  | * Lymph Node, Mediastinal   |
| * Lymph Node, Mesenteric | * Mammary Gland            | * Ovary                   | * Pancreas                  |
| * Parathyroid Gland      | * Salivary Glands          | * Skin                    | * Spleen                    |
| * Stomach, Forestomach   | * Stomach, Glandular       | * Thymus                  | * Trachea                   |
| * Urinary Bladder        |                            |                           |                             |

INSUFFICIENT TISSUE

- \* Intestine Large, Colon

OBSERVATIONS

- |                   |                       |                               |                 |
|-------------------|-----------------------|-------------------------------|-----------------|
| * Heart           |                       | Cardiomyopathy                | Minimal         |
| * Larynx          |                       | Metaplasia                    | Squamous, Mild  |
| * Liver           |                       | Clear Cell Focus              |                 |
| * Nose            |                       | Accumulation, Hyaline Droplet | Moderate        |
|                   | Glands, Olfactory Epi | Hyperplasia                   | Minimal         |
| * Pituitary Gland | Pars Distalis         | Hyperplasia                   | Mild            |
| * Thyroid Gland   | C Cell                | Hyperplasia                   | Mild            |
| * Uterus          | Endometrium           | Hyperplasia                   | Cystic, Minimal |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 315

TRT#: 4

SEX: Female

DAY ON TEST: 732

DOSE: 10 mg/m3

DISP: Terminal Sacrifice

HISTO: 57184

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

* Adrenal Medulla	* Bone	* Bone Marrow	* Brain
* Clitoral Gland	* Esophagus	* Eye	* Harderian Gland
* Intestine Large, Cecum	* Intestine Large, Colon	* Intestine Large, Rectum	* Intestine Small, Duodenum
* Intestine Small, Ileum	* Intestine Small, Jejunum	* Islets, Pancreatic	* Lung
* Lymph Node, Bronchial	* Lymph Node, Mandibular	* Lymph Node, Mediastinal	* Lymph Node, Mesenteric
* Ovary	* Pancreas	* Parathyroid Gland	* Salivary Glands
* Skin	* Spleen	* Stomach, Forestomach	* Stomach, Glandular
* Thymus	* Trachea	* Urinary Bladder	* Uterus

OBSERVATIONS

* Adrenal Cortex		Hypertrophy	Mild
* Heart		Cardiomyopathy	Minimal
* Kidney		Cyst	Marked
		Nephropathy	Mild
	[ Cyst TGLs = 3,4-7+15+16 ]		
* Larynx		Metaplasia	Squamous, Mild
* Liver		Basophilic Focus	
		Clear Cell Focus	
		Cyst	Moderate
	[ Cyst TGLs = 2-14 ]		
* Mammary Gland		Fibroadenoma	
	[ Fibroadenoma TGLs = 1-17 ]		
* Nose		Accumulation, Hyaline Droplet	Moderate
	Glands, Olfactory Epi	Hyperplasia	Mild
* Pituitary Gland	Pars Distalis	Adenoma	
* Thyroid Gland	C Cell	Hyperplasia	Moderate

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 316

TRT#: 4

SEX: Female

DAY ON TEST: 732

DOSE: 10 mg/m3

DISP: Terminal Sacrifice

HISTO: 57185

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                             |                          |                            |                           |
|-----------------------------|--------------------------|----------------------------|---------------------------|
| * Adrenal Medulla           | * Bone                   | * Bone Marrow              | * Brain                   |
| * Clitoral Gland            | * Esophagus              | * Eye                      | * Harderian Gland         |
| * Heart                     | * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum |
| * Intestine Small, Duodenum | * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      |
| * Kidney                    | * Lung                   | * Lymph Node, Bronchial    | * Lymph Node, Mandibular  |
| * Lymph Node, Mediastinal   | * Lymph Node, Mesenteric | * Mammary Gland            | * Ovary                   |
| * Pancreas                  | * Salivary Glands        | * Skin                     | * Spleen                  |
| * Stomach, Forestomach      | * Stomach, Glandular     | * Thymus                   | * Trachea                 |
| * Urinary Bladder           | * Uterus                 |                            |                           |

MISSING

- \* Parathyroid Gland

OBSERVATIONS

- |                   |                       |                               |                |
|-------------------|-----------------------|-------------------------------|----------------|
| * Adrenal Cortex  |                       | Degeneration                  | Cystic, Mild   |
|                   |                       | Hypertrophy                   | Mild           |
| * Larynx          |                       | Metaplasia                    | Squamous, Mild |
| * Liver           |                       | Basophilic Focus              |                |
| * Nose            |                       | Accumulation, Hyaline Droplet | Mild           |
|                   | Glands, Olfactory Epi | Hyperplasia                   | Mild           |
| * Pituitary Gland | Pars Distalis         | Hyperplasia                   | Minimal        |
| * Thyroid Gland   | C Cell                | Hyperplasia                   | Mild           |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 317

TRT#: 4

SEX: Female

DAY ON TEST: 731

DOSE: 10 mg/m3

DISP: Terminal Sacrifice

HISTO: 57186

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                            |                           |                             |                          |
|----------------------------|---------------------------|-----------------------------|--------------------------|
| * Adrenal Medulla          | * Bone                    | * Bone Marrow               | * Brain                  |
| * Clitoral Gland           | * Esophagus               | * Eye                       | * Intestine Large, Cecum |
| * Intestine Large, Colon   | * Intestine Large, Rectum | * Intestine Small, Duodenum | * Intestine Small, Ileum |
| * Intestine Small, Jejunum | * Islets, Pancreatic      | * Lung                      | * Lymph Node, Bronchial  |
| * Lymph Node, Mandibular   | * Lymph Node, Mesenteric  | * Mammary Gland             | * Ovary                  |
| * Pancreas                 | * Parathyroid Gland       | * Salivary Glands           | * Skin                   |
| * Spleen                   | * Stomach, Forestomach    | * Stomach, Glandular        | * Thymus                 |
| * Trachea                  | * Urinary Bladder         | * Uterus                    |                          |

MISSING

- \* Lymph Node, Mediastinal

OBSERVATIONS

- |                   |                         |                               |                   |
|-------------------|-------------------------|-------------------------------|-------------------|
| * Adrenal Cortex  |                         | Degeneration                  | Cystic, Moderate  |
|                   |                         | Hyperplasia                   | Mild              |
| * Harderian Gland |                         | Hyperplasia                   | Minimal           |
| * Heart           |                         | Cardiomyopathy                | Minimal           |
| * Kidney          |                         | Nephropathy                   | Minimal           |
|                   | Transit Epithe          | Papilloma                     |                   |
| * Larynx          |                         | Metaplasia                    | Squamous, Minimal |
| * Liver           |                         | Basophilic Focus              |                   |
| * Nose            |                         | Accumulation, Hyaline Droplet | Moderate          |
|                   | Glands, Olfactory Epi   | Hyperplasia                   | Mild              |
| * Pituitary Gland | Pars Distalis           | Adenoma                       |                   |
|                   | [ Adenoma TGLs = 1-10 ] |                               |                   |
| * Thyroid Gland   | C Cell                  | Hyperplasia                   | Mild              |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 318

TRT#: 4

SEX: Female

DAY ON TEST: 732

DOSE: 10 mg/m3

DISP: Terminal Sacrifice

HISTO: 57187

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                             |                          |                            |                           |
|-----------------------------|--------------------------|----------------------------|---------------------------|
| * Adrenal Medulla           | * Bone                   | * Bone Marrow              | * Brain                   |
| * Clitoral Gland            | * Esophagus              | * Eye                      | * Harderian Gland         |
| * Heart                     | * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum |
| * Intestine Small, Duodenum | * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      |
| * Kidney                    | * Lymph Node, Mandibular | * Lymph Node, Mediastinal  | * Lymph Node, Mesenteric  |
| * Mammary Gland             | * Ovary                  | * Pancreas                 | * Parathyroid Gland       |
| * Salivary Glands           | * Skin                   | * Spleen                   | * Stomach, Forestomach    |
| * Stomach, Glandular        | * Thymus                 | * Trachea                  | * Urinary Bladder         |

MISSING

- \* Lymph Node, Bronchial

OBSERVATIONS

- |                   |                                  |                               |                |
|-------------------|----------------------------------|-------------------------------|----------------|
| * Adrenal Cortex  |                                  | Hyperplasia                   | Mild           |
|                   |                                  | Hypertrophy                   | Mild           |
| * Larynx          |                                  | Metaplasia                    | Squamous, Mild |
| * Liver           |                                  | Angiectasis                   | Mild           |
|                   |                                  | Basophilic Focus              |                |
|                   | [ Angiectasis TGLs = 3-14 ]      |                               |                |
|                   | [ Basophilic Focus TGLs = 4-15 ] |                               |                |
| * Lung            | Alveolar Epith                   | Hyperplasia                   | Mild           |
| Mesentery         | Fat                              | Necrosis                      | Moderate       |
|                   | [ Necrosis TGLs = 1-16 ]         |                               |                |
| * Nose            |                                  | Accumulation, Hyaline Droplet | Moderate       |
|                   | Glands, Olfactory Epi            | Hyperplasia                   | Mild           |
| * Pituitary Gland | Pars Distalis                    | Adenoma                       |                |
|                   | [ Adenoma TGLs = 2-10 ]          |                               |                |
| * Thyroid Gland   | C Cell                           | Hyperplasia                   | Mild           |
| * Uterus          | Endometrium                      | Hyperplasia                   | Cystic, Marked |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 319

TRT#: 4

SEX: Female

DAY ON TEST: 732

DOSE: 10 mg/m3

DISP: Terminal Sacrifice

HISTO: 57188

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                          |                            |                           |                             |
|--------------------------|----------------------------|---------------------------|-----------------------------|
| * Adrenal Medulla        | * Bone                     | * Bone Marrow             | * Brain                     |
| * Esophagus              | * Eye                      | * Harderian Gland         | * Heart                     |
| * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum | * Intestine Small, Duodenum |
| * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      | * Kidney                    |
| * Lung                   | * Lymph Node, Mandibular   | * Lymph Node, Mediastinal | * Lymph Node, Mesenteric    |
| * Mammary Gland          | * Ovary                    | * Pancreas                | * Parathyroid Gland         |
| * Salivary Glands        | * Skin                     | * Spleen                  | * Stomach, Forestomach      |
| * Stomach, Glandular     | * Trachea                  | * Urinary Bladder         | * Uterus                    |

MISSING

- \* Lymph Node, Bronchial

INSUFFICIENT TISSUE

- \* Clitoral Gland

OBSERVATIONS

- |                   |                             |                               |                |
|-------------------|-----------------------------|-------------------------------|----------------|
| * Adrenal Cortex  |                             | Degeneration                  | Cystic, Mild   |
|                   |                             | Hypertrophy                   | Mild           |
| * Larynx          |                             | Metaplasia                    | Squamous, Mild |
| * Liver           |                             | Angiectasis                   | Minimal        |
|                   |                             | Basophilic Focus              |                |
|                   |                             | Clear Cell Focus              |                |
|                   | [ Angiectasis TGLs = 1-14 ] |                               |                |
| * Nose            |                             | Accumulation, Hyaline Droplet | Mild           |
| * Pituitary Gland | Pars Distalis               | Hyperplasia                   | Mild           |
| * Thymus          |                             | Hyperplasia                   | Tubular, Mild  |
| * Thyroid Gland   | C Cell                      | Hyperplasia                   | Mild           |

\* PROTOCOL REQUIRED TISSUE



TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 320

TRT#: 4

SEX: Female

DAY ON TEST: 731

DOSE: 10 mg/m3

DISP: Terminal Sacrifice

HISTO: 57189

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                          |                            |                           |                             |
|--------------------------|----------------------------|---------------------------|-----------------------------|
| * Adrenal Medulla        | * Bone                     | * Bone Marrow             | * Brain                     |
| * Clitoral Gland         | * Esophagus                | * Eye                     | * Harderian Gland           |
| * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum | * Intestine Small, Duodenum |
| * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      | * Kidney                    |
| * Lung                   | * Lymph Node, Bronchial    | * Lymph Node, Mandibular  | * Lymph Node, Mediastinal   |
| * Lymph Node, Mesenteric | * Mammary Gland            | * Pancreas                | * Parathyroid Gland         |
| * Salivary Glands        | * Skin                     | * Spleen                  | * Stomach, Forestomach      |
| * Stomach, Glandular     | * Thymus                   | * Trachea                 | * Urinary Bladder           |
| * Uterus                 |                            |                           |                             |

OBSERVATIONS

- |                   |                     |                               |                   |
|-------------------|---------------------|-------------------------------|-------------------|
| * Adrenal Cortex  |                     | Hyperplasia                   | Mild              |
|                   |                     | Hypertrophy                   | Mild              |
| * Heart           |                     | Cardiomyopathy                | Minimal           |
| * Larynx          |                     | Metaplasia                    | Squamous, Minimal |
| * Liver           |                     | Basophilic Focus              |                   |
|                   |                     | Clear Cell Focus              |                   |
| * Nose            |                     | Accumulation, Hyaline Droplet | Mild              |
| * Ovary           |                     | Cyst                          | Mild              |
|                   | [ Cyst TGLs = 2-9 ] |                               |                   |
| * Pituitary Gland | Pars Distalis       | Adenoma                       |                   |
| * Thyroid Gland   | C Cell              | Hyperplasia                   | Minimal           |

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 321

TRT#: 4

SEX: Female

DAY ON TEST: 687

DOSE: 10 mg/m3

DISP: Moribund Sacrifice

HISTO: 57190

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Medulla
- \* Esophagus
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Lymph Node, Mediastinal
- \* Parathyroid Gland
- Spinal Cord
- \* Thymus
- \* Uterus
- \* Bone
- \* Eye
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Lymph Node, Mesenteric
- Peripheral Nerve
- \* Spleen
- \* Thyroid Gland
- \* Bone Marrow
- \* Harderian Gland
- \* Intestine Small, Duodenum
- \* Lung
- \* Ovary
- \* Salivary Glands
- \* Stomach, Forestomach
- \* Trachea
- \* Brain
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Lymph Node, Mandibular
- \* Pancreas
- \* Skin
- \* Stomach, Glandular
- \* Urinary Bladder

MISSING

- \* Clitoral Gland
- \* Lymph Node, Bronchial

OBSERVATIONS

- \* Adrenal Cortex
- \* Heart
- \* Kidney
- \* Larynx
- \* Liver
- \* Mammary Gland
- [ Fibroadenoma TGLs = 1-15 ]
- [ Galactocele TGLs = 2-16 ]
- \* Nose
- \* Pituitary Gland
- [ Adenoma TGLs = 3-10 ]
- Vagina
- [ Squamous Cell Carcinoma TGLs = 4-14 ]
- Transit Epithe
- Glands, Olfactory Epi
- Pars Distalis
- Hypertrophy
- Cardiomyopathy
- Hyperplasia
- Mineralization
- Metaplasia
- Basophilic Focus
- Fibroadenoma
- Galactocele
- Accumulation, Hyaline Droplet
- Hyperplasia
- Adenoma
- Squamous Cell Carcinoma
- Mild
- Minimal
- Minimal
- Mild
- Squamous, Minimal
- Mild
- Moderate
- Mild

PRIMARY CAUSE OF DEATH - Vagina Squamous Cell Carcinoma

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 322

TRT#: 4

SEX: Female

DAY ON TEST: 619

DOSE: 10 mg/m3

DISP: Moribund Sacrifice

HISTO: 57191

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                             |                          |                            |                           |
|-----------------------------|--------------------------|----------------------------|---------------------------|
| * Adrenal Medulla           | * Bone                   | * Bone Marrow              | * Brain                   |
| * Clitoral Gland            | * Esophagus              | * Eye                      | * Harderian Gland         |
| * Heart                     | * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum |
| * Intestine Small, Duodenum | * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      |
| * Kidney                    | * Lymph Node, Mandibular | * Lymph Node, Mediastinal  | * Lymph Node, Mesenteric  |
| * Mammary Gland             | * Pancreas               | * Parathyroid Gland        | * Salivary Glands         |
| * Skin                      | * Stomach, Forestomach   | * Stomach, Glandular       | * Thymus                  |
| * Trachea                   | * Urinary Bladder        | * Uterus                   |                           |

MISSING

- \* Lymph Node, Bronchial

OBSERVATIONS

- |   |                       |                                  |                        |
|---|-----------------------|----------------------------------|------------------------|
| * Adrenal Cortex                                |                       | Hyperplasia                      | Mild                   |
|   |                       | Hypertrophy                      | Mild                   |
| * Larynx  |                       | Metaplasia                       | Squamous, Mild         |
| * Liver   |                       | Basophilic Focus                 |                        |
| * Lung  | Alveolar Epith        | Hyperplasia                      | Minimal                |
|   |                       | Inflammation                     | Granulomatous, Minimal |
| Lymph Node                                      | Lumbar                | Hemorrhage                       | Moderate               |
| [ Hemorrhage TGLs = 6-16 ]                      |                       |                                  |                        |
| * Nose  | Glands, Olfactory Epi | Accumulation, Hyaline Droplet    | Moderate               |
|   |                       | Hyperplasia                      | Moderate               |
| * Ovary   |                       | Granulosa Cell Tumor Malignant   |                        |
|   |                       | Mesothelioma Malignant           |                        |
| [ Granulosa Cell Tumor Malignant TGLs = 3-14 ]  |                       |                                  |                        |
| * Pituitary Gland                               | Pars Distalis         | Adenoma                          |                        |
| [ Adenoma TGLs = 8-10 ]                         |                       |                                  |                        |
| Skeletal Muscle                                 |                       | Mesothelioma Malignant           |                        |
| [ Mesothelioma Malignant TGLs = 2-15 ]          |                       |                                  |                        |
| * Spleen  |                       | Hematopoietic Cell Proliferation | Moderate               |
| [ Hematopoietic Cell Proliferation TGLs = 4-6 ] |                       |                                  |                        |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

---

ANIMAL ID: 322

TRT#: 4

SEX: Female

DAY ON TEST: 619

DOSE: 10 mg/m3

DISP: Moribund Sacrifice

HISTO: 57191

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**ORGAN AND ACCOUNTABLE SITE STATUS**

---

\* Thyroid Gland

C Cell

Hyperplasia

Mild

---

PRIMARY CAUSE OF DEATH

- Ovary Granulosa Cell Tumor Malignant

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TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 323

TRT#: 4

SEX: Female

DAY ON TEST: 732

DOSE: 10 mg/m3

DISP: Terminal Sacrifice

HISTO: 57192

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                          |                            |                           |                             |
|--------------------------|----------------------------|---------------------------|-----------------------------|
| * Adrenal Medulla        | * Bone                     | * Bone Marrow             | * Brain                     |
| * Clitoral Gland         | * Esophagus                | * Eye                     | * Heart                     |
| * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum | * Intestine Small, Duodenum |
| * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      | * Kidney                    |
| * Liver                  | * Lymph Node, Bronchial    | * Lymph Node, Mandibular  | * Lymph Node, Mediastinal   |
| * Lymph Node, Mesenteric | * Mammary Gland            | * Ovary                   | * Pancreas                  |
| * Parathyroid Gland      | * Salivary Glands          | * Skin                    | * Spleen                    |
| * Stomach, Forestomach   | * Stomach, Glandular       | * Thymus                  | * Trachea                   |
| * Urinary Bladder        |                            |                           |                             |

OBSERVATIONS

- |                   |               |                               |                        |
|-------------------|---------------|-------------------------------|------------------------|
| * Adrenal Cortex  |               | Degeneration                  | Cystic, Mild           |
| * Harderian Gland |               | Hyperplasia                   | Minimal                |
| * Larynx          |               | Metaplasia                    | Squamous, Minimal      |
| * Lung            |               | Inflammation                  | Granulomatous, Minimal |
| * Nose            |               | Accumulation, Hyaline Droplet | Mild                   |
| * Pituitary Gland | Pars Distalis | Hyperplasia                   | Mild                   |
| * Thyroid Gland   | C Cell        | Hyperplasia                   | Minimal                |
| * Uterus          | Endometrium   | Hyperplasia                   | Cystic, Marked         |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 324

TRT#: 4

SEX: Female

DAY ON TEST: 733

DOSE: 10 mg/m3

DISP: Terminal Sacrifice

HISTO: 57193

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                          |                            |                           |                             |
|--------------------------|----------------------------|---------------------------|-----------------------------|
| * Adrenal Medulla        | * Bone                     | * Bone Marrow             | * Brain                     |
| * Esophagus              | * Eye                      | * Harderian Gland         | * Heart                     |
| * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum | * Intestine Small, Duodenum |
| * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      | * Liver                     |
| * Lung                   | * Lymph Node, Bronchial    | * Lymph Node, Mandibular  | * Lymph Node, Mediastinal   |
| * Lymph Node, Mesenteric | * Ovary                    | * Pancreas                | * Parathyroid Gland         |
| * Salivary Glands        | * Spleen                   | * Stomach, Glandular      | * Thymus                    |
| * Trachea                | * Urinary Bladder          | * Uterus                  |                             |

MISSING

- \* Clitoral Gland

OBSERVATIONS

- |                        |                              |                               |                        |
|------------------------|------------------------------|-------------------------------|------------------------|
| * Adrenal Cortex       |                              | Adenoma                       |                        |
|                        |                              | Degeneration                  | Cystic, Mild           |
|                        |                              | Hyperplasia                   | Mild                   |
|                        |                              | Hypertrophy                   | Mild                   |
| * Kidney               |                              | Nephropathy                   | Minimal                |
| * Larynx               |                              | Metaplasia                    | Squamous, Minimal      |
| * Mammary Gland        |                              | Fibroadenoma                  |                        |
|                        | [ Fibroadenoma TGLs = 1-15 ] |                               |                        |
| * Nose                 |                              | Accumulation, Hyaline Droplet | Minimal                |
| * Pituitary Gland      | Pars Distalis                | Adenoma                       |                        |
|                        | [ Adenoma TGLs = 2-10 ]      |                               |                        |
| * Skin                 | Subcut Tiss                  | Liposarcoma                   |                        |
| * Stomach, Forestomach |                              | Inflammation                  | Chronic Active, Marked |
|                        | [ Inflammation TGLs = 3-14 ] |                               |                        |
| * Thyroid Gland        | C Cell                       | Hyperplasia                   | Mild                   |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 325

TRT#: 4

SEX: Female

DAY ON TEST: 733

DOSE: 10 mg/m3

DISP: Terminal Sacrifice

HISTO: 57194

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                           |                             |                          |                            |
|---------------------------|-----------------------------|--------------------------|----------------------------|
| * Adrenal Cortex          | * Adrenal Medulla           | * Bone                   | * Bone Marrow              |
| * Brain                   | * Clitoral Gland            | * Esophagus              | * Eye                      |
| * Harderian Gland         | * Heart                     | * Intestine Large, Cecum | * Intestine Large, Colon   |
| * Intestine Large, Rectum | * Intestine Small, Duodenum | * Intestine Small, Ileum | * Intestine Small, Jejunum |
| * Islets, Pancreatic      | * Lung                      | * Lymph Node, Bronchial  | * Lymph Node, Mandibular   |
| * Lymph Node, Mediastinal | * Lymph Node, Mesenteric    | * Mammary Gland          | * Ovary                    |
| * Pancreas                | * Pituitary Gland           | * Salivary Glands        | * Skin                     |
| * Spleen                  | * Stomach, Forestomach      | * Stomach, Glandular     | * Thymus                   |
| * Trachea                 | * Urinary Bladder           | * Uterus                 |                            |

MISSING

- \* Parathyroid Gland

OBSERVATIONS

- |                 |                       |                               |                |
|-----------------|-----------------------|-------------------------------|----------------|
| * Kidney        |                       | Nephropathy                   | Minimal        |
| * Larynx        |                       | Metaplasia                    | Squamous, Mild |
| * Liver         |                       | Basophilic Focus              |                |
| * Nose          |                       | Accumulation, Hyaline Droplet | Mild           |
|                 | Glands, Olfactory Epi | Hyperplasia                   | Mild           |
| * Thyroid Gland | C Cell                | Hyperplasia                   | Minimal        |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 326

TRT#: 4

SEX: Female

DAY ON TEST: 732

DOSE: 10 mg/m3

DISP: Terminal Sacrifice

HISTO: 57195

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                           |                             |                          |                            |
|---------------------------|-----------------------------|--------------------------|----------------------------|
| * Adrenal Cortex          | * Adrenal Medulla           | * Bone                   | * Bone Marrow              |
| * Brain                   | * Clitoral Gland            | * Esophagus              | * Eye                      |
| * Harderian Gland         | * Heart                     | * Intestine Large, Cecum | * Intestine Large, Colon   |
| * Intestine Large, Rectum | * Intestine Small, Duodenum | * Intestine Small, Ileum | * Intestine Small, Jejunum |
| * Islets, Pancreatic      | * Lung                      | * Lymph Node, Bronchial  | * Lymph Node, Mediastinal  |
| * Lymph Node, Mesenteric  | * Ovary                     | * Pancreas               | * Parathyroid Gland        |
| * Salivary Glands         | * Skin                      | * Spleen                 | * Stomach, Forestomach     |
| * Stomach, Glandular      | * Thymus                    | * Trachea                | * Urinary Bladder          |
| * Uterus                  |                             |                          |                            |

MISSING

- \* Lymph Node, Mandibular

OBSERVATIONS

- |                   |                      |                               |                   |
|-------------------|----------------------|-------------------------------|-------------------|
| * Kidney          |                      | Nephropathy                   | Minimal           |
| * Larynx          |                      | Metaplasia                    | Squamous, Minimal |
| * Liver           |                      | Basophilic Focus              |                   |
|                   |                      | Cyst                          | Mild              |
|                   | [ Cyst TGLs = 1-14 ] |                               |                   |
| * Mammary Gland   |                      | Fibroadenoma                  |                   |
| * Nose            |                      | Accumulation, Hyaline Droplet | Mild              |
| * Pituitary Gland | Pars Distalis        | Hyperplasia                   | Mild              |
| * Thyroid Gland   | C Cell               | Hyperplasia                   | Minimal           |

\* PROTOCOL REQUIRED TISSUE



TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 327

TRT#: 4

SEX: Female

DAY ON TEST: 732

DOSE: 10 mg/m3

DISP: Terminal Sacrifice

HISTO: 57196

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                             |                           |                            |                           |
|-----------------------------|---------------------------|----------------------------|---------------------------|
| * Adrenal Medulla           | * Bone                    | * Bone Marrow              | * Brain                   |
| * Clitoral Gland            | * Esophagus               | * Eye                      | * Harderian Gland         |
| * Heart                     | * Intestine Large, Cecum  | * Intestine Large, Colon   | * Intestine Large, Rectum |
| * Intestine Small, Duodenum | * Intestine Small, Ileum  | * Intestine Small, Jejunum | * Islets, Pancreatic      |
| * Lung                      | * Lymph Node, Mediastinal | * Lymph Node, Mesenteric   | * Mammary Gland           |
| * Ovary                     | * Parathyroid Gland       | * Salivary Glands          | * Skin                    |
| * Spleen                    | * Stomach, Forestomach    | * Stomach, Glandular       | * Thymus                  |
| * Trachea                   | * Urinary Bladder         | * Uterus                   |                           |

MISSING

- \* Lymph Node, Bronchial

OBSERVATIONS

- |                          |                             |                               |                      |
|--------------------------|-----------------------------|-------------------------------|----------------------|
| * Adrenal Cortex         |                             | Degeneration                  | Cystic, Minimal      |
| * Kidney                 |                             | Inflammation                  | Suppurative, Minimal |
| * Larynx                 |                             | Metaplasia                    | Squamous, Mild       |
| * Liver                  |                             | Angiectasis                   | Minimal              |
|                          | [ Angiectasis TGLs = 3-14 ] |                               |                      |
| * Lymph Node, Mandibular |                             | Ectasia                       | Moderate             |
|                          | [ Ectasia TGLs = 1-9 ]      |                               |                      |
| * Nose                   |                             | Accumulation, Hyaline Droplet | Moderate             |
|                          | Glands, Olfactory Epi       | Hyperplasia                   | Mild                 |
| * Pancreas               |                             | Basophilic Focus              |                      |
| * Pituitary Gland        |                             | Hyperplasia                   | Mild                 |
|                          | [ Hyperplasia TGLs = 2-10 ] |                               |                      |
| * Thyroid Gland          |                             | Hyperplasia                   | Mild                 |
|                          | C Cell                      |                               |                      |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 328

TRT#: 4

SEX: Female

DAY ON TEST: 627

DOSE: 10 mg/m3

DISP: Moribund Sacrifice

HISTO: 57197

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Medulla
- \* Clitoral Gland
- \* Heart
- \* Intestine Small, Duodenum
- \* Lymph Node, Bronchial
- \* Ovary
- \* Salivary Glands
- \* Stomach, Glandular
- \* Uterus
- \* Bone
- \* Esophagus
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Lymph Node, Mandibular
- \* Pancreas
- Spinal Cord
- \* Thymus
- \* Bone Marrow
- \* Eye
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Lymph Node, Mediastinal
- \* Parathyroid Gland
- \* Spleen
- \* Trachea
- \* Brain
- \* Harderian Gland
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Lymph Node, Mesenteric
- Peripheral Nerve
- \* Stomach, Forestomach
- \* Urinary Bladder

OBSERVATIONS

- \* Adrenal Cortex
    - [ Degeneration TGLs = 4-7 ]
  - \* Kidney
  - \* Larynx
  - \* Liver
  - \* Lung
  - \* Mammary Gland
  - \* Nose
  - \* Pituitary Gland
    - [ Adenoma TGLs = 3-10 ]
  - \* Skin
    - [ Inflammation TGLs = 1-14 ]
  - \* Thyroid Gland
- Degeneration  
 Hypertrophy  
 Nephropathy  
 Metaplasia  
 Basophilic Focus  
 Inflammation  
 Fibroadenoma  
 Accumulation, Hyaline Droplet  
 Adenoma  
 Inflammation  
 Hyperplasia  
 Cystic, Mild  
 Mild  
 Minimal  
 Squamous, Minimal  
 Granulomatous, Minimal  
 Mild  
 Chronic Active, Marked  
 Minimal

PRIMARY CAUSE OF DEATH - Pituitary Gland Pars Distalis Adenoma

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 329

TRT#: 4

SEX: Female

DAY ON TEST: 732

DOSE: 10 mg/m3

DISP: Terminal Sacrifice

HISTO: 57198

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                          |                            |                           |                             |
|--------------------------|----------------------------|---------------------------|-----------------------------|
| * Adrenal Medulla        | * Bone                     | * Bone Marrow             | * Brain                     |
| * Esophagus              | * Eye                      | * Harderian Gland         | * Heart                     |
| * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum | * Intestine Small, Duodenum |
| * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      | * Lung                      |
| * Lymph Node, Mandibular | * Lymph Node, Mediastinal  | * Lymph Node, Mesenteric  | * Ovary                     |
| * Pancreas               | * Parathyroid Gland        | * Salivary Glands         | * Skin                      |
| * Spleen                 | * Stomach, Forestomach     | * Stomach, Glandular      | * Thymus                    |
| * Trachea                | * Urinary Bladder          |                           |                             |

MISSING

- |                  |                         |
|------------------|-------------------------|
| * Clitoral Gland | * Lymph Node, Bronchial |
|------------------|-------------------------|

OBSERVATIONS

- |                   |                                  |                               |                  |
|-------------------|----------------------------------|-------------------------------|------------------|
| * Adrenal Cortex  |                                  | Degeneration                  | Cystic, Moderate |
|                   |                                  | Hyperplasia                   | Mild             |
|                   |                                  | Hypertrophy                   | Mild             |
| * Kidney          | Transit Epithe                   | Hyperplasia                   | Minimal          |
|                   |                                  | Nephropathy                   | Minimal          |
| * Larynx          |                                  | Metaplasia                    | Squamous, Mild   |
| * Liver           |                                  | Basophilic Focus              |                  |
|                   | [ Basophilic Focus TGLs = 3-14 ] |                               |                  |
| * Mammary Gland   |                                  | Fibroadenoma                  |                  |
|                   | [ Fibroadenoma TGLs = 1-15 ]     |                               |                  |
| Mesentery         | Fat                              | Necrosis                      | Mild             |
|                   | [ Necrosis TGLs = 2-16 ]         |                               |                  |
| * Nose            |                                  | Accumulation, Hyaline Droplet | Mild             |
| * Pituitary Gland | Pars Distalis                    | Adenoma                       |                  |
| * Thyroid Gland   | C Cell                           | Hyperplasia                   | Minimal          |
| * Uterus          |                                  | Polyp Stromal                 |                  |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 330

TRT#: 4

SEX: Female

DAY ON TEST: 603

DOSE: 10 mg/m3

DISP: Moribund Sacrifice

HISTO: 57199

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Cortex
- \* Brain
- \* Harderian Gland
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Lymph Node, Bronchial
- \* Mammary Gland
- \* Salivary Glands
- \* Stomach, Glandular
- \* Urinary Bladder

- \* Adrenal Medulla
- \* Clitoral Gland
- \* Heart
- \* Intestine Small, Duodenum
- \* Kidney
- \* Lymph Node, Mandibular
- \* Ovary
- \* Skin
- \* Thymus
- \* Uterus

- \* Bone
- \* Esophagus
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Liver
- \* Lymph Node, Mediastinal
- \* Pancreas
- \* Spleen
- \* Thyroid Gland

- \* Bone Marrow
- \* Eye
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Lung
- \* Lymph Node, Mesenteric
- \* Parathyroid Gland
- \* Stomach, Forestomach
- \* Trachea

OBSERVATIONS

- \* Larynx
- \* Nose
- \* Pituitary Gland

Pars Distalis

Metaplasia  
Accumulation, Hyaline Droplet  
Adenoma

Squamous, Minimal  
Mild

[ Adenoma TGLs = 1-10 ]

PRIMARY CAUSE OF DEATH

- Pituitary Gland Pars Distalis Adenoma

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 331

TRT#: 4

SEX: Female

DAY ON TEST: 731

DOSE: 10 mg/m3

DISP: Terminal Sacrifice

HISTO: 57200

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                             |                           |                            |                           |
|-----------------------------|---------------------------|----------------------------|---------------------------|
| * Adrenal Medulla           | * Bone                    | * Bone Marrow              | * Brain                   |
| * Clitoral Gland            | * Esophagus               | * Eye                      | * Harderian Gland         |
| * Heart                     | * Intestine Large, Cecum  | * Intestine Large, Colon   | * Intestine Large, Rectum |
| * Intestine Small, Duodenum | * Intestine Small, Ileum  | * Intestine Small, Jejunum | * Islets, Pancreatic      |
| * Kidney                    | * Liver                   | * Lung                     | * Lymph Node, Bronchial   |
| * Lymph Node, Mandibular    | * Lymph Node, Mediastinal | * Lymph Node, Mesenteric   | * Mammary Gland           |
| * Ovary                     | * Pancreas                | * Parathyroid Gland        | * Salivary Glands         |
| * Skin                      | * Spleen                  | * Stomach, Forestomach     | * Stomach, Glandular      |
| * Thymus                    | * Trachea                 | * Urinary Bladder          |                           |

OBSERVATIONS

- |                         |                       |                               |                   |
|-------------------------|-----------------------|-------------------------------|-------------------|
| * Adrenal Cortex        |                       | Degeneration                  | Cystic, Mild      |
| * Larynx                |                       | Metaplasia                    | Squamous, Minimal |
| * Nose                  |                       | Accumulation, Hyaline Droplet | Moderate          |
|                         | Glands, Olfactory Epi | Hyperplasia                   | Mild              |
| * Pituitary Gland       | Pars Distalis         | Adenoma                       |                   |
| [ Adenoma TGLs = 1-10 ] |                       |                               |                   |
| * Thyroid Gland         | C Cell                | Hyperplasia                   | Mild              |
| * Uterus                |                       | Polyp Stromal                 |                   |

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 332

TRT#: 4

SEX: Female

DAY ON TEST: 729

DOSE: 10 mg/m3

DISP: Moribund Sacrifice

HISTO: 57201

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Medulla
- \* Esophagus
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Lymph Node, Mandibular
- \* Ovary
- \* Spleen
- \* Urinary Bladder
- \* Bone
- \* Eye
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Lymph Node, Mediastinal
- \* Pancreas
- \* Stomach, Forestomach
- \* Uterus
- \* Bone Marrow
- \* Harderian Gland
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Lymph Node, Mesenteric
- \* Parathyroid Gland
- \* Stomach, Glandular
- \* Clitoral Gland
- \* Heart
- \* Intestine Small, Duodenum
- \* Kidney
- \* Mammary Gland
- \* Salivary Glands
- \* Trachea

MISSING

- \* Lymph Node, Bronchial

OBSERVATIONS

- \* Adrenal Cortex
  - Degeneration
  - Hypertrophy
  - Cystic, Mild
- \* Brain
  - Granular Cell Tumor Benign
- \* Larynx
  - Metaplasia
  - Squamous, Minimal
- \* Liver
  - Basophilic Focus
  - Cyst
  - Moderate
- [ Cyst TGLs = 5,6-6+15 ]
- \* Lung
  - [ Inflammation TGLs = 3,4-5+4 ]
  - Inflammation
  - Granulomatous, Minimal
- \* Nose
  - Accumulation, Hyaline Droplet
  - Mild
- Glands, Olfactory Epi
- \* Pituitary Gland
  - Pars Distalis
  - Hyperplasia
  - Mild
  - Adenoma
- [ Adenoma TGLs = 2-10 ]
- \* Skin
  - Inflammation
  - Chronic Active, Mild
- [ Inflammation TGLs = 7-16 ]
- \* Thymus
  - Lymphoma Malignant
- [ Lymphoma Malignant TGLs = 1-14 ]
- \* Thyroid Gland
  - C Cell
  - Hyperplasia
  - Minimal

PRIMARY CAUSE OF DEATH - Pituitary Gland Pars Distalis Adenoma

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 333

TRT#: 4

SEX: Female

DAY ON TEST: 731

DOSE: 10 mg/m3

DISP: Terminal Sacrifice

HISTO: 57202

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                          |                            |                           |                             |
|--------------------------|----------------------------|---------------------------|-----------------------------|
| * Adrenal Medulla        | * Bone                     | * Bone Marrow             | * Brain                     |
| * Clitoral Gland         | * Esophagus                | * Eye                     | * Heart                     |
| * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum | * Intestine Small, Duodenum |
| * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      | * Lung                      |
| * Lymph Node, Bronchial  | * Lymph Node, Mandibular   | * Lymph Node, Mediastinal | * Lymph Node, Mesenteric    |
| * Mammary Gland          | * Ovary                    | * Pancreas                | * Parathyroid Gland         |
| * Salivary Glands        | * Skin                     | * Spleen                  | * Stomach, Forestomach      |
| * Stomach, Glandular     | * Thymus                   | * Trachea                 | * Urinary Bladder           |
| * Uterus                 |                            |                           |                             |

OBSERVATIONS

- |                   |                                 |                               |                   |
|-------------------|---------------------------------|-------------------------------|-------------------|
| * Adrenal Cortex  |                                 | Adenoma                       |                   |
|                   |                                 | Metaplasia                    | Osseous, Moderate |
| * Harderian Gland |                                 | Hyperplasia                   | Minimal           |
| * Kidney          |                                 | Nephropathy                   | Minimal           |
| * Larynx          |                                 | Metaplasia                    | Squamous, Mild    |
| * Liver           |                                 | Basophilic Focus              |                   |
|                   | [ Basophilic Focus TGLs = 1-6 ] |                               |                   |
| * Nose            |                                 | Accumulation, Hyaline Droplet | Marked            |
|                   | Glands, Olfactory Epi           | Hyperplasia                   | Mild              |
| * Pituitary Gland | Pars Distalis                   | Hyperplasia                   | Mild              |
| * Thyroid Gland   | C Cell                          | Hyperplasia                   | Minimal           |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 334

TRT#: 4

SEX: Female

DAY ON TEST: 633

DOSE: 10 mg/m3

DISP: Moribund Sacrifice

HISTO: 57203

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Medulla
- \* Clitoral Gland
- \* Heart
- \* Intestine Small, Duodenum
- \* Kidney
- \* Ovary
- \* Pituitary Gland
- \* Spleen
- \* Trachea
- \* Bone
- \* Esophagus
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Lung
- \* Pancreas
- \* Salivary Glands
- \* Stomach, Forestomach
- \* Urinary Bladder
- \* Bone Marrow
- \* Eye
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Lymph Node, Mandibular
- \* Parathyroid Gland
- \* Skin
- \* Stomach, Glandular
- \* Brain
- \* Harderian Gland
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Lymph Node, Mediastinal
- Peripheral Nerve
- Spinal Cord
- \* Thymus

MISSING

- \* Lymph Node, Bronchial

OBSERVATIONS

- \* Adrenal Cortex
  - Degeneration
  - Hyperplasia
  - Hypertrophy
  - Metaplasia
  - Basophilic Focus
  - Cyst
  - Cystic, Mild
  - Mild
  - Mild
  - Squamous, Mild
- \* Larynx
- \* Liver
  - [ Cyst TGLs = 4-6 ]
  - Ectasia
  - Fibroadenoma
  - Accumulation, Hyaline Droplet
  - Hyperplasia
  - Polyp Stromal
  - Mild
  - Mild
  - Moderate
  - Minimal
- \* Mammory Gland
  - [ Fibroadenoma TGLs = 2-15+16 ]
- \* Nose
- \* Thyroid Gland
  - C Cell
- \* Uterus

PRIMARY CAUSE OF DEATH - Mammary Gland Fibroadenoma

\* PROTOCOL REQUIRED TISSUE



TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 335

TRT#: 4

SEX: Female

DAY ON TEST: 530

DOSE: 10 mg/m3

DISP: Moribund Sacrifice

HISTO: 57204

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Medulla
- \* Clitoral Gland
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Lymph Node, Bronchial
- \* Mammary Gland
- \* Skin
- \* Thymus
- \* Uterus
- \* Bone
- \* Esophagus
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Lymph Node, Mandibular
- \* Pancreas
- \* Spleen
- \* Thyroid Gland
- \* Bone Marrow
- \* Eye
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Lymph Node, Mediastinal
- \* Parathyroid Gland
- \* Stomach, Forestomach
- \* Trachea
- \* Brain
- \* Harderian Gland
- \* Intestine Small, Duodenum
- \* Liver
- \* Lymph Node, Mesenteric
- \* Salivary Glands
- \* Stomach, Glandular
- \* Urinary Bladder

OBSERVATIONS

- \* Adrenal Cortex [ Hypertrophy TGLs = 4-7 ] Hypertrophy Mild
- \* Heart Cardiomyopathy Mild
- \* Kidney Nephropathy Minimal
- \* Larynx Metaplasia Squamous, Mild
- \* Lung Inflammation Granulomatous, Minimal
- [ Squamous Cell Carcinoma TGLs = 1-5 ] Squamous Cell Carcinoma
- Mesentery Fat Necrosis Mild
- [ Necrosis TGLs = 6-14 ]
- \* Nose Accumulation, Hyaline Droplet Marked
- Glands, Olfactory Epi Hyperplasia Minimal
- \* Ovary Cyst Moderate
- [ Cyst TGLs = 2,3-9 ]
- \* Pituitary Gland Pars Distalis Adenoma
- [ Adenoma TGLs = 5-10 ]

PRIMARY CAUSE OF DEATH - Pituitary Gland Pars Distalis Adenoma

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 336

TRT#: 4

SEX: Female

DAY ON TEST: 732

DOSE: 10 mg/m3

DISP: Terminal Sacrifice

HISTO: 57205

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Bone
- \* Esophagus
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Lymph Node, Bronchial
- \* Ovary
- \* Salivary Glands
- \* Stomach, Glandular
- \* Urinary Bladder
- \* Bone Marrow
- \* Eye
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Lymph Node, Mandibular
- \* Pancreas
- \* Skin
- \* Thymus
- \* Brain
- \* Harderian Gland
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Lymph Node, Mesenteric
- \* Parathyroid Gland
- \* Spleen
- \* Thyroid Gland
- \* Clitoral Gland
- \* Heart
- \* Intestine Small, Duodenum
- \* Kidney
- \* Mammary Gland
- \* Pituitary Gland
- \* Stomach, Forestomach
- \* Trachea

MISSING

- \* Lymph Node, Mediastinal

OBSERVATIONS

- \* Adrenal Cortex
  - \* Adrenal Medulla
    - [ Pheochromocytoma Malignant TGLs = 1-7 ]
  - \* Larynx
  - \* Liver
  - \* Lung
  - \* Nose
  - \* Uterus
    - Endometrium
- Hyperplasia  
Pheochromocytoma Malignant
- Metaplasia  
Basophilic Focus  
Inflammation  
Accumulation, Hyaline Droplet  
Hyperplasia  
Polyp Stromal
- Mild  
Squamous, Mild  
Granulomatous, Minimal  
Mild  
Cystic, Moderate

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 337

TRT#: 4

SEX: Female

DAY ON TEST: 731

DOSE: 10 mg/m3

DISP: Terminal Sacrifice

HISTO: 57206

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                            |                           |                             |                          |
|----------------------------|---------------------------|-----------------------------|--------------------------|
| * Adrenal Medulla          | * Bone                    | * Bone Marrow               | * Brain                  |
| * Clitoral Gland           | * Esophagus               | * Harderian Gland           | * Intestine Large, Cecum |
| * Intestine Large, Colon   | * Intestine Large, Rectum | * Intestine Small, Duodenum | * Intestine Small, Ileum |
| * Intestine Small, Jejunum | * Islets, Pancreatic      | * Kidney                    | * Liver                  |
| * Lung                     | * Lymph Node, Mandibular  | * Lymph Node, Mesenteric    | * Mammary Gland          |
| * Pancreas                 | * Parathyroid Gland       | * Pituitary Gland           | * Salivary Glands        |
| * Skin                     | * Spleen                  | * Stomach, Forestomach      | * Stomach, Glandular     |
| * Trachea                  | * Urinary Bladder         | * Uterus                    |                          |

MISSING

- |                         |                           |          |
|-------------------------|---------------------------|----------|
| * Lymph Node, Bronchial | * Lymph Node, Mediastinal | * Thymus |
|-------------------------|---------------------------|----------|

OBSERVATIONS

- |                     |                       |                               |                |
|---------------------|-----------------------|-------------------------------|----------------|
| * Adrenal Cortex    |                       | Hyperplasia                   | Mild           |
| * Eye               | Retina                | Atrophy                       | Mild           |
| * Heart             |                       | Cardiomyopathy                | Minimal        |
| * Larynx            |                       | Metaplasia                    | Squamous, Mild |
| * Nose              |                       | Accumulation, Hyaline Droplet | Moderate       |
| * Ovary             | Glands, Olfactory Epi | Hyperplasia                   | Mild           |
|                     |                       | Cyst                          | Moderate       |
| [ Cyst TGLs = 1-9 ] |                       |                               |                |
| * Thyroid Gland     | C Cell                | Hyperplasia                   | Minimal        |

\* PROTOCOL REQUIRED TISSUE





TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 340

TRT#: 4

SEX: Female

DAY ON TEST: 530

DOSE: 10 mg/m3

DISP: Moribund Sacrifice

HISTO: 57209

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Medulla
- \* Clitoral Gland
- \* Heart
- \* Intestine Small, Duodenum
- \* Kidney
- \* Lymph Node, Mandibular
- \* Ovary
- \* Skin
- \* Trachea
- \* Bone
- \* Esophagus
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Liver
- \* Lymph Node, Mediastinal
- \* Pancreas
- \* Spleen
- \* Urinary Bladder
- \* Bone Marrow
- \* Eye
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Lung
- \* Lymph Node, Mesenteric
- \* Parathyroid Gland
- \* Stomach, Glandular
- \* Uterus
- \* Brain
- \* Harderian Gland
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Lymph Node, Bronchial
- \* Mammary Gland
- \* Salivary Glands
- \* Thymus

OBSERVATIONS

- |   |   |   |  |
|---|---|---|--|
| <ul style="list-style-type: none"> <li>* Adrenal Cortex<br/>[ Necrosis TGLs = 3,4-15+14 ]</li> <li>* Larynx</li> <li>* Nose</li> <li>* Pituitary Gland<br/>[ Adenoma TGLs = 2-10 ]</li> <li>* Stomach, Forestomach<br/>[ Ulcer TGLs = 5-10+16 ]</li> <li>* Thyroid Gland</li> </ul> | <ul style="list-style-type: none"> <li>Glands, Olfactory Epi<br/>Pars Distalis</li> <li>C Cell</li> </ul> | <ul style="list-style-type: none"> <li>Necrosis</li> <li>Metaplasia</li> <li>Accumulation, Hyaline Droplet</li> <li>Hyperplasia</li> <li>Adenoma</li> <li>Ulcer</li> <li>Hyperplasia</li> </ul> | <ul style="list-style-type: none"> <li>Mild</li> <li>Squamous, Mild</li> <li>Marked</li> <li>Minimal</li> <li>Marked</li> <li>Minimal</li> </ul> |
|---|---|---|--|

PRIMARY CAUSE OF DEATH - Pituitary Gland Pars Distalis Adenoma

CONTRIBUTORY CAUSE OF DEATH - Stomach, Forestomach Ulcer

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 341

TRT#: 4

SEX: Female

DAY ON TEST: 681

DOSE: 10 mg/m3

DISP: Moribund Sacrifice

HISTO: 57210

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                          |                            |                           |                             |
|--------------------------|----------------------------|---------------------------|-----------------------------|
| * Adrenal Medulla        | * Bone                     | * Bone Marrow             | * Brain                     |
| * Clitoral Gland         | * Esophagus                | * Eye                     | * Harderian Gland           |
| * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum | * Intestine Small, Duodenum |
| * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      | * Kidney                    |
| * Lung                   | * Lymph Node, Bronchial    | * Lymph Node, Mandibular  | * Lymph Node, Mediastinal   |
| * Lymph Node, Mesenteric | * Mammary Gland            | * Ovary                   | * Parathyroid Gland         |
| Peripheral Nerve         | * Salivary Glands          | * Skin                    | Spinal Cord                 |
| * Spleen                 | * Stomach, Forestomach     | * Stomach, Glandular      | * Thymus                    |
| * Trachea                | * Urinary Bladder          | * Uterus                  |                             |

OBSERVATIONS

- |                   |                         |                               |                   |
|-------------------|-------------------------|-------------------------------|-------------------|
| * Adrenal Cortex  |                         | Degeneration                  | Cystic, Mild      |
|                   |                         | Hypertrophy                   | Mild              |
| * Heart           |                         | Cardiomyopathy                | Minimal           |
| * Larynx          |                         | Metaplasia                    | Squamous, Minimal |
| * Liver           |                         | Basophilic Focus              |                   |
|                   |                         | Cyst                          | Mild              |
|                   | [ Cyst TGLs = 4-6 ]     |                               |                   |
| * Nose            |                         | Accumulation, Hyaline Droplet | Mild              |
| * Pancreas        |                         | Atrophy                       | Minimal           |
| * Pituitary Gland | Pars Distalis           | Adenoma                       |                   |
|                   | [ Adenoma TGLs = 3-10 ] |                               |                   |
| * Thyroid Gland   | C Cell                  | Hyperplasia                   | Minimal           |

PRIMARY CAUSE OF DEATH - Pituitary Gland Pars Distalis Adenoma

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 342

TRT#: 4

SEX: Female

DAY ON TEST: 684

DOSE: 10 mg/m3

DISP: Moribund Sacrifice

HISTO: 57211

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                            |                           |                             |                          |
|----------------------------|---------------------------|-----------------------------|--------------------------|
| * Adrenal Medulla          | * Bone                    | * Bone Marrow               | * Brain                  |
| * Clitoral Gland           | * Esophagus               | * Harderian Gland           | * Intestine Large, Cecum |
| * Intestine Large, Colon   | * Intestine Large, Rectum | * Intestine Small, Duodenum | * Intestine Small, Ileum |
| * Intestine Small, Jejunum | * Islets, Pancreatic      | * Kidney                    | * Liver                  |
| * Lymph Node, Bronchial    | * Lymph Node, Mandibular  | * Lymph Node, Mediastinal   | * Lymph Node, Mesenteric |
| * Ovary                    | * Pancreas                | * Parathyroid Gland         | Peripheral Nerve         |
| * Salivary Glands          | * Skin                    | Spinal Cord                 | * Spleen                 |
| * Stomach, Forestomach     | * Stomach, Glandular      | * Thymus                    | * Thyroid Gland          |
| * Trachea                  | * Urinary Bladder         | * Uterus                    |                          |

OBSERVATIONS

- |                   |                                       |                               |                        |
|-------------------|---------------------------------------|-------------------------------|------------------------|
| * Adrenal Cortex  |                                       | Degeneration                  | Cystic, Minimal        |
|                   |                                       | Hyperplasia                   | Mild                   |
| * Eye             | Retina                                | Atrophy                       | Mild                   |
| * Heart           |                                       | Cardiomyopathy                | Minimal                |
| * Larynx          |                                       | Metaplasia                    | Squamous, Mild         |
| * Lung            |                                       | Inflammation                  | Granulomatous, Minimal |
| * Mammary Gland   |                                       | Fibroadenoma                  |                        |
|                   | [ Fibroadenoma TGLs = 1-15+16+17+18 ] |                               |                        |
| * Nose            |                                       | Accumulation, Hyaline Droplet | Moderate               |
|                   | Glands, Olfactory Epi                 | Hyperplasia                   | Mild                   |
| * Pituitary Gland | Pars Distalis                         | Adenoma                       |                        |

PRIMARY CAUSE OF DEATH - Mammary Gland Fibroadenoma

\* PROTOCOL REQUIRED TISSUE



TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 343

TRT#: 4

SEX: Female

DAY ON TEST: 732

DOSE: 10 mg/m3

DISP: Terminal Sacrifice

HISTO: 57212

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                             |                           |                            |                           |
|-----------------------------|---------------------------|----------------------------|---------------------------|
| * Adrenal Medulla           | * Bone                    | * Bone Marrow              | * Brain                   |
| * Clitoral Gland            | * Esophagus               | * Eye                      | * Harderian Gland         |
| * Heart                     | * Intestine Large, Cecum  | * Intestine Large, Colon   | * Intestine Large, Rectum |
| * Intestine Small, Duodenum | * Intestine Small, Ileum  | * Intestine Small, Jejunum | * Islets, Pancreatic      |
| * Lymph Node, Mandibular    | * Lymph Node, Mediastinal | * Lymph Node, Mesenteric   | * Mammary Gland           |
| * Ovary                     | * Pancreas                | * Parathyroid Gland        | * Salivary Glands         |
| * Skin                      | * Spleen                  | * Stomach, Forestomach     | * Stomach, Glandular      |
| * Thymus                    | * Trachea                 | * Urinary Bladder          | * Uterus                  |

MISSING

- \* Lymph Node, Bronchial

OBSERVATIONS

- |                   |                               |                               |                        |
|-------------------|-------------------------------|-------------------------------|------------------------|
| * Adrenal Cortex  |                               | Degeneration                  | Cystic, Moderate       |
|                   |                               | Hyperplasia                   | Mild                   |
|                   |                               | Hypertrophy                   | Mild                   |
| * Kidney          |                               | Nephropathy                   | Minimal                |
| * Larynx          |                               | Metaplasia                    | Squamous, Mild         |
| * Liver           |                               | Basophilic Focus              |                        |
| * Lung            | Bronchiole                    | Hyperplasia                   | Minimal                |
|                   | [ Inflammation TGLs = 1-4+5 ] | Inflammation                  | Granulomatous, Minimal |
| * Nose            |                               | Accumulation, Hyaline Droplet | Mild                   |
| * Pituitary Gland | Pars Distalis                 | Hyperplasia                   | Moderate               |
| * Thyroid Gland   | C Cell                        | Hyperplasia                   | Mild                   |

\* PROTOCOL REQUIRED TISSUE



TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 345

TRT#: 4

SEX: Female

DAY ON TEST: 732

DOSE: 10 mg/m3

DISP: Terminal Sacrifice

HISTO: 57214

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Medulla
- \* Clitoral Gland
- \* Heart
- \* Intestine Small, Duodenum
- \* Lung
- \* Ovary
- \* Stomach, Glandular
- \* Urinary Bladder
- \* Bone
- \* Esophagus
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Lymph Node, Mandibular
- \* Salivary Glands
- \* Thymus
- \* Uterus
- \* Bone Marrow
- \* Eye
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Lymph Node, Mediastinal
- \* Spleen
- \* Thyroid Gland
- \* Brain
- \* Harderian Gland
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Lymph Node, Mesenteric
- \* Stomach, Forestomach
- \* Trachea

MISSING

- \* Lymph Node, Bronchial
- \* Parathyroid Gland

OBSERVATIONS

- \* Adrenal Cortex
    - [ Hyperplasia TGLs = 4-7 ]
  - \* Kidney
    - [ Fibroadenoma TGLs = 2-14 ]
  - \* Larynx
  - \* Liver
  - \* Mammary Gland
    - [ Adenoma TGLs = 1-10 ]
  - \* Nose
  - \* Pancreas
  - \* Pituitary Gland
    - [ Inflammation TGLs = 3-15 ]
  - \* Skin
- Degeneration
  - Hyperplasia
  - Nephropathy
  - Metaplasia
  - Basophilic Focus
  - Fibroadenoma
  - Accumulation, Hyaline Droplet
  - Atrophy
  - Adenoma
  - Inflammation
- Cystic, Mild
  - Mild
  - Minimal
  - Squamous, Mild
  - Multiple
  - Moderate
  - Minimal
  - Chronic Active, Moderate

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 346

TRT#: 4

SEX: Female

DAY ON TEST: 731

DOSE: 10 mg/m3

DISP: Terminal Sacrifice

HISTO: 57215

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

* Adrenal Medulla	* Bone	* Bone Marrow	* Brain
* Clitoral Gland	* Esophagus	* Eye	* Harderian Gland
* Intestine Large, Cecum	* Intestine Large, Colon	* Intestine Large, Rectum	* Intestine Small, Duodenum
* Intestine Small, Ileum	* Intestine Small, Jejunum	* Islets, Pancreatic	* Kidney
* Liver	* Lymph Node, Bronchial	* Lymph Node, Mandibular	* Lymph Node, Mediastinal
* Lymph Node, Mesenteric	* Mammary Gland	* Ovary	* Parathyroid Gland
* Salivary Glands	* Spleen	* Stomach, Forestomach	* Stomach, Glandular
* Thymus	* Trachea	* Urinary Bladder	* Uterus

OBSERVATIONS

* Adrenal Cortex		Hyperplasia	Mild
* Heart		Cardiomyopathy	Minimal
* Larynx		Metaplasia	Squamous, Mild
* Lung		Inflammation	Granulomatous, Minimal
* Nose		Accumulation, Hyaline Droplet	Moderate
	Glands, Olfactory Epi	Hyperplasia	Minimal
* Pancreas		Atrophy	Minimal
* Pituitary Gland	Pars Distalis	Hyperplasia	Moderate
	[ Hyperplasia TGLs = 1-10 ]		
* Skin		Inflammation	Chronic Active, Marked
	[ Inflammation TGLs = 2-14 ]		
* Thyroid Gland	C Cell	Hyperplasia	Mild

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 347

TRT#: 4

SEX: Female

DAY ON TEST: 731

DOSE: 10 mg/m3

DISP: Terminal Sacrifice

HISTO: 57216

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                          |                            |                           |                             |
|--------------------------|----------------------------|---------------------------|-----------------------------|
| * Adrenal Medulla        | * Bone                     | * Bone Marrow             | * Brain                     |
| * Clitoral Gland         | * Esophagus                | * Harderian Gland         | * Heart                     |
| * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum | * Intestine Small, Duodenum |
| * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      | * Kidney                    |
| * Lymph Node, Mandibular | * Lymph Node, Mediastinal  | * Lymph Node, Mesenteric  | * Mammary Gland             |
| * Pancreas               | * Parathyroid Gland        | * Salivary Glands         | * Skin                      |
| * Spleen                 | * Stomach, Forestomach     | * Stomach, Glandular      | * Thymus                    |
| * Trachea                | * Urinary Bladder          | * Uterus                  |                             |

MISSING

- \* Lymph Node, Bronchial

OBSERVATIONS

- |                   |                                       |                               |                        |
|-------------------|---------------------------------------|-------------------------------|------------------------|
| * Adrenal Cortex  |                                       | Hyperplasia                   | Mild                   |
| * Eye             | Retina                                | Atrophy                       | Mild                   |
| * Larynx          |                                       | Metaplasia                    | Squamous, Mild         |
| * Liver           |                                       | Basophilic Focus              |                        |
|                   | [ Hepatocellular Adenoma TGLs = 2-6 ] | Hepatocellular Adenoma        |                        |
| * Lung            | Bronchiole                            | Hyperplasia                   | Minimal                |
|                   |                                       | Inflammation                  | Granulomatous, Minimal |
| * Nose            |                                       | Accumulation, Hyaline Droplet | Mild                   |
|                   | Glands, Olfactory Epi                 | Hyperplasia                   | Moderate               |
| * Ovary           |                                       | Cyst                          | Marked                 |
|                   | [ Cyst TGLs = 3-14 ]                  |                               |                        |
| * Pituitary Gland | Pars Distalis                         | Adenoma                       |                        |
|                   | [ Adenoma TGLs = 1-10 ]               |                               |                        |
| * Thyroid Gland   | Follicular Cel                        | Adenoma                       |                        |
|                   | C Cell                                | Hyperplasia                   | Mild                   |
|                   | [ Adenoma TGLs = 4-3 ]                |                               |                        |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 348

TRT#: 4

SEX: Female

DAY ON TEST: 732

DOSE: 10 mg/m3

DISP: Terminal Sacrifice

HISTO: 57217

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Medulla
- \* Clitoral Gland
- \* Heart
- \* Intestine Small, Duodenum
- \* Lymph Node, Mandibular
- \* Parathyroid Gland
- \* Stomach, Forestomach
- \* Urinary Bladder
- \* Bone
- \* Esophagus
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Lymph Node, Mesenteric
- \* Salivary Glands
- \* Stomach, Glandular
- \* Uterus
- \* Bone Marrow
- \* Eye
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Ovary
- \* Skin
- \* Thymus
- \* Brain
- \* Harderian Gland
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Pancreas
- \* Spleen
- \* Trachea

MISSING

- \* Lymph Node, Bronchial
- \* Lymph Node, Mediastinal

OBSERVATIONS

- \* Adrenal Cortex
  - Degeneration
  - Hypertrophy
  - Cystic, Mild
- \* Kidney
  - Transit Epithe
  - Hyperplasia
  - Mild
- \* Larynx
  - Metaplasia
  - Minimal
- \* Liver
  - Basophilic Focus
  - Squamous, Mild
- \* Lung
  - Bronchiole
  - Hyperplasia
  - Inflammation
  - Minimal
  - Granulomatous, Minimal
- [ Inflammation TGLs = 3,4-5+4 ]
- \* Mammary Gland
  - Fibroadenoma
  - Fibroadenoma
- [ Fibroadenoma TGLs = 1-14 ]
- \* Nose
  - Accumulation, Hyaline Droplet
  - Moderate
- Glands, Olfactory Epi
  - Hyperplasia
  - Mild
- \* Pituitary Gland
  - Pars Distalis
  - Adenoma
- [ Adenoma TGLs = 2-10 ]
- \* Thyroid Gland
  - C Cell
  - Hyperplasia
  - Minimal

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 349

TRT#: 4

SEX: Female

DAY ON TEST: 732

DOSE: 10 mg/m3

DISP: Terminal Sacrifice

HISTO: 57218

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Medulla
- \* Clitoral Gland
- \* Heart
- \* Intestine Small, Duodenum
- \* Kidney
- \* Lymph Node, Mediastinal
- \* Salivary Glands
- \* Stomach, Glandular
- \* Uterus
- \* Bone
- \* Esophagus
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Lung
- \* Lymph Node, Mesenteric
- \* Skin
- \* Thymus
- \* Bone Marrow
- \* Eye
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Lymph Node, Bronchial
- \* Mammary Gland
- \* Spleen
- \* Trachea
- \* Brain
- \* Harderian Gland
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Lymph Node, Mandibular
- \* Parathyroid Gland
- \* Stomach, Forestomach
- \* Urinary Bladder

OBSERVATIONS

- \* Adrenal Cortex
  - Degeneration
  - Hypertrophy
  - Metaplasia
  - Basophilic Focus
  - Accumulation, Hyaline Droplet
  - Granulosa Cell Tumor Malignant
  - Atrophy
  - Adenoma
  - Cystic, Minimal
  - Mild
  - Squamous, Mild
  - Mild
  - Minimal
- \* Larynx
- \* Liver
- \* Nose
- \* Ovary
- \* Pancreas
- \* Pituitary Gland
  - Pars Distalis
- \* Thyroid Gland
  - C Cell
  - Hyperplasia
  - Mild

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 350

TRT#: 4

SEX: Female

DAY ON TEST: 731

DOSE: 10 mg/m3

DISP: Terminal Sacrifice

HISTO: 57219

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                            |                           |                             |                          |
|----------------------------|---------------------------|-----------------------------|--------------------------|
| * Bone                     | * Bone Marrow             | * Brain                     | * Esophagus              |
| * Eye                      | * Harderian Gland         | * Heart                     | * Intestine Large, Cecum |
| * Intestine Large, Colon   | * Intestine Large, Rectum | * Intestine Small, Duodenum | * Intestine Small, Ileum |
| * Intestine Small, Jejunum | * Islets, Pancreatic      | * Lung                      | * Lymph Node, Mandibular |
| * Lymph Node, Mediastinal  | * Mammary Gland           | * Pancreas                  | * Parathyroid Gland      |
| * Salivary Glands          | * Skin                    | * Spleen                    | * Stomach, Forestomach   |
| * Stomach, Glandular       | * Trachea                 | * Urinary Bladder           | * Uterus                 |

MISSING

- \* Lymph Node, Bronchial

OBSERVATIONS

- |                          |                                   |                               |                      |
|--------------------------|-----------------------------------|-------------------------------|----------------------|
| * Adrenal Cortex         |                                   | Degeneration                  | Cystic, Moderate     |
|                          |                                   | Hypertrophy                   | Mild                 |
| * Adrenal Medulla        |                                   | Hyperplasia                   | Mild                 |
| * Clitoral Gland         |                                   | Inflammation                  | Chronic Active, Mild |
| * Kidney                 |                                   | Nephropathy                   | Minimal              |
| * Larynx                 |                                   | Metaplasia                    | Squamous, Minimal    |
| * Liver                  |                                   | Basophilic Focus              |                      |
| * Lymph Node, Mesenteric |                                   | Hemangiosarcoma               |                      |
|                          | [ Hemangiosarcoma TGLs = 3-14 ]   |                               |                      |
| * Nose                   |                                   | Accumulation, Hyaline Droplet | Mild                 |
|                          | Glands, Olfactory Epi             | Hyperplasia                   | Minimal              |
| * Ovary                  |                                   | Cyst                          | Mild                 |
| * Pituitary Gland        |                                   | Adenoma                       |                      |
|                          | Pars Distalis                     |                               |                      |
|                          | [ Adenoma TGLs = 1-10 ]           |                               |                      |
| * Thymus                 |                                   | Lymphoma Malignant            |                      |
|                          | [ Lymphoma Malignant TGLs = 2-3 ] |                               |                      |
| * Thyroid Gland          |                                   | Hyperplasia                   | Minimal              |
|                          | C Cell                            |                               |                      |

\* PROTOCOL REQUIRED TISSUE



TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 501

TRT#: 6

SEX: Female

DAY ON TEST: 732

DOSE: 30 mg/m3

DISP: Terminal Sacrifice

HISTO: 57070

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Medulla
- \* Clitoral Gland
- \* Heart
- \* Intestine Small, Duodenum
- \* Kidney
- \* Lymph Node, Mesenteric
- \* Salivary Glands
- \* Stomach, Glandular
- \* Uterus
- \* Bone
- \* Esophagus
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Lymph Node, Bronchial
- \* Mammary Gland
- \* Skin
- \* Thymus
- \* Bone Marrow
- \* Eye
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Lymph Node, Mandibular
- \* Ovary
- \* Spleen
- \* Trachea
- \* Brain
- \* Harderian Gland
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Lymph Node, Mediastinal
- \* Pancreas
- \* Stomach, Forestomach
- \* Urinary Bladder

MISSING

- \* Parathyroid Gland

OBSERVATIONS

- |                   |  |                               |                        |
|-------------------|--|-------------------------------|------------------------|
| * Adrenal Cortex  |  | Hypertrophy                   | Mild                   |
| * Larynx          |  | Metaplasia                    | Squamous, Moderate     |
| * Liver           | Bile Duct                              | Dilatation                    | Marked                 |
|                   | [ Dilatation TGLs = 1-18 ]             |                               |                        |
| * Lung            | Bronchiole                             | Hyperplasia                   | Minimal                |
|                   | [ Inflammation TGLs = 3,4,5-14+15+16 ] | Inflammation                  | Granulomatous, Minimal |
| * Nose            |  | Accumulation, Hyaline Droplet | Moderate               |
|                   | Glands, Olfactory Epi                  | Hyperplasia                   | Mild                   |
| * Pituitary Gland | Pars Distalis                          | Adenoma                       |                        |
|                   | [ Adenoma TGLs = 2-10 ]                |                               |                        |
| * Thyroid Gland   | C Cell                                 | Hyperplasia                   | Mild                   |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 502

TRT#: 6

SEX: Female

DAY ON TEST: 673

DOSE: 30 mg/m3

DISP: Moribund Sacrifice

HISTO: 57071

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                             |                          |                            |                           |
|-----------------------------|--------------------------|----------------------------|---------------------------|
| * Adrenal Medulla           | * Bone                   | * Bone Marrow              | * Brain                   |
| * Clitoral Gland            | * Esophagus              | * Eye                      | * Harderian Gland         |
| * Heart                     | * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum |
| * Intestine Small, Duodenum | * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      |
| * Kidney                    | * Lymph Node, Bronchial  | * Lymph Node, Mandibular   | * Lymph Node, Mediastinal |
| * Lymph Node, Mesenteric    | * Ovary                  | * Pancreas                 | * Parathyroid Gland       |
| * Pituitary Gland           | * Salivary Glands        | * Skin                     | * Stomach, Forestomach    |
| * Stomach, Glandular        | * Thymus                 | * Trachea                  | * Urinary Bladder         |
| * Uterus                    |                          |                            |                           |

OBSERVATIONS

- |                  |                           |                                  |                        |
|------------------|---------------------------|----------------------------------|------------------------|
| * Adrenal Cortex |                           | Hyperplasia                      | Moderate               |
| * Larynx         |                           | Metaplasia                       | Squamous, Moderate     |
| * Liver          |                           | Basophilic Focus                 |                        |
|                  |                           | Necrosis                         | Minimal                |
| * Lung           |                           | Inflammation                     | Granulomatous, Minimal |
| * Mammary Gland  |                           | Carcinoma                        |                        |
|                  | [ Carcinoma TGLs = 1-14 ] |                                  |                        |
| * Nose           |                           | Accumulation, Hyaline Droplet    | Mild                   |
|                  | Glands, Olfactory Epi     | Hyperplasia                      | Minimal                |
| * Spleen         |                           | Hematopoietic Cell Proliferation | Moderate               |
| * Thyroid Gland  | C Cell                    | Hyperplasia                      | Moderate               |

PRIMARY CAUSE OF DEATH - Mammary Gland Carcinoma

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 503

TRT#: 6

SEX: Female

DAY ON TEST: 708

DOSE: 30 mg/m3

DISP: Moribund Sacrifice

HISTO: 57072

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                             |                          |                            |                           |
|-----------------------------|--------------------------|----------------------------|---------------------------|
| * Adrenal Medulla           | * Bone                   | * Bone Marrow              | * Brain                   |
| * Clitoral Gland            | * Esophagus              | * Eye                      | * Harderian Gland         |
| * Heart                     | * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum |
| * Intestine Small, Duodenum | * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      |
| * Lymph Node, Bronchial     | * Lymph Node, Mandibular | * Lymph Node, Mesenteric   | * Mammary Gland           |
| * Ovary                     | * Parathyroid Gland      | Peripheral Nerve           | * Salivary Glands         |
| * Skin                      | Spinal Cord              | * Spleen                   | * Stomach, Forestomach    |
| * Stomach, Glandular        | * Thymus                 | * Trachea                  | * Urinary Bladder         |
| * Uterus                    |                          |                            |                           |

OBSERVATIONS

- |                           |                             |                               |                        |
|---------------------------|-----------------------------|-------------------------------|------------------------|
| * Adrenal Cortex          |                             | Degeneration                  | Cystic, Minimal        |
|                           |                             | Hypertrophy                   | Mild                   |
| * Kidney                  |                             | Nephropathy                   | Minimal                |
| * Larynx                  |                             | Metaplasia                    | Squamous, Mild         |
| * Liver                   |                             | Basophilic Focus              |                        |
| * Lung                    |                             | Inflammation                  | Granulomatous, Minimal |
|                           | [ Inflammation TGLs = 3-4 ] |                               |                        |
| * Lymph Node, Mediastinal |                             | Hemorrhage                    | Mild                   |
|                           | [ Hemorrhage TGLs = 1-3 ]   |                               |                        |
| * Nose                    |                             | Accumulation, Hyaline Droplet | Minimal                |
|                           | Glands, Olfactory Epi       | Hyperplasia                   | Mild                   |
| * Pancreas                |                             | Atrophy                       | Minimal                |
| * Pituitary Gland         | Pars Distalis               | Adenoma                       |                        |
|                           | [ Adenoma TGLs = 2-10 ]     |                               |                        |
| * Thyroid Gland           | C Cell                      | Hyperplasia                   | Minimal                |

PRIMARY CAUSE OF DEATH - Pituitary Gland Pars Distalis Adenoma

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 504

TRT#: 6

SEX: Female

DAY ON TEST: 690

DOSE: 30 mg/m3

DISP: Moribund Sacrifice

HISTO: 57073

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                             |                           |                            |                           |
|-----------------------------|---------------------------|----------------------------|---------------------------|
| * Adrenal Cortex            | * Adrenal Medulla         | * Bone                     | * Bone Marrow             |
| * Brain                     | * Clitoral Gland          | * Esophagus                | * Eye                     |
| * Heart                     | * Intestine Large, Cecum  | * Intestine Large, Colon   | * Intestine Large, Rectum |
| * Intestine Small, Duodenum | * Intestine Small, Ileum  | * Intestine Small, Jejunum | * Islets, Pancreatic      |
| * Lymph Node, Mandibular    | * Lymph Node, Mediastinal | * Lymph Node, Mesenteric   | * Mammary Gland           |
| * Ovary                     | * Pancreas                | * Parathyroid Gland        | * Salivary Glands         |
| * Skin                      | * Spleen                  | * Stomach, Forestomach     | * Stomach, Glandular      |
| * Thymus                    | * Trachea                 | * Urinary Bladder          | * Uterus                  |

MISSING

- \* Lymph Node, Bronchial

OBSERVATIONS

- |                   |                         |                               |                        |
|-------------------|-------------------------|-------------------------------|------------------------|
| * Harderian Gland |                         | Hyperplasia                   | Minimal                |
| * Kidney          |                         | Nephropathy                   | Minimal                |
| * Larynx          |                         | Metaplasia                    | Squamous, Moderate     |
| * Liver           |                         | Basophilic Focus              |                        |
|                   |                         | Clear Cell Focus              |                        |
| * Lung            | Bronchiole              | Hyperplasia                   | Minimal                |
|                   |                         | Inflammation                  | Granulomatous, Minimal |
| * Nose            |                         | Accumulation, Hyaline Droplet | Marked                 |
|                   | Glands, Olfactory Epi   | Hyperplasia                   | Moderate               |
| * Pituitary Gland | Pars Distalis           | Adenoma                       |                        |
|                   | [ Adenoma TGLs = 4-10 ] |                               |                        |
| * Thyroid Gland   | C Cell                  | Hyperplasia                   | Moderate               |

PRIMARY CAUSE OF DEATH - Pituitary Gland Pars Distalis Adenoma

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 505

TRT#: 6

SEX: Female

DAY ON TEST: 732

DOSE: 30 mg/m3

DISP: Terminal Sacrifice

HISTO: 57074

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                             |                          |                            |                           |
|-----------------------------|--------------------------|----------------------------|---------------------------|
| * Adrenal Medulla           | * Bone                   | * Bone Marrow              | * Brain                   |
| * Clitoral Gland            | * Esophagus              | * Eye                      | * Harderian Gland         |
| * Heart                     | * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum |
| * Intestine Small, Duodenum | * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      |
| * Lymph Node, Bronchial     | * Lymph Node, Mandibular | * Lymph Node, Mesenteric   | * Mammary Gland           |
| * Ovary                     | * Pancreas               | * Parathyroid Gland        | * Salivary Glands         |
| * Skin                      | * Spleen                 | * Stomach, Forestomach     | * Stomach, Glandular      |
| * Trachea                   | * Urinary Bladder        | * Uterus                   |                           |

MISSING

- \* Lymph Node, Mediastinal

INSUFFICIENT TISSUE

- \* Thymus

OBSERVATIONS

- |                   |                          |                               |                        |
|-------------------|--------------------------|-------------------------------|------------------------|
| * Adrenal Cortex  |                          | Hyperplasia                   | Mild                   |
|                   |                          | Hypertrophy                   | Mild                   |
| * Kidney          |                          | Nephropathy                   | Minimal                |
| * Larynx          |                          | Metaplasia                    | Squamous, Moderate     |
| * Liver           |                          | Basophilic Focus              |                        |
|                   |                          | Clear Cell Focus              |                        |
| * Lung            | Bronchiole               | Hyperplasia                   | Minimal                |
|                   |                          | Inflammation                  | Granulomatous, Minimal |
| Mesentery         | Fat                      | Necrosis                      | Mild                   |
|                   | [ Necrosis TGLs = 1-14 ] |                               |                        |
| * Nose            |                          | Accumulation, Hyaline Droplet | Mild                   |
|                   | Glands, Olfactory Epi    | Hyperplasia                   | Moderate               |
| * Pituitary Gland | Pars Distalis            | Hyperplasia                   | Moderate               |
| * Thyroid Gland   | C Cell                   | Hyperplasia                   | Mild                   |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 506

TRT#: 6

SEX: Female

DAY ON TEST: 731

DOSE: 30 mg/m3

DISP: Terminal Sacrifice

HISTO: 57075

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Cortex
- \* Brain
- \* Harderian Gland
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Lymph Node, Mediastinal
- \* Parathyroid Gland
- \* Stomach, Glandular
- \* Adrenal Medulla
- \* Clitoral Gland
- \* Heart
- \* Intestine Small, Duodenum
- \* Kidney
- \* Lymph Node, Mesenteric
- \* Salivary Glands
- \* Trachea
- \* Bone
- \* Esophagus
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Liver
- \* Mammary Gland
- \* Spleen
- \* Urinary Bladder
- \* Bone Marrow
- \* Eye
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Lymph Node, Mandibular
- \* Pancreas
- \* Stomach, Forestomach

MISSING

- \* Lymph Node, Bronchial
- \* Thymus

OBSERVATIONS

- \* Larynx
- \* Lung
  - [ Inflammation TGLs = 2-14 ]
- \* Nose
- \* Ovary
  - [ Cyst TGLs = 5-9 ]
- \* Pituitary Gland
  - [ Adenoma TGLs = 3-10 ]
- \* Skin
  - [ Inflammation TGLs = 1-15 ]
- \* Thyroid Gland
- \* Uterus
- Bronchiole
- Glands, Olfactory Epi
- Pars Distalis
- Metaplasia
- Hyperplasia
- Inflammation
- Accumulation, Hyaline Droplet
- Hyperplasia
- Cyst
- Adenoma
- Inflammation
- Hyperplasia
- Hyperplasia
- Squamous, Moderate
- Minimal
- Granulomatous, Minimal
- Moderate
- Moderate
- Mild
- Chronic Active, Marked
- Mild
- Cystic, Mild

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 507

TRT#: 6

SEX: Female

DAY ON TEST: 660

DOSE: 30 mg/m3

DISP: Moribund Sacrifice

HISTO: 57076

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Medulla
- \* Clitoral Gland
- \* Heart
- \* Intestine Small, Duodenum
- \* Kidney
- \* Mammary Gland
- \* Salivary Glands
- \* Stomach, Glandular
- \* Uterus
- \* Bone
- \* Esophagus
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Lymph Node, Mandibular
- \* Ovary
- \* Skin
- \* Thymus
- \* Bone Marrow
- \* Eye
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Lymph Node, Mediastinal
- \* Pancreas
- \* Spleen
- \* Trachea
- \* Brain
- \* Harderian Gland
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Lymph Node, Mesenteric
- \* Parathyroid Gland
- \* Stomach, Forestomach
- \* Urinary Bladder

MISSING

- \* Lymph Node, Bronchial

OBSERVATIONS

- |  |   |  |
|--|---|--|
| <ul style="list-style-type: none"> <li>* Adrenal Cortex</li> <li>* Larynx</li> <li>* Liver</li> <br/> <li>* Lung</li> <li style="padding-left: 20px;">[ Inflammation TGLs = 3-4+5 ]</li> <li>* Nose</li> <li style="padding-left: 20px;">Glands, Olfactory Epi</li> <li>* Pituitary Gland</li> <li style="padding-left: 20px;">[ Adenoma TGLs = 4-10 ]</li> <li>* Thyroid Gland</li> <li style="padding-left: 20px;">C Cell</li> </ul> | <ul style="list-style-type: none"> <li>Degeneration</li> <li>Metaplasia</li> <li>Basophilic Focus</li> <li>Fatty Change</li> <li>Hyperplasia</li> <li>Inflammation</li> <br/> <li>Accumulation, Hyaline Droplet</li> <li>Hyperplasia</li> <li>Adenoma</li> <br/> <li>Hyperplasia</li> </ul> | <ul style="list-style-type: none"> <li>Cystic, Moderate</li> <li>Squamous, Mild</li> <br/> <li>Minimal</li> <li>Minimal</li> <li>Granulomatous, Minimal</li> <br/> <li>Marked</li> <li>Moderate</li> <br/> <li>Mild</li> </ul> |
|--|---|--|

PRIMARY CAUSE OF DEATH - Pituitary Gland Pars Distalis Adenoma

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 508

TRT#: 6

SEX: Female

DAY ON TEST: 732

DOSE: 30 mg/m3

DISP: Terminal Sacrifice

HISTO: 57077

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                          |                            |                           |                             |
|--------------------------|----------------------------|---------------------------|-----------------------------|
| * Adrenal Medulla        | * Bone                     | * Bone Marrow             | * Brain                     |
| * Clitoral Gland         | * Esophagus                | * Eye                     | * Harderian Gland           |
| * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum | * Intestine Small, Duodenum |
| * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      | * Lymph Node, Mediastinal   |
| * Lymph Node, Mesenteric | * Mammary Gland            | * Pancreas                | * Parathyroid Gland         |
| * Salivary Glands        | * Skin                     | * Spleen                  | * Stomach, Forestomach      |
| * Stomach, Glandular     | * Thymus                   | * Trachea                 | * Urinary Bladder           |

MISSING

- |                         |                          |
|-------------------------|--------------------------|
| * Lymph Node, Bronchial | * Lymph Node, Mandibular |
|-------------------------|--------------------------|

OBSERVATIONS

- |                   |                             |  |                                   |
|-------------------|-----------------------------|--|-----------------------------------|
| * Adrenal Cortex  |                             | Degeneration<br>Hyperplasia<br>Hypertrophy | Cystic, Minimal<br>Mild<br>Mild   |
|                   | [ Degeneration TGLs = 2-7 ] |  |                                   |
| * Heart           |                             | Cardiomyopathy                             | Minimal                           |
| * Kidney          |                             | Nephropathy                                | Minimal                           |
| * Larynx          |                             | Metaplasia                                 | Squamous, Moderate                |
| * Liver           |                             | Basophilic Focus                           |                                   |
| * Lung            | Bronchiole                  | Hyperplasia<br>Inflammation                | Minimal<br>Granulomatous, Minimal |
| * Nose            |                             | Accumulation, Hyaline Droplet              | Moderate                          |
| * Ovary           | Glands, Olfactory Epi       | Hyperplasia<br>Cyst                        | Mild<br>Mild                      |
|                   | [ Cyst TGLs = 3-9 ]         |  |                                   |
| * Pituitary Gland | Pars Distalis               | Adenoma                                    |                                   |
|                   | [ Adenoma TGLs = 1-10 ]     |  |                                   |
| * Thyroid Gland   | C Cell                      | Hyperplasia                                | Moderate                          |
| * Uterus          | Endometrium                 | Hyperplasia                                | Cystic, Mild                      |

\* PROTOCOL REQUIRED TISSUE



TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 509

TRT#: 6

SEX: Female

DAY ON TEST: 731

DOSE: 30 mg/m3

DISP: Terminal Sacrifice

HISTO: 57078

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Medulla
- \* Clitoral Gland
- \* Heart
- \* Intestine Small, Duodenum
- \* Lymph Node, Mandibular
- \* Pancreas
- \* Spleen
- \* Trachea
- \* Bone
- \* Esophagus
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Lymph Node, Mediastinal
- \* Parathyroid Gland
- \* Stomach, Forestomach
- \* Urinary Bladder
- \* Bone Marrow
- \* Eye
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Lymph Node, Mesenteric
- \* Salivary Glands
- \* Stomach, Glandular
- \* Uterus
- \* Brain
- \* Harderian Gland
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Ovary
- \* Skin
- \* Thymus

MISSING

- \* Lymph Node, Bronchial

OBSERVATIONS

- \* Adrenal Cortex
- \* Kidney
- \* Larynx
- \* Liver
- [ Cyst TGLs = 2-16 ]
- \* Lung
- Bronchiole
- \* Mammary Gland
- [ Fibroadenoma TGLs = 1-17 ]
- \* Nose
- Glands, Olfactory Epi
- \* Pituitary Gland
- Pars Distalis
- [ Hyperplasia TGLs = 5-10 ]
- \* Thyroid Gland
- C Cell
- Degeneration
- Nephropathy
- Metaplasia
- Basophilic Focus
- Cyst
- Hyperplasia
- Inflammation
- Fibroadenoma
- Accumulation, Hyaline Droplet
- Hyperplasia
- Hyperplasia
- Hyperplasia
- Cystic, Mild
- Minimal
- Squamous, Moderate
- Mild
- Minimal
- Granulomatous, Minimal
- Moderate
- Minimal
- Moderate
- Minimal

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 510

TRT#: 6

SEX: Female

DAY ON TEST: 733

DOSE: 30 mg/m3

DISP: Terminal Sacrifice

HISTO: 57079

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                           |                            |                          |                             |
|---------------------------|----------------------------|--------------------------|-----------------------------|
| * Adrenal Medulla         | * Bone                     | * Bone Marrow            | * Brain                     |
| * Clitoral Gland          | * Esophagus                | * Eye                    | * Harderian Gland           |
| * Heart                   | * Intestine Large, Cecum   | * Intestine Large, Colon | * Intestine Small, Duodenum |
| * Intestine Small, Ileum  | * Intestine Small, Jejunum | * Islets, Pancreatic     | * Kidney                    |
| * Lymph Node, Mediastinal | * Lymph Node, Mesenteric   | * Mammary Gland          | * Ovary                     |
| * Pancreas                | * Parathyroid Gland        | * Salivary Glands        | * Skin                      |
| * Spleen                  | * Stomach, Forestomach     | * Stomach, Glandular     | * Thymus                    |
| * Trachea                 | * Urinary Bladder          | * Uterus                 |                             |

MISSING

- |                         |                          |
|-------------------------|--------------------------|
| * Lymph Node, Bronchial | * Lymph Node, Mandibular |
|-------------------------|--------------------------|

INSUFFICIENT TISSUE

- \* Intestine Large, Rectum

OBSERVATIONS

- |                            |                       |                               |                        |
|----------------------------|-----------------------|-------------------------------|------------------------|
| * Adrenal Cortex           |                       | Degeneration                  | Cystic, Mild           |
|                            |                       | Hyperplasia                   | Mild                   |
| * Larynx                   |                       | Metaplasia                    | Squamous, Mild         |
| * Liver                    |                       | Angiectasis                   | Mild                   |
|                            |                       | Clear Cell Focus              |                        |
| [ Angiectasis TGLs = 2-6 ] |                       |                               |                        |
| * Lung                     | Bronchiole            | Hyperplasia                   | Minimal                |
|                            |                       | Inflammation                  | Granulomatous, Minimal |
| * Nose                     |                       | Accumulation, Hyaline Droplet | Mild                   |
|                            | Glands, Olfactory Epi | Hyperplasia                   | Moderate               |
| * Pituitary Gland          | Pars Distalis         | Adenoma                       |                        |
| [ Adenoma TGLs = 1-10 ]    |                       |                               |                        |
| * Thyroid Gland            | C Cell                | Hyperplasia                   | Mild                   |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 511

TRT#: 6

SEX: Female

DAY ON TEST: 732

DOSE: 30 mg/m3

DISP: Terminal Sacrifice

HISTO: 57080

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Bone
- \* Esophagus
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Lymph Node, Mediastinal
- \* Parathyroid Gland
- \* Stomach, Forestomach
- \* Urinary Bladder
- \* Bone Marrow
- \* Eye
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Lymph Node, Mesenteric
- \* Salivary Glands
- \* Stomach, Glandular
- \* Uterus
- \* Brain
- \* Harderian Gland
- \* Intestine Small, Duodenum
- \* Lymph Node, Bronchial
- \* Ovary
- \* Skin
- \* Thymus
- \* Clitoral Gland
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Lymph Node, Mandibular
- \* Pancreas
- \* Spleen
- \* Trachea

MISSING

- \* Adrenal Medulla

OBSERVATIONS

- \* Adrenal Cortex
  - Degeneration
  - Hyperplasia
  - Cardiomyopathy
  - Cyst
  - Nephropathy
- \* Heart
  - Cystic, Moderate
  - Mild
- \* Kidney
  - Minimal
  - Mild
  - Mild
- [ Cyst TGLs = 7-7 ]
- \* Larynx
  - Metaplasia
  - Angiectasis
  - Basophilic Focus
  - Clear Cell Focus
- \* Liver
  - Squamous, Mild
  - Mild
- Bile Duct
    - Dilatation
    - Hepatodiaphragmatic Nodule
- [ Angiectasis TGLs = 4-6 ]
  - [ Dilatation TGLs = 3-14 ]
  - [ Hepatodiaphragmatic Nodule TGLs = 5-14 ]
- \* Lung
  - Bronchiole
    - Hyperplasia
    - Inflammation
    - Carcinoma
    - Fibroadenoma
- \* Mammary Gland
  - Minimal
  - Granulomatous, Minimal
  - Multiple

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 511

TRT#: 6

SEX: Female

DAY ON TEST: 732

DOSE: 30 mg/m3

DISP: Terminal Sacrifice

HISTO: 57080

ORGAN AND ACCOUNTABLE SITE STATUS

[ Carcinoma TGLs = 1,2-15+16 ]

\* Nose

Accumulation, Hyaline Droplet

Moderate

Glands, Olfactory Epi

Hyperplasia

Mild

\* Pituitary Gland

Pars Distalis

Adenoma

[ Adenoma TGLs = 6-10 ]

\* Thyroid Gland

C Cell

Hyperplasia

Minimal

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 512

TRT#: 6

SEX: Female

DAY ON TEST: 732

DOSE: 30 mg/m3

DISP: Terminal Sacrifice

HISTO: 57081

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                             |                          |                            |                           |
|-----------------------------|--------------------------|----------------------------|---------------------------|
| * Adrenal Medulla           | * Bone                   | * Bone Marrow              | * Brain                   |
| * Clitoral Gland            | * Esophagus              | * Eye                      | * Harderian Gland         |
| * Heart                     | * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum |
| * Intestine Small, Duodenum | * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      |
| * Kidney                    | * Liver                  | * Lymph Node, Bronchial    | * Lymph Node, Mandibular  |
| * Lymph Node, Mediastinal   | * Lymph Node, Mesenteric | * Mammary Gland            | * Ovary                   |
| * Pancreas                  | * Parathyroid Gland      | * Salivary Glands          | * Skin                    |
| * Spleen                    | * Stomach, Forestomach   | * Stomach, Glandular       | * Thymus                  |
| * Trachea                   | * Urinary Bladder        | * Uterus                   |                           |

INSUFFICIENT TISSUE

- \* Larynx

OBSERVATIONS

- |  |  |  |                                   |
|--|--|--|-----------------------------------|
| * Adrenal Cortex                             |  | Adenoma<br>Degeneration<br>Hyperplasia       | Cystic, Moderate<br>Mild          |
| * Lung                                       | Bronchiole                             | Hyperplasia<br>Inflammation                  | Minimal<br>Granulomatous, Minimal |
| Mesentery<br>[ Necrosis TGLs = 1-14 ]        | Fat                                    | Necrosis                                     | Mild                              |
| * Nose                                       |  | Accumulation, Hyaline Droplet<br>Hyperplasia | Mild<br>Minimal                   |
| * Pituitary Gland<br>[ Adenoma TGLs = 2-10 ] | Glands, Olfactory Epi<br>Pars Distalis | Adenoma                                      |                                   |
| * Thyroid Gland                              | C Cell                                 | Hyperplasia                                  | Mild                              |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 513

TRT#: 6

SEX: Female

DAY ON TEST: 731

DOSE: 30 mg/m3

DISP: Terminal Sacrifice

HISTO: 57082

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                             |                          |                            |                           |
|-----------------------------|--------------------------|----------------------------|---------------------------|
| * Adrenal Medulla           | * Bone                   | * Bone Marrow              | * Brain                   |
| * Clitoral Gland            | * Esophagus              | * Eye                      | * Harderian Gland         |
| * Heart                     | * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum |
| * Intestine Small, Duodenum | * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      |
| * Kidney                    | * Lymph Node, Bronchial  | * Lymph Node, Mandibular   | * Lymph Node, Mediastinal |
| * Lymph Node, Mesenteric    | * Ovary                  | * Pancreas                 | * Parathyroid Gland       |
| * Salivary Glands           | * Skin                   | * Spleen                   | * Stomach, Forestomach    |
| * Stomach, Glandular        | * Thymus                 | * Trachea                  | * Urinary Bladder         |
| * Uterus                    |                          |                            |                           |

OBSERVATIONS

- |                   |                         |                               |                        |
|-------------------|-------------------------|-------------------------------|------------------------|
| * Adrenal Cortex  |                         | Hypertrophy                   | Mild                   |
| * Larynx          |                         | Metaplasia                    | Squamous, Moderate     |
| * Liver           |                         | Clear Cell Focus              |                        |
| * Lung            | Bronchiole              | Hyperplasia                   | Minimal                |
|                   |                         | Inflammation                  | Granulomatous, Minimal |
| * Mammary Gland   |                         | Fibroadenoma                  |                        |
| * Nose            |                         | Accumulation, Hyaline Droplet | Moderate               |
|                   | Glands, Olfactory Epi   | Hyperplasia                   | Mild                   |
| * Pituitary Gland | Pars Distalis           | Adenoma                       |                        |
|                   | [ Adenoma TGLs = 1-10 ] |                               |                        |
| * Thyroid Gland   | C Cell                  | Hyperplasia                   | Mild                   |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 514

TRT#: 6

SEX: Female

DAY ON TEST: 683

DOSE: 30 mg/m3

DISP: Moribund Sacrifice

HISTO: 57083

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                          |                            |                           |                             |
|--------------------------|----------------------------|---------------------------|-----------------------------|
| * Bone                   | * Bone Marrow              | * Brain                   | * Clitoral Gland            |
| * Esophagus              | * Eye                      | * Harderian Gland         | * Heart                     |
| * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum | * Intestine Small, Duodenum |
| * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      | * Lymph Node, Bronchial     |
| * Lymph Node, Mandibular | * Lymph Node, Mediastinal  | * Lymph Node, Mesenteric  | * Ovary                     |
| * Pancreas               | * Parathyroid Gland        | * Salivary Glands         | * Skin                      |
| * Spleen                 | * Stomach, Glandular       | * Thymus                  | * Trachea                   |
| * Urinary Bladder        | * Uterus                   |                           |                             |

OBSERVATIONS

- |                        |                                |                               |                        |
|------------------------|--------------------------------|-------------------------------|------------------------|
| * Adrenal Cortex       |                                | Hypertrophy                   | Minimal                |
| * Adrenal Medulla      |                                | Pheochromocytoma Benign       |                        |
| * Kidney               |                                | Nephropathy                   | Minimal                |
| * Larynx               |                                | Metaplasia                    | Squamous, Mild         |
| * Liver                | Bile Duct                      | Hyperplasia                   | Mild                   |
| * Lung                 | Bronchiole                     | Hyperplasia                   | Minimal                |
|                        |                                | Inflammation                  | Granulomatous, Minimal |
| * Mammary Gland        |                                | Carcinoma                     | Multiple               |
|                        | [ Carcinoma TGLs = 4,5-14+15 ] |                               |                        |
| * Nose                 |                                | Accumulation, Hyaline Droplet | Moderate               |
| * Pituitary Gland      | Pars Distalis                  | Adenoma                       |                        |
|                        | [ Adenoma TGLs = 1-10 ]        |                               |                        |
| * Stomach, Forestomach |                                | Inflammation                  | Acute, Moderate        |
| * Thyroid Gland        | C Cell                         | Hyperplasia                   | Minimal                |

PRIMARY CAUSE OF DEATH - Pituitary Gland Pars Distalis Adenoma

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 515

TRT#: 6

SEX: Female

DAY ON TEST: 731

DOSE: 30 mg/m3

DISP: Terminal Sacrifice

HISTO: 57084

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                          |                            |                           |                             |
|--------------------------|----------------------------|---------------------------|-----------------------------|
| * Adrenal Medulla        | * Bone                     | * Bone Marrow             | * Brain                     |
| * Clitoral Gland         | * Esophagus                | * Eye                     | * Harderian Gland           |
| * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum | * Intestine Small, Duodenum |
| * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      | * Kidney                    |
| * Lymph Node, Bronchial  | * Lymph Node, Mandibular   | * Lymph Node, Mediastinal | * Lymph Node, Mesenteric    |
| * Mammary Gland          | * Ovary                    | * Pancreas                | * Parathyroid Gland         |
| * Salivary Glands        | * Skin                     | * Spleen                  | * Stomach, Forestomach      |
| * Stomach, Glandular     | * Thymus                   | * Trachea                 | * Urinary Bladder           |

OBSERVATIONS

- |                   |                             |  |                                 |
|-------------------|-----------------------------|--|---------------------------------|
| * Adrenal Cortex  |                             | Degeneration<br>Hyperplasia<br>Hypertrophy           | Cystic, Minimal<br>Mild<br>Mild |
|                   | [ Degeneration TGLs = 1-7 ] |  |                                 |
| * Heart           |                             | Cardiomyopathy                                       | Minimal                         |
| * Larynx          |                             | Metaplasia   | Squamous, Mild                  |
| * Liver           |                             | Basophilic Focus<br>Clear Cell Focus<br>Inflammation |                                 |
| * Lung            |                             | Necrosis   | Granulomatous, Minimal          |
| Mesentery         | Fat                         |  | Mild                            |
|                   | [ Necrosis TGLs = 2-14 ]    |  |                                 |
| * Nose            |                             | Accumulation, Hyaline Droplet                        | Moderate                        |
|                   | Glands, Olfactory Epi       | Hyperplasia  | Minimal                         |
| * Pituitary Gland | Pars Distalis               | Adenoma  |                                 |
| * Thyroid Gland   | C Cell                      | Hyperplasia  | Moderate                        |
| * Uterus          | Endometrium                 | Carcinoma<br>Leiomyoma                               |                                 |
|                   | [ Leiomyoma TGLs = 3-10 ]   |  |                                 |

\* PROTOCOL REQUIRED TISSUE



TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 516

TRT#: 6

SEX: Female

DAY ON TEST: 731

DOSE: 30 mg/m3

DISP: Terminal Sacrifice

HISTO: 57085

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                           |                             |                          |                            |
|---------------------------|-----------------------------|--------------------------|----------------------------|
| * Bone                    | * Bone Marrow               | * Brain                  | * Clitoral Gland           |
| * Esophagus               | * Eye                       | * Intestine Large, Cecum | * Intestine Large, Colon   |
| * Intestine Large, Rectum | * Intestine Small, Duodenum | * Intestine Small, Ileum | * Intestine Small, Jejunum |
| * Islets, Pancreatic      | * Lung                      | * Lymph Node, Bronchial  | * Lymph Node, Mandibular   |
| * Lymph Node, Mediastinal | * Lymph Node, Mesenteric    | * Ovary                  | * Pancreas                 |
| * Salivary Glands         | * Spleen                    | * Stomach, Forestomach   | * Stomach, Glandular       |
| * Thymus                  | * Trachea                   | * Urinary Bladder        | * Uterus                   |

MISSING

- \* Parathyroid Gland

OBSERVATIONS

- |                   |                            |                               |                          |
|-------------------|----------------------------|-------------------------------|--------------------------|
| * Adrenal Cortex  |                            | Hyperplasia                   | Mild                     |
|                   |                            | Hypertrophy                   | Mild                     |
|                   | [ Hyperplasia TGLs = 5-7 ] |                               |                          |
| * Adrenal Medulla |                            | Hyperplasia                   | Mild                     |
| * Harderian Gland |                            | Hyperplasia                   | Mild                     |
| * Heart           |                            | Cardiomyopathy                | Minimal                  |
|                   |                            | Chemodectoma Benign           |                          |
| * Kidney          |                            | Nephropathy                   | Minimal                  |
| * Larynx          |                            | Metaplasia                    | Squamous, Minimal        |
| * Liver           |                            | Angiectasis                   | Mild                     |
|                   |                            | Basophilic Focus              |                          |
|                   |                            | Clear Cell Focus              |                          |
|                   | [ Angiectasis TGLs = 4-6 ] |                               |                          |
| * Mammary Gland   |                            | Carcinoma                     |                          |
|                   | [ Carcinoma TGLs = 1-15 ]  |                               |                          |
| * Nose            |                            | Accumulation, Hyaline Droplet | Moderate                 |
|                   | Glands, Olfactory Epi      | Hyperplasia                   | Minimal                  |
| * Pituitary Gland | Pars Distalis              | Adenoma                       |                          |
|                   | [ Adenoma TGLs = 2-10 ]    |                               |                          |
| * Skin            |                            | Inflammation                  | Chronic Active, Moderate |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

---

ANIMAL ID: 516

TRT#: 6

SEX: Female

DAY ON TEST: 731

DOSE: 30 mg/m3

DISP: Terminal Sacrifice

HISTO: 57085

---

**ORGAN AND ACCOUNTABLE SITE STATUS**

---

[ Inflammation TGLs = 3-14 ]

\* Thyroid Gland

C Cell

Hyperplasia

Moderate

---

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 517

TRT#: 6

SEX: Female

DAY ON TEST: 598

DOSE: 30 mg/m3

DISP: Moribund Sacrifice

HISTO: 57086

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                             |                          |                            |                           |
|-----------------------------|--------------------------|----------------------------|---------------------------|
| * Adrenal Medulla           | * Bone                   | * Bone Marrow              | * Brain                   |
| * Clitoral Gland            | * Esophagus              | * Eye                      | * Harderian Gland         |
| * Heart                     | * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum |
| * Intestine Small, Duodenum | * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      |
| * Kidney                    | * Lymph Node, Bronchial  | * Lymph Node, Mandibular   | * Lymph Node, Mediastinal |
| * Lymph Node, Mesenteric    | * Mammary Gland          | * Ovary                    | * Parathyroid Gland       |
| Peripheral Nerve            | * Salivary Glands        | * Skin                     | Spinal Cord               |
| * Spleen                    | * Stomach, Forestomach   | * Stomach, Glandular       | * Thymus                  |
| * Trachea                   | * Urinary Bladder        | * Uterus                   |                           |

OBSERVATIONS

- |                          |                       |                               |                        |
|--------------------------|-----------------------|-------------------------------|------------------------|
| * Adrenal Cortex         |                       | Degeneration                  | Cystic, Mild           |
| * Larynx                 |                       | Metaplasia                    | Squamous, Mild         |
| * Liver                  |                       | Basophilic Focus              |                        |
|                          |                       | Fatty Change                  | Mild                   |
| * Lung                   | Bronchiole            | Hyperplasia                   | Minimal                |
|                          |                       | Inflammation                  | Granulomatous, Minimal |
| Mesentery                | Fat                   | Necrosis                      | Mild                   |
| [ Necrosis TGLs = 2-15 ] |                       |                               |                        |
| * Nose                   |                       | Accumulation, Hyaline Droplet | Moderate               |
|                          | Glands, Olfactory Epi | Hyperplasia                   | Mild                   |
| * Pancreas               |                       | Atrophy                       | Mild                   |
| * Pituitary Gland        | Pars Distalis         | Adenoma                       |                        |
| [ Adenoma TGLs = 1-10 ]  |                       |                               |                        |
| * Thyroid Gland          | C Cell                | Hyperplasia                   | Mild                   |

PRIMARY CAUSE OF DEATH - Pituitary Gland Pars Distalis Adenoma

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 518

TRT#: 6

SEX: Female

DAY ON TEST: 733

DOSE: 30 mg/m3

DISP: Terminal Sacrifice

HISTO: 57087

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                           |                             |                          |                            |
|---------------------------|-----------------------------|--------------------------|----------------------------|
| * Adrenal Cortex          | * Adrenal Medulla           | * Bone                   | * Bone Marrow              |
| * Brain                   | * Clitoral Gland            | * Esophagus              | * Eye                      |
| * Harderian Gland         | * Heart                     | * Intestine Large, Cecum | * Intestine Large, Colon   |
| * Intestine Large, Rectum | * Intestine Small, Duodenum | * Intestine Small, Ileum | * Intestine Small, Jejunum |
| * Islets, Pancreatic      | * Kidney                    | * Lung                   | * Lymph Node, Bronchial    |
| * Lymph Node, Mandibular  | * Lymph Node, Mediastinal   | * Lymph Node, Mesenteric | * Mammary Gland            |
| * Ovary                   | * Pancreas                  | * Parathyroid Gland      | * Salivary Glands          |
| * Skin                    | * Spleen                    | * Stomach, Forestomach   | * Stomach, Glandular       |
| * Thymus                  | * Trachea                   | * Urinary Bladder        | * Uterus                   |

OBSERVATIONS

- |                         |                       |                               |                    |
|-------------------------|-----------------------|-------------------------------|--------------------|
| * Larynx                |                       | Metaplasia                    | Squamous, Moderate |
| * Liver                 |                       | Basophilic Focus              |                    |
| * Nose                  |                       | Accumulation, Hyaline Droplet | Marked             |
|                         | Glands, Olfactory Epi | Hyperplasia                   | Mild               |
| * Pituitary Gland       | Pars Distalis         | Adenoma                       |                    |
| [ Adenoma TGLs = 1-10 ] |                       |                               |                    |
| * Thyroid Gland         | C Cell                | Hyperplasia                   | Minimal            |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 519

TRT#: 6

SEX: Female

DAY ON TEST: 731

DOSE: 30 mg/m3

DISP: Terminal Sacrifice

HISTO: 57088

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                             |                          |                            |                           |
|-----------------------------|--------------------------|----------------------------|---------------------------|
| * Adrenal Medulla           | * Bone                   | * Bone Marrow              | * Brain                   |
| * Clitoral Gland            | * Esophagus              | * Eye                      | * Harderian Gland         |
| * Heart                     | * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum |
| * Intestine Small, Duodenum | * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      |
| * Kidney                    | * Lung                   | * Lymph Node, Bronchial    | * Lymph Node, Mandibular  |
| * Lymph Node, Mediastinal   | * Lymph Node, Mesenteric | * Mammary Gland            | * Ovary                   |
| * Pancreas                  | * Salivary Glands        | * Spleen                   | * Stomach, Forestomach    |
| * Stomach, Glandular        | * Thymus                 | * Thyroid Gland            | * Trachea                 |
| * Urinary Bladder           | * Uterus                 |                            |                           |

MISSING

- \* Parathyroid Gland

OBSERVATIONS

- |                   |                       |                               |                          |
|-------------------|-----------------------|-------------------------------|--------------------------|
| * Adrenal Cortex  |                       | Hypertrophy                   | Mild                     |
| * Larynx          |                       | Metaplasia                    | Squamous, Moderate       |
| * Liver           |                       | Basophilic Focus              |                          |
|                   |                       | Clear Cell Focus              |                          |
| * Nose            |                       | Accumulation, Hyaline Droplet | Moderate                 |
|                   | Glands, Olfactory Epi | Hyperplasia                   | Moderate                 |
| * Pituitary Gland | Pars Distalis         | Hyperplasia                   | Mild                     |
| * Skin            |                       | Inflammation                  | Chronic Active, Moderate |

[ Inflammation TGLs = 1-14 ]

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 520

TRT#: 6

SEX: Female

DAY ON TEST: 642

DOSE: 30 mg/m3

DISP: Moribund Sacrifice

HISTO: 57089

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                           |                          |                            |                           |
|---------------------------|--------------------------|----------------------------|---------------------------|
| * Adrenal Cortex          | * Adrenal Medulla        | * Bone                     | * Bone Marrow             |
| * Brain                   | * Clitoral Gland         | * Esophagus                | * Eye                     |
| * Harderian Gland         | * Heart                  | * Intestine Large, Cecum   | * Intestine Large, Colon  |
| * Intestine Large, Rectum | * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      |
| * Kidney                  | * Lymph Node, Bronchial  | * Lymph Node, Mandibular   | * Lymph Node, Mediastinal |
| * Lymph Node, Mesenteric  | * Ovary                  | * Pancreas                 | * Parathyroid Gland       |
| Peripheral Nerve          | * Salivary Glands        | * Skin                     | Spinal Cord               |
| * Spleen                  | * Stomach, Forestomach   | * Stomach, Glandular       | * Thymus                  |
| * Trachea                 | * Urinary Bladder        |                            |                           |

OBSERVATIONS

- |  |  |                               |                        |
|--|--|-------------------------------|------------------------|
| * Intestine Small, Duodenum<br>[ Hypertrophy TGLs = 5-17 ] | Muscularis                             | Hypertrophy                   | Focal, Mild            |
| * Larynx   |  | Metaplasia                    | Squamous, Mild         |
| * Liver  |  | Basophilic Focus              |                        |
| * Lung   |  | Inflammation                  | Granulomatous, Minimal |
| * Mammary Gland<br>[ Fibroadenoma TGLs = 1,6-15+14 ]       |  | Fibroadenoma                  | Multiple               |
| * Nose   |  | Accumulation, Hyaline Droplet | Marked                 |
| * Pituitary Gland<br>[ Adenoma TGLs = 3-10 ]               | Glands, Olfactory Epi<br>Pars Distalis | Hyperplasia<br>Adenoma        | Mild                   |
| * Thyroid Gland<br>[ Adenoma TGLs = 2-3 ]                  | Follicular Cel<br>C Cell               | Adenoma<br>Hyperplasia        | Moderate               |
| * Uterus<br>[ Hypertrophy TGLs = 4-16 ]                    | Cervix                                 | Hypertrophy                   | Mild                   |

PRIMARY CAUSE OF DEATH - Mammary Gland Fibroadenoma

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 521

TRT#: 6

SEX: Female

DAY ON TEST: 732

DOSE: 30 mg/m3

DISP: Terminal Sacrifice

HISTO: 57090

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

* Adrenal Medulla	* Bone	* Bone Marrow	* Brain
* Clitoral Gland	* Esophagus	* Harderian Gland	* Heart
* Intestine Large, Cecum	* Intestine Large, Colon	* Intestine Large, Rectum	* Intestine Small, Duodenum
* Intestine Small, Ileum	* Intestine Small, Jejunum	* Islets, Pancreatic	* Liver
* Lymph Node, Bronchial	* Lymph Node, Mandibular	* Lymph Node, Mediastinal	* Lymph Node, Mesenteric
* Ovary	* Pancreas	* Parathyroid Gland	* Salivary Glands
* Skin	* Spleen	* Stomach, Forestomach	* Stomach, Glandular
* Thymus	* Trachea	* Urinary Bladder	* Uterus

OBSERVATIONS

* Adrenal Cortex		Angiectasis	Mild
		Hyperplasia	Mild
* Eye		Cataract	Marked
	[ Cataract TGLs = 1-13 ]		
* Kidney		Nephropathy	Mild
* Larynx		Metaplasia	Squamous, Moderate
* Lung	Bronchiole	Hyperplasia	Minimal
	[ Inflammation TGLs = 5-4+5 ]	Inflammation	Granulomatous, Minimal
* Mammary Gland		Fibroadenoma	
	[ Fibroadenoma TGLs = 3-15 ]		
Mesentery	Fat	Necrosis	Mild
	[ Necrosis TGLs = 4-14 ]		
* Nose		Accumulation, Hyaline Droplet	Moderate
	Glands, Olfactory Epi	Hyperplasia	Minimal
* Pituitary Gland	Pars Distalis	Adenoma	
	[ Adenoma TGLs = 2-10 ]		
* Thyroid Gland	C Cell	Adenoma	
	C Cell	Hyperplasia	Moderate

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 522

TRT#: 6

SEX: Female

DAY ON TEST: 733

DOSE: 30 mg/m3

DISP: Terminal Sacrifice

HISTO: 57091

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Medulla
- \* Clitoral Gland
- \* Intestine Large, Cecum
- \* Intestine Small, Jejunum
- \* Lymph Node, Mesenteric
- \* Salivary Glands
- \* Stomach, Glandular
- \* Uterus
- \* Bone
- \* Esophagus
- \* Intestine Large, Colon
- \* Islets, Pancreatic
- \* Mammary Gland
- \* Skin
- \* Thymus
- \* Bone Marrow
- \* Eye
- \* Intestine Small, Duodenum
- \* Lymph Node, Mandibular
- \* Ovary
- \* Spleen
- \* Trachea
- \* Brain
- \* Harderian Gland
- \* Intestine Small, Ileum
- \* Lymph Node, Mediastinal
- \* Pancreas
- \* Stomach, Forestomach
- \* Urinary Bladder

MISSING

- \* Lymph Node, Bronchial
- \* Parathyroid Gland

INSUFFICIENT TISSUE

- \* Intestine Large, Rectum

OBSERVATIONS

- |  |  |  |   |
|--|--|--|---|
| <ul style="list-style-type: none"> <li>* Adrenal Cortex</li> <li>* Heart</li> <li>* Kidney</li> <li>* Larynx</li> <li>* Liver</li> <li>* Lung</li> <li>* Nose</li> <li>* Pituitary Gland</li> <li>* Thyroid Gland</li> </ul> | <ul style="list-style-type: none"> <li>Bile Duct</li> <li>Pars Distalis</li> <li>C Cell</li> </ul> | <ul style="list-style-type: none"> <li>Degeneration</li> <li>Hypertrophy</li> <li>Cardiomyopathy</li> <li>Nephropathy</li> <li>Metaplasia</li> <li>Eosinophilic Focus</li> <li>Hyperplasia</li> <li>Inflammation</li> <li>Accumulation, Hyaline Droplet</li> <li>Adenoma</li> <li>Hyperplasia</li> </ul> | <ul style="list-style-type: none"> <li>Cystic, Moderate</li> <li>Mild</li> <li>Minimal</li> <li>Mild</li> <li>Squamous, Moderate</li> <li>Mild</li> <li>Granulomatous, Minimal</li> <li>Mild</li> <li>Mild</li> </ul> |
|--|--|--|---|

\* PROTOCOL REQUIRED TISSUE



TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 523

TRT#: 6

SEX: Female

DAY ON TEST: 731

DOSE: 30 mg/m3

DISP: Terminal Sacrifice

HISTO: 57092

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                          |                            |                           |                             |
|--------------------------|----------------------------|---------------------------|-----------------------------|
| * Adrenal Medulla        | * Bone                     | * Bone Marrow             | * Brain                     |
| * Clitoral Gland         | * Esophagus                | * Eye                     | * Harderian Gland           |
| * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum | * Intestine Small, Duodenum |
| * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      | * Kidney                    |
| * Lymph Node, Bronchial  | * Lymph Node, Mandibular   | * Lymph Node, Mediastinal | * Lymph Node, Mesenteric    |
| * Mammary Gland          | * Ovary                    | * Pancreas                | * Parathyroid Gland         |
| * Pituitary Gland        | * Salivary Glands          | * Skin                    | * Spleen                    |
| * Stomach, Forestomach   | * Stomach, Glandular       | * Thymus                  | * Trachea                   |
| * Urinary Bladder        |                            |                           |                             |

OBSERVATIONS

- |                  |                             |                               |                        |
|------------------|-----------------------------|-------------------------------|------------------------|
| * Adrenal Cortex |                             | Hyperplasia                   | Mild                   |
| * Heart          |                             | Cardiomyopathy                | Minimal                |
| * Larynx         |                             | Metaplasia                    | Squamous, Moderate     |
| * Liver          |                             | Basophilic Focus              |                        |
| * Lung           |                             | Inflammation                  | Granulomatous, Minimal |
|                  | [ Inflammation TGLs = 1-4 ] |                               |                        |
| * Nose           |                             | Accumulation, Hyaline Droplet | Mild                   |
|                  | Glands, Olfactory Epi       | Hyperplasia                   | Mild                   |
| * Thyroid Gland  | C Cell                      | Hyperplasia                   | Mild                   |
| * Uterus         | Endometrium                 | Hyperplasia                   | Cystic, Moderate       |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 524

TRT#: 6

SEX: Female

DAY ON TEST: 719

DOSE: 30 mg/m3

DISP: Moribund Sacrifice

HISTO: 57093

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Cortex
- \* Brain
- \* Harderian Gland
- \* Intestine Large, Rectum
- \* Kidney
- \* Lymph Node, Mesenteric
- \* Salivary Glands
- \* Trachea
- \* Adrenal Medulla
- \* Clitoral Gland
- \* Heart
- \* Intestine Small, Duodenum
- \* Liver
- \* Mammary Gland
- \* Spleen
- \* Urinary Bladder
- \* Bone
- \* Esophagus
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Lymph Node, Mandibular
- \* Ovary
- \* Stomach, Glandular
- \* Uterus
- \* Bone Marrow
- \* Eye
- \* Intestine Large, Colon
- \* Islets, Pancreatic
- \* Lymph Node, Mediastinal
- \* Pancreas
- \* Thymus

MISSING

- \* Lymph Node, Bronchial
- \* Parathyroid Gland

OBSERVATIONS

- \* Intestine Small, Jejunum [ Inflammation TGLs = 4-15 ] Inflammation Chronic Active, Mild
- \* Larynx Metaplasia Squamous, Mild
- \* Lung Alveolar Epith Hyperplasia Minimal
- \* Nose Accumulation, Hyaline Droplet Moderate
- \* Pituitary Gland Glands, Olfactory Epi Hyperplasia Moderate
- [ Adenoma TGLs = 1-10 ] Adenoma
- \* Skin Inflammation Chronic Active, Marked
- [ Inflammation TGLs = 6-16 ]
- \* Stomach, Forestomach Inflammation Acute, Mild
- [ Ulcer TGLs = 5-14 ] Ulcer Moderate
- \* Thyroid Gland C Cell Hyperplasia Mild

PRIMARY CAUSE OF DEATH - Pituitary Gland Pars Distalis Adenoma

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 525

TRT#: 6

SEX: Female

DAY ON TEST: 732

DOSE: 30 mg/m3

DISP: Terminal Sacrifice

HISTO: 57094

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Medulla
- \* Clitoral Gland
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Lymph Node, Bronchial
- \* Mammary Gland
- \* Salivary Glands
- \* Stomach, Glandular
- \* Uterus
- \* Bone
- \* Esophagus
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Lymph Node, Mandibular
- \* Ovary
- \* Skin
- \* Thymus
- \* Bone Marrow
- \* Eye
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Lymph Node, Mediastinal
- \* Pancreas
- \* Spleen
- \* Trachea
- \* Brain
- \* Harderian Gland
- \* Intestine Small, Duodenum
- \* Kidney
- \* Lymph Node, Mesenteric
- \* Parathyroid Gland
- \* Stomach, Forestomach
- \* Urinary Bladder

OBSERVATIONS

- \* Adrenal Cortex
    - [ Degeneration TGLs = 2-7 ]
  - \* Heart
  - \* Larynx
  - \* Liver
    - [ Angiectasis TGLs = 1-6 ]
  - \* Lung
    - Bronchiole
  - Mesentery
    - [ Necrosis TGLs = 3-14 ]
  - \* Nose
    - Glands, Olfactory Epi
  - \* Pituitary Gland
    - Pars Distalis
  - \* Thyroid Gland
    - C Cell
    - Follicular Cel
- |  |                               |                        |
|--|-------------------------------|------------------------|
|  | Degeneration                  | Cystic, Moderate       |
|  | Hyperplasia                   | Mild                   |
|  | Cardiomyopathy                | Minimal                |
|  | Hemangioma                    |                        |
|  | Metaplasia                    | Squamous, Mild         |
|  | Angiectasis                   | Minimal                |
|  | Basophilic Focus              |                        |
|  | Clear Cell Focus              |                        |
|  | Hyperplasia                   | Minimal                |
|  | Inflammation                  | Granulomatous, Minimal |
|  | Necrosis                      | Mild                   |
|  | Accumulation, Hyaline Droplet | Marked                 |
|  | Hyperplasia                   | Mild                   |
|  | Hyperplasia                   | Mild                   |
|  | Hyperplasia                   | Minimal                |
|  | Hyperplasia                   | Mild                   |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 526

TRT#: 6

SEX: Female

DAY ON TEST: 732

DOSE: 30 mg/m3

DISP: Terminal Sacrifice

HISTO: 57095

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                             |                          |                            |                           |
|-----------------------------|--------------------------|----------------------------|---------------------------|
| * Adrenal Medulla           | * Bone                   | * Bone Marrow              | * Brain                   |
| * Clitoral Gland            | * Esophagus              | * Eye                      | * Harderian Gland         |
| * Heart                     | * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum |
| * Intestine Small, Duodenum | * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      |
| * Lymph Node, Bronchial     | * Lymph Node, Mandibular | * Lymph Node, Mediastinal  | * Lymph Node, Mesenteric  |
| * Ovary                     | * Pancreas               | * Parathyroid Gland        | * Salivary Glands         |
| * Skin                      | * Spleen                 | * Stomach, Forestomach     | * Stomach, Glandular      |
| * Thymus                    | * Trachea                | * Urinary Bladder          | * Uterus                  |

OBSERVATIONS

- |                   |                           |                               |                        |
|-------------------|---------------------------|-------------------------------|------------------------|
| * Adrenal Cortex  |                           | Degeneration                  | Cystic, Mild           |
|                   |                           | Hyperplasia                   | Mild                   |
| * Kidney          |                           | Nephropathy                   | Minimal                |
| * Larynx          |                           | Metaplasia                    | Squamous, Moderate     |
| * Liver           |                           | Basophilic Focus              |                        |
| * Lung            | Bronchiole                | Hyperplasia                   | Minimal                |
|                   |                           | Inflammation                  | Granulomatous, Minimal |
| * Mammary Gland   |                           | Carcinoma                     |                        |
|                   | [ Carcinoma TGLs = 1-14 ] |                               |                        |
| * Nose            |                           | Accumulation, Hyaline Droplet | Moderate               |
|                   | Glands, Olfactory Epi     | Hyperplasia                   | Mild                   |
| * Pituitary Gland | Pars Distalis             | Hyperplasia                   | Mild                   |
| * Thyroid Gland   | Follicular Cel            | Carcinoma                     |                        |
|                   | C Cell                    | Hyperplasia                   | Mild                   |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 527

TRT#: 6

SEX: Female

DAY ON TEST: 732

DOSE: 30 mg/m3

DISP: Terminal Sacrifice

HISTO: 57096

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                          |                            |                           |                             |
|--------------------------|----------------------------|---------------------------|-----------------------------|
| * Adrenal Medulla        | * Bone                     | * Bone Marrow             | * Brain                     |
| * Clitoral Gland         | * Esophagus                | * Eye                     | * Heart                     |
| * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum | * Intestine Small, Duodenum |
| * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      | * Kidney                    |
| * Lymph Node, Bronchial  | * Lymph Node, Mandibular   | * Lymph Node, Mesenteric  | * Ovary                     |
| * Pancreas               | * Parathyroid Gland        | * Salivary Glands         | * Skin                      |
| * Spleen                 | * Stomach, Forestomach     | * Stomach, Glandular      | * Thymus                    |
| * Trachea                | * Urinary Bladder          | * Uterus                  |                             |

MISSING

- \* Lymph Node, Mediastinal

OBSERVATIONS

- |                   |                              |                               |                        |
|-------------------|------------------------------|-------------------------------|------------------------|
| * Adrenal Cortex  |                              | Degeneration                  | Cystic, Minimal        |
|                   |                              | Hyperplasia                   | Mild                   |
|                   |                              | Hypertrophy                   | Minimal                |
| * Harderian Gland |                              | Hyperplasia                   | Mild                   |
| * Larynx          |                              | Metaplasia                    | Squamous, Mild         |
| * Liver           |                              | Basophilic Focus              |                        |
| * Lung            |                              | Inflammation                  | Granulomatous, Minimal |
| * Mammary Gland   |                              | Fibroadenoma                  |                        |
|                   | [ Fibroadenoma TGLs = 1-14 ] |                               |                        |
| * Nose            |                              | Accumulation, Hyaline Droplet | Marked                 |
|                   | Glands, Olfactory Epi        | Hyperplasia                   | Mild                   |
| * Pituitary Gland | Pars Distalis                | Adenoma                       |                        |
|                   | [ Adenoma TGLs = 2-10 ]      |                               |                        |
| * Thyroid Gland   | C Cell                       | Carcinoma                     |                        |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 528

TRT#: 6

SEX: Female

DAY ON TEST: 733

DOSE: 30 mg/m3

DISP: Terminal Sacrifice

HISTO: 57097

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Medulla
- \* Clitoral Gland
- \* Heart
- \* Intestine Small, Ileum
- \* Lymph Node, Mediastinal
- \* Parathyroid Gland
- \* Stomach, Forestomach
- \* Urinary Bladder
- \* Bone
- \* Esophagus
- \* Intestine Large, Cecum
- \* Intestine Small, Jejunum
- \* Lymph Node, Mesenteric
- \* Salivary Glands
- \* Stomach, Glandular
- \* Bone Marrow
- \* Eye
- \* Intestine Large, Colon
- \* Islets, Pancreatic
- \* Ovary
- \* Skin
- \* Thymus
- \* Brain
- \* Harderian Gland
- \* Intestine Small, Duodenum
- \* Lymph Node, Mandibular
- \* Pancreas
- \* Spleen
- \* Trachea

MISSING

- \* Lymph Node, Bronchial

INSUFFICIENT TISSUE

- \* Intestine Large, Rectum

OBSERVATIONS

- \* Adrenal Cortex
  - Degeneration
  - Hyperplasia
  - Hypertrophy
  - Cystic, Marked
  - Mild
  - Mild
- [ Degeneration TGLs = 3-7 ]
- \* Kidney
  - Nephropathy
  - Metaplasia
  - Basophilic Focus
  - Clear Cell Focus
  - Minimal
  - Squamous, Moderate
- \* Larynx
- \* Liver
- \* Lung
  - Bronchiole
  - Hyperplasia
  - Inflammation
  - Minimal
  - Granulomatous, Minimal
- [ Inflammation TGLs = 6-5 ]
- \* Mammary Gland
  - Carcinoma
  - Multiple
- [ Carcinoma TGLs = 1,5-16+15 ]
- \* Nose
  - Accumulation, Hyaline Droplet
  - Hyperplasia
  - Mild
- \* Pituitary Gland
  - Glands, Olfactory Epi
  - Pars Distalis
  - Adenoma

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

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**ANIMAL ID:** 528

**TRT#:** 6

**SEX:** Female

**DAY ON TEST:** 733

**DOSE:** 30 mg/m3

**DISP:** Terminal Sacrifice

**HISTO:** 57097

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**ORGAN AND ACCOUNTABLE SITE STATUS**

---

[ Adenoma TGLs = 2-10 ]

\* Thyroid Gland

C Cell

Hyperplasia

Moderate

\* Uterus

Cervix

Cyst

Squamous, Moderate

[ Cyst TGLs = 4-14 ]

---

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 529

TRT#: 6

SEX: Female

DAY ON TEST: 731

DOSE: 30 mg/m3

DISP: Terminal Sacrifice

HISTO: 57098

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                            |                           |                             |                          |
|----------------------------|---------------------------|-----------------------------|--------------------------|
| * Adrenal Medulla          | * Bone                    | * Bone Marrow               | * Brain                  |
| * Clitoral Gland           | * Esophagus               | * Eye                       | * Intestine Large, Cecum |
| * Intestine Large, Colon   | * Intestine Large, Rectum | * Intestine Small, Duodenum | * Intestine Small, Ileum |
| * Intestine Small, Jejunum | * Islets, Pancreatic      | * Lung                      | * Lymph Node, Bronchial  |
| * Lymph Node, Mediastinal  | * Lymph Node, Mesenteric  | * Mammary Gland             | * Ovary                  |
| * Pancreas                 | * Parathyroid Gland       | * Salivary Glands           | * Skin                   |
| * Spleen                   | * Stomach, Forestomach    | * Stomach, Glandular        | * Thymus                 |
| * Trachea                  | * Urinary Bladder         | * Uterus                    |                          |

MISSING

- \* Lymph Node, Mandibular

OBSERVATIONS

- |                   |  |                               |                    |
|-------------------|--|-------------------------------|--------------------|
| * Adrenal Cortex  |  | Degeneration                  | Cystic, Moderate   |
|                   |  | Hypertrophy                   | Moderate           |
| * Harderian Gland |  | Hyperplasia                   | Minimal            |
| * Heart           |  | Cardiomyopathy                | Minimal            |
| * Kidney          |  | Nephropathy                   | Minimal            |
| * Larynx          |  | Metaplasia                    | Squamous, Moderate |
| * Liver           |  | Basophilic Focus              |                    |
|                   |  | Clear Cell Focus              |                    |
|                   |  | Hepatocellular Adenoma        |                    |
|                   | [ Hepatocellular Adenoma TGLs = 2-14 ] |                               |                    |
| * Nose            |  | Accumulation, Hyaline Droplet | Mild               |
|                   | Glands, Olfactory Epi                  | Hyperplasia                   | Minimal            |
| * Pituitary Gland | Pars Distalis                          | Adenoma                       |                    |
|                   | [ Adenoma TGLs = 1-10 ]                |                               |                    |
| * Thyroid Gland   | C Cell                                 | Hyperplasia                   | Mild               |

\* PROTOCOL REQUIRED TISSUE



TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 530

TRT#: 6

SEX: Female

DAY ON TEST: 705

DOSE: 30 mg/m3

DISP: Moribund Sacrifice

HISTO: 57099

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Medulla
- \* Clitoral Gland
- \* Heart
- \* Intestine Small, Duodenum
- \* Lymph Node, Bronchial
- \* Mammary Gland
- \* Skin
- \* Thymus
- \* Uterus
- \* Bone
- \* Esophagus
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Lymph Node, Mandibular
- \* Pancreas
- \* Spleen
- \* Thyroid Gland
- \* Bone Marrow
- \* Eye
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Lymph Node, Mediastinal
- \* Parathyroid Gland
- \* Stomach, Forestomach
- \* Trachea
- \* Brain
- \* Harderian Gland
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Lymph Node, Mesenteric
- \* Salivary Glands
- \* Stomach, Glandular
- \* Urinary Bladder

OBSERVATIONS

- \* Adrenal Cortex
- \* Kidney
- \* Larynx
- \* Liver
- \* Lung
- Mesentery
- \* Nose
- \* Ovary
- \* Pituitary Gland
- Degeneration
- Nephropathy
- Metaplasia
- Basophilic Focus
- Bronchiole
- Fat
- Glands, Olfactory Epi
- Pars Distalis
- Hyperplasia
- Inflammation
- Necrosis
- Accumulation, Hyaline Droplet
- Hyperplasia
- Cyst
- Adenoma
- Cystic, Marked
- Minimal
- Squamous, Moderate
- Minimal
- Granulomatous, Minimal
- Mild
- Mild
- Minimal
- Mild

[ Necrosis TGLs = 3,4-14+15 ]

[ Adenoma TGLs = 2-10 ]

PRIMARY CAUSE OF DEATH - Pituitary Gland Pars Distalis Adenoma

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 531

TRT#: 6

SEX: Female

DAY ON TEST: 733

DOSE: 30 mg/m3

DISP: Terminal Sacrifice

HISTO: 57100

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                          |                            |                           |                             |
|--------------------------|----------------------------|---------------------------|-----------------------------|
| * Adrenal Medulla        | * Bone                     | * Bone Marrow             | * Brain                     |
| * Clitoral Gland         | * Esophagus                | * Harderian Gland         | * Heart                     |
| * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum | * Intestine Small, Duodenum |
| * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      | * Kidney                    |
| * Liver                  | * Lymph Node, Bronchial    | * Lymph Node, Mandibular  | * Lymph Node, Mediastinal   |
| * Lymph Node, Mesenteric | * Ovary                    | * Pancreas                | * Parathyroid Gland         |
| * Salivary Glands        | * Skin                     | * Spleen                  | * Stomach, Forestomach      |
| * Stomach, Glandular     | * Trachea                  | * Urinary Bladder         | * Uterus                    |

OBSERVATIONS

- |                   |                             |                               |                        |
|-------------------|-----------------------------|-------------------------------|------------------------|
| * Adrenal Cortex  |                             | Hyperplasia                   | Mild                   |
| * Eye             | Retina                      | Atrophy                       | Mild                   |
| * Larynx          |                             | Metaplasia                    | Squamous, Moderate     |
| * Lung            | Bronchiole                  | Hyperplasia                   | Minimal                |
|                   |                             | Inflammation                  | Granulomatous, Minimal |
| * Mammary Gland   |                             | Fibroadenoma                  |                        |
|                   |                             | Galactocele                   | Moderate               |
|                   | [ Galactocele TGLs = 1-14 ] |                               |                        |
| * Nose            |                             | Accumulation, Hyaline Droplet | Mild                   |
|                   | Glands, Olfactory Epi       | Hyperplasia                   | Minimal                |
| * Pituitary Gland | Pars Distalis               | Adenoma                       |                        |
|                   | [ Adenoma TGLs = 3-10 ]     |                               |                        |
| * Thymus          |                             | Cyst                          | Marked                 |
|                   | [ Cyst TGLs = 2-3 ]         |                               |                        |
| * Thyroid Gland   | C Cell                      | Hyperplasia                   | Mild                   |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 532

TRT#: 6

SEX: Female

DAY ON TEST: 681

DOSE: 30 mg/m3

DISP: Moribund Sacrifice

HISTO: 57101

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                             |                          |                            |                           |
|-----------------------------|--------------------------|----------------------------|---------------------------|
| * Adrenal Medulla           | * Bone                   | * Bone Marrow              | * Brain                   |
| * Clitoral Gland            | * Esophagus              | * Eye                      | * Harderian Gland         |
| * Heart                     | * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum |
| * Intestine Small, Duodenum | * Intestine Small, Ileum | * Intestine Small, Jejunum | * Kidney                  |
| * Lung                      | * Lymph Node, Mandibular | * Lymph Node, Mediastinal  | * Lymph Node, Mesenteric  |
| * Ovary                     | * Pancreas               | * Parathyroid Gland        | * Salivary Glands         |
| * Skin                      | * Stomach, Forestomach   | * Stomach, Glandular       | * Thymus                  |
| * Trachea                   | * Urinary Bladder        | * Uterus                   |                           |

MISSING

- \* Lymph Node, Bronchial

OBSERVATIONS

- |                      |   |                                  |                   |
|----------------------|---|----------------------------------|-------------------|
| * Adrenal Cortex     |   | Degeneration                     | Cystic, Moderate  |
|                      |   | Hyperplasia                      | Mild              |
|                      |   | Hypertrophy                      | Mild              |
|                      | [ Degeneration TGLs = 5-7 ]                     |                                  |                   |
| * Islets, Pancreatic |   | Hyperplasia                      | Mild              |
| * Larynx             |   | Metaplasia                       | Squamous, Mild    |
| * Liver              |   | Basophilic Focus                 |                   |
| Lymph Node           | Lumbar  | Hyperplasia                      | Lymphoid, Minimal |
|                      | [ Hyperplasia TGLs = 6-15 ]                     |                                  |                   |
| * Mammary Gland      |   | Fibroadenoma                     | Multiple          |
|                      | [ Fibroadenoma TGLs = 1,7-16+17+18+19+14 ]      |                                  |                   |
| * Nose               |   | Accumulation, Hyaline Droplet    | Moderate          |
|                      | Glands, Olfactory Epi                           | Hyperplasia                      | Mild              |
| * Pituitary Gland    | Pars Distalis                                   | Adenoma                          |                   |
|                      | [ Adenoma TGLs = 2-10 ]                         |                                  |                   |
| * Spleen             |   | Hematopoietic Cell Proliferation | Mild              |
|                      | [ Hematopoietic Cell Proliferation TGLs = 4-6 ] |                                  |                   |
| * Thyroid Gland      | C Cell  | Hyperplasia                      | Moderate          |

PRIMARY CAUSE OF DEATH - Mammary Gland Fibroadenoma

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 533

TRT#: 6

SEX: Female

DAY ON TEST: 563

DOSE: 30 mg/m3

DISP: Moribund Sacrifice

HISTO: 57102

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                           |                             |                           |                            |
|---------------------------|-----------------------------|---------------------------|----------------------------|
| * Adrenal Cortex          | * Adrenal Medulla           | * Bone                    | * Bone Marrow              |
| * Brain                   | * Clitoral Gland            | * Esophagus               | * Eye                      |
| * Harderian Gland         | * Heart                     | * Intestine Large, Cecum  | * Intestine Large, Colon   |
| * Intestine Large, Rectum | * Intestine Small, Duodenum | * Intestine Small, Ileum  | * Intestine Small, Jejunum |
| * Islets, Pancreatic      | * Kidney                    | * Liver                   | * Lung                     |
| * Lymph Node, Bronchial   | * Lymph Node, Mandibular    | * Lymph Node, Mediastinal | * Lymph Node, Mesenteric   |
| * Mammary Gland           | * Ovary                     | * Pancreas                | * Parathyroid Gland        |
| * Salivary Glands         | * Skin                      | * Spleen                  | * Stomach, Forestomach     |
| * Stomach, Glandular      | * Thymus                    | * Thyroid Gland           | * Trachea                  |
| * Urinary Bladder         | * Uterus                    |                           |                            |

OBSERVATIONS

- |                         |                       |                               |                    |
|-------------------------|-----------------------|-------------------------------|--------------------|
| * Larynx                |                       | Metaplasia                    | Squamous, Moderate |
| * Nose                  |                       | Accumulation, Hyaline Droplet | Moderate           |
|                         | Glands, Olfactory Epi | Hyperplasia                   | Moderate           |
| * Pituitary Gland       | Pars Distalis         | Adenoma                       |                    |
| [ Adenoma TGLs = 3-10 ] |                       |                               |                    |

PRIMARY CAUSE OF DEATH - Pituitary Gland Pars Distalis Adenoma

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 534

TRT#: 6

SEX: Female

DAY ON TEST: 732

DOSE: 30 mg/m3

DISP: Terminal Sacrifice

HISTO: 57103

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                          |                            |                           |                             |
|--------------------------|----------------------------|---------------------------|-----------------------------|
| * Adrenal Medulla        | * Bone                     | * Bone Marrow             | * Brain                     |
| * Clitoral Gland         | * Esophagus                | * Eye                     | * Harderian Gland           |
| * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum | * Intestine Small, Duodenum |
| * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      | * Lymph Node, Bronchial     |
| * Lymph Node, Mandibular | * Lymph Node, Mediastinal  | * Lymph Node, Mesenteric  | * Ovary                     |
| * Pancreas               | * Parathyroid Gland        | * Salivary Glands         | * Skin                      |
| * Spleen                 | * Stomach, Forestomach     | * Stomach, Glandular      | * Thymus                    |
| * Trachea                | * Urinary Bladder          | * Uterus                  |                             |

OBSERVATIONS

- |                   |                           |                               |                        |
|-------------------|---------------------------|-------------------------------|------------------------|
| * Adrenal Cortex  |                           | Hyperplasia                   | Mild                   |
| * Heart           |                           | Cardiomyopathy                | Minimal                |
| * Kidney          |                           | Nephropathy                   | Minimal                |
| * Larynx          |                           | Metaplasia                    | Squamous, Moderate     |
| * Liver           |                           | Basophilic Focus              |                        |
| * Lung            | Bronchiole                | Hyperplasia                   | Minimal                |
|                   |                           | Inflammation                  | Granulomatous, Minimal |
| * Mammary Gland   |                           | Carcinoma                     |                        |
|                   | [ Carcinoma TGLs = 2-14 ] |                               |                        |
| * Nose            |                           | Accumulation, Hyaline Droplet | Mild                   |
|                   | Glands, Olfactory Epi     | Hyperplasia                   | Minimal                |
| * Pituitary Gland | Pars Distalis             | Adenoma                       |                        |
|                   | [ Adenoma TGLs = 1-10 ]   |                               |                        |
| * Thyroid Gland   | C Cell                    | Hyperplasia                   | Mild                   |

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 535

TRT#: 6

SEX: Female

DAY ON TEST: 733

DOSE: 30 mg/m3

DISP: Terminal Sacrifice

HISTO: 57104

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Medulla
- \* Clitoral Gland
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Lymph Node, Mandibular
- \* Pancreas
- \* Stomach, Forestomach
- \* Uterus
- \* Bone
- \* Esophagus
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Lymph Node, Mediastinal
- \* Salivary Glands
- \* Stomach, Glandular
- \* Bone Marrow
- \* Eye
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Lymph Node, Mesenteric
- \* Skin
- \* Trachea
- \* Brain
- \* Harderian Gland
- \* Intestine Small, Duodenum
- \* Kidney
- \* Ovary
- \* Spleen
- \* Urinary Bladder

MISSING

- \* Lymph Node, Bronchial
- \* Parathyroid Gland
- \* Thymus

OBSERVATIONS

- \* Adrenal Cortex
- \* Heart
- \* Larynx
- \* Liver
- \* Lung
- \* Mammary Gland  
[ Carcinoma TGLs = 1-14 ]
- \* Nose
- \* Pituitary Gland  
[ Adenoma TGLs = 2-10 ]
- \* Thyroid Gland
- Hyperplasia
- Cardiomyopathy
- Metaplasia
- Basophilic Focus
- Bronchiole
- Hyperplasia
- Inflammation
- Carcinoma
- Accumulation, Hyaline Droplet
- Hyperplasia
- Adenoma
- Hyperplasia
- Mild
- Minimal
- Squamous, Mild
- Minimal
- Granulomatous, Minimal
- Moderate
- Moderate
- Minimal

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 536

TRT#: 6

SEX: Female

DAY ON TEST: 733

DOSE: 30 mg/m3

DISP: Terminal Sacrifice

HISTO: 57105

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                          |                            |                           |                             |
|--------------------------|----------------------------|---------------------------|-----------------------------|
| * Adrenal Medulla        | * Bone                     | * Bone Marrow             | * Brain                     |
| * Clitoral Gland         | * Esophagus                | * Harderian Gland         | * Heart                     |
| * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum | * Intestine Small, Duodenum |
| * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      | * Kidney                    |
| * Lung                   | * Lymph Node, Bronchial    | * Lymph Node, Mandibular  | * Lymph Node, Mediastinal   |
| * Lymph Node, Mesenteric | * Ovary                    | * Pancreas                | * Parathyroid Gland         |
| * Salivary Glands        | * Skin                     | * Spleen                  | * Stomach, Forestomach      |
| * Stomach, Glandular     | * Thymus                   | * Trachea                 | * Urinary Bladder           |
| * Uterus                 |                            |                           |                             |

OBSERVATIONS

- |                   |                         |                               |                    |
|-------------------|-------------------------|-------------------------------|--------------------|
| * Adrenal Cortex  |                         | Degeneration                  | Cystic, Mild       |
|                   |                         | Hyperplasia                   | Mild               |
|                   |                         | Hypertrophy                   | Mild               |
| * Eye             | Retina                  | Atrophy                       | Mild               |
| * Larynx          |                         | Metaplasia                    | Squamous, Moderate |
| * Liver           |                         | Basophilic Focus              |                    |
|                   |                         | Clear Cell Focus              |                    |
| * Mammary Gland   |                         | Fibroadenoma                  |                    |
| * Nose            |                         | Accumulation, Hyaline Droplet | Mild               |
|                   | Glands, Olfactory Epi   | Hyperplasia                   | Moderate           |
| * Pituitary Gland | Pars Distalis           | Adenoma                       |                    |
|                   | [ Adenoma TGLs = 1-10 ] |                               |                    |
| * Thyroid Gland   | C Cell                  | Hyperplasia                   | Mild               |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 537

TRT#: 6

SEX: Female

DAY ON TEST: 731

DOSE: 30 mg/m3

DISP: Terminal Sacrifice

HISTO: 57106

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                             |                          |                            |                           |
|-----------------------------|--------------------------|----------------------------|---------------------------|
| * Adrenal Medulla           | * Bone                   | * Bone Marrow              | * Brain                   |
| * Clitoral Gland            | * Esophagus              | * Eye                      | * Harderian Gland         |
| * Heart                     | * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum |
| * Intestine Small, Duodenum | * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      |
| * Kidney                    | * Lymph Node, Mandibular | * Lymph Node, Mediastinal  | * Lymph Node, Mesenteric  |
| * Mammary Gland             | * Ovary                  | * Pancreas                 | * Salivary Glands         |
| * Skin                      | * Spleen                 | * Stomach, Forestomach     | * Stomach, Glandular      |
| * Thymus                    | * Trachea                | * Urinary Bladder          | * Uterus                  |

MISSING

- |                         |                     |
|-------------------------|---------------------|
| * Lymph Node, Bronchial | * Parathyroid Gland |
|-------------------------|---------------------|

OBSERVATIONS

- |                   |                       |                               |                        |
|-------------------|-----------------------|-------------------------------|------------------------|
| * Adrenal Cortex  |                       | Degeneration                  | Cystic, Minimal        |
| * Larynx          |                       | Metaplasia                    | Squamous, Mild         |
| * Liver           |                       | Basophilic Focus              |                        |
|                   |                       | Clear Cell Focus              |                        |
| * Lung            |                       | Inflammation                  | Granulomatous, Minimal |
| * Nose            |                       | Accumulation, Hyaline Droplet | Moderate               |
|                   | Glands, Olfactory Epi | Hyperplasia                   | Mild                   |
| * Pituitary Gland | Pars Distalis         | Hyperplasia                   | Mild                   |
| * Thyroid Gland   | C Cell                | Hyperplasia                   | Minimal                |

\* PROTOCOL REQUIRED TISSUE



TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 538

TRT#: 6

SEX: Female

DAY ON TEST: 603

DOSE: 30 mg/m3

DISP: Moribund Sacrifice

HISTO: 57107

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Medulla
- \* Clitoral Gland
- \* Heart
- \* Intestine Small, Duodenum
- \* Lymph Node, Bronchial
- \* Pancreas
- \* Stomach, Forestomach
- \* Urinary Bladder
- \* Bone
- \* Esophagus
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Lymph Node, Mesenteric
- \* Parathyroid Gland
- \* Stomach, Glandular
- \* Uterus
- \* Bone Marrow
- \* Eye
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Mammary Gland
- \* Salivary Glands
- \* Thymus
- \* Brain
- \* Harderian Gland
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Ovary
- \* Spleen
- \* Trachea

MISSING

- \* Lymph Node, Mandibular
- \* Lymph Node, Mediastinal

OBSERVATIONS

- \* Adrenal Cortex
    - [ Degeneration TGLs = 2-7 ]
  - \* Kidney
    - Transit Epithe
  - \* Larynx
  - \* Liver
    - Bile Duct
  - \* Lung
    - Bronchiole
  - \* Nose
    - Glands, Olfactory Epi
  - \* Pituitary Gland
    - Pars Distalis
  - \* Skin
    - [ Inflammation TGLs = 1,3-14+15 ]
  - \* Thyroid Gland
    - C Cell
- Degeneration  
 Hypertrophy  
 Hyperplasia  
 Metaplasia  
 Basophilic Focus  
 Hyperplasia  
 Hyperplasia  
 Inflammation  
 Accumulation, Hyaline Droplet  
 Hyperplasia  
 Hyperplasia  
 Inflammation  
 Hyperplasia
- Cystic, Moderate  
 Mild  
 Minimal  
 Squamous, Mild  
 Mild  
 Minimal  
 Granulomatous, Minimal  
 Moderate  
 Mild  
 Moderate  
 Chronic Active, Marked  
 Mild

PRIMARY CAUSE OF DEATH - Skin Inflammation

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 539

TRT#: 6

SEX: Female

DAY ON TEST: 732

DOSE: 30 mg/m3

DISP: Terminal Sacrifice

HISTO: 57108

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Medulla
- \* Clitoral Gland
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Liver
- \* Ovary
- \* Salivary Glands
- \* Trachea
- \* Bone
- \* Esophagus
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Lymph Node, Mediastinal
- \* Pancreas
- \* Skin
- \* Urinary Bladder
- \* Bone Marrow
- \* Eye
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Lymph Node, Mesenteric
- \* Parathyroid Gland
- \* Spleen
- \* Brain
- \* Harderian Gland
- \* Intestine Small, Duodenum
- \* Kidney
- \* Mammary Gland
- \* Pituitary Gland
- \* Thymus

MISSING

- \* Lymph Node, Bronchial

INSUFFICIENT TISSUE

- \* Lymph Node, Mandibular

OBSERVATIONS

- |                              |                       |                               |                          |
|------------------------------|-----------------------|-------------------------------|--------------------------|
| * Adrenal Cortex             |                       | Degeneration                  | Cystic, Mild             |
|                              |                       | Hyperplasia                   | Mild                     |
| * Heart                      |                       | Cardiomyopathy                | Minimal                  |
| * Larynx                     |                       | Metaplasia                    | Squamous, Moderate       |
| * Lung                       | Bronchiole            | Hyperplasia                   | Minimal                  |
|                              |                       | Inflammation                  | Granulomatous, Minimal   |
| Mesentery                    | Fat                   | Necrosis                      | Mild                     |
| [ Necrosis TGLs = 1-15 ]     |                       |                               |                          |
| * Nose                       |                       | Accumulation, Hyaline Droplet | Marked                   |
|                              | Glands, Olfactory Epi | Hyperplasia                   | Moderate                 |
| * Stomach, Forestomach       |                       | Inflammation                  | Chronic Active, Moderate |
| [ Inflammation TGLs = 2-14 ] |                       |                               |                          |
| * Stomach, Glandular         |                       | Mineralization                | Mild                     |
| * Thyroid Gland              | C Cell                | Hyperplasia                   | Moderate                 |
| * Uterus                     | Endometrium           | Hyperplasia                   | Cystic, Moderate         |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 540

TRT#: 6

SEX: Female

DAY ON TEST: 733

DOSE: 30 mg/m3

DISP: Terminal Sacrifice

HISTO: 57109

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Medulla
- \* Clitoral Gland
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Lymph Node, Mesenteric
- \* Skin
- \* Trachea
- \* Bone
- \* Esophagus
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Mammary Gland
- \* Spleen
- \* Urinary Bladder
- \* Bone Marrow
- \* Eye
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Pancreas
- \* Stomach, Forestomach
- \* Brain
- \* Harderian Gland
- \* Intestine Small, Duodenum
- \* Lymph Node, Mediastinal
- \* Salivary Glands
- \* Stomach, Glandular

MISSING

- \* Lymph Node, Bronchial
- \* Lymph Node, Mandibular
- \* Parathyroid Gland
- \* Thymus

OBSERVATIONS

- \* Adrenal Cortex
  - \* Heart
  - \* Kidney
  - \* Larynx
  - \* Liver
  - \* Lung
    - [ Inflammation TGLs = 2-4+5 ]
  - \* Nose
    - Glands, Olfactory Epi
  - \* Ovary
  - \* Pituitary Gland
  - \* Thyroid Gland
  - \* Uterus
    - [ Polyp Stromal TGLs = 1-10 ]
- Degeneration  
 Cardiomyopathy  
 Nephropathy  
 Metaplasia  
 Clear Cell Focus  
 Inflammation  
 Accumulation, Hyaline Droplet  
 Hyperplasia  
 Granulosa Cell Tumor Benign  
 Hyperplasia  
 Hyperplasia  
 Polyp Stromal
- Cystic, Moderate  
 Minimal  
 Minimal  
 Squamous, Mild  
 Granulomatous, Minimal  
 Mild  
 Mild  
 Mild  
 Minimal

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 541

TRT#: 6

SEX: Female

DAY ON TEST: 732

DOSE: 30 mg/m3

DISP: Terminal Sacrifice

HISTO: 57110

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                            |                           |                             |                          |
|----------------------------|---------------------------|-----------------------------|--------------------------|
| * Adrenal Medulla          | * Bone                    | * Bone Marrow               | * Brain                  |
| * Clitoral Gland           | * Esophagus               | * Harderian Gland           | * Intestine Large, Cecum |
| * Intestine Large, Colon   | * Intestine Large, Rectum | * Intestine Small, Duodenum | * Intestine Small, Ileum |
| * Intestine Small, Jejunum | * Islets, Pancreatic      | * Kidney                    | * Lymph Node, Mandibular |
| * Lymph Node, Mediastinal  | * Lymph Node, Mesenteric  | * Mammary Gland             | * Pancreas               |
| * Parathyroid Gland        | * Salivary Glands         | * Skin                      | * Spleen                 |
| * Stomach, Forestomach     | * Stomach, Glandular      | * Thymus                    | * Trachea                |
| * Urinary Bladder          |                           |                             |                          |

MISSING

- \* Lymph Node, Bronchial

OBSERVATIONS

- |                   |                       |                               |                        |
|-------------------|-----------------------|-------------------------------|------------------------|
| * Adrenal Cortex  |                       | Degeneration                  | Cystic, Mild           |
|                   |                       | Hyperplasia                   | Mild                   |
|                   |                       | Hypertrophy                   | Mild                   |
| * Eye             | Retina                | Atrophy                       | Moderate               |
| * Heart           |                       | Cardiomyopathy                | Mild                   |
| * Larynx          |                       | Metaplasia                    | Squamous, Mild         |
| * Liver           |                       | Basophilic Focus              |                        |
|                   |                       | Clear Cell Focus              |                        |
| * Lung            | Bronchiole            | Hyperplasia                   | Minimal                |
|                   |                       | Inflammation                  | Granulomatous, Minimal |
| * Nose            |                       | Accumulation, Hyaline Droplet | Marked                 |
|                   | Glands, Olfactory Epi | Hyperplasia                   | Mild                   |
| * Ovary           |                       | Cyst                          | Moderate               |
|                   | [ Cyst TGLs = 2-9 ]   |                               |                        |
| * Pituitary Gland | Pars Distalis         | Adenoma                       |                        |
| * Thyroid Gland   | C Cell                | Hyperplasia                   | Mild                   |
| * Uterus          | Endometrium           | Hyperplasia                   | Cystic, Moderate       |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 542

TRT#: 6

SEX: Female

DAY ON TEST: 731

DOSE: 30 mg/m3

DISP: Terminal Sacrifice

HISTO: 57111

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                             |                          |                            |                           |
|-----------------------------|--------------------------|----------------------------|---------------------------|
| * Adrenal Medulla           | * Bone                   | * Bone Marrow              | * Brain                   |
| * Clitoral Gland            | * Esophagus              | * Eye                      | * Harderian Gland         |
| * Heart                     | * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum |
| * Intestine Small, Duodenum | * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      |
| * Lymph Node, Bronchial     | * Lymph Node, Mandibular | * Lymph Node, Mediastinal  | * Lymph Node, Mesenteric  |
| * Mammary Gland             | * Ovary                  | * Pancreas                 | * Parathyroid Gland       |
| * Salivary Glands           | * Skin                   | * Spleen                   | * Stomach, Forestomach    |
| * Stomach, Glandular        | * Thymus                 | * Trachea                  | * Urinary Bladder         |

OBSERVATIONS

- |                   |                         |                               |                        |
|-------------------|-------------------------|-------------------------------|------------------------|
| * Adrenal Cortex  |                         | Degeneration                  | Cystic, Minimal        |
|                   |                         | Hypertrophy                   | Mild                   |
| * Kidney          |                         | Nephropathy                   | Minimal                |
| * Larynx          |                         | Metaplasia                    | Squamous, Mild         |
| * Liver           |                         | Basophilic Focus              |                        |
| * Lung            | Bronchiole              | Hyperplasia                   | Minimal                |
|                   |                         | Inflammation                  | Granulomatous, Minimal |
| * Nose            |                         | Accumulation, Hyaline Droplet | Moderate               |
|                   | Glands, Olfactory Epi   | Hyperplasia                   | Moderate               |
| * Pituitary Gland | Pars Distalis           | Adenoma                       |                        |
|                   |                         |                               |                        |
|                   | [ Adenoma TGLs = 1-10 ] |                               |                        |
| * Thyroid Gland   | C Cell                  | Hyperplasia                   | Mild                   |
| * Uterus          |                         | Fibroma                       |                        |
|                   | [ Fibroma TGLs = 3-10 ] |                               |                        |

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 543

TRT#: 6

SEX: Female

DAY ON TEST: 684

DOSE: 30 mg/m3

DISP: Moribund Sacrifice

HISTO: 57112

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                             |                          |                            |                           |
|-----------------------------|--------------------------|----------------------------|---------------------------|
| * Adrenal Medulla           | * Bone                   | * Bone Marrow              | * Brain                   |
| * Clitoral Gland            | * Esophagus              | * Eye                      | * Harderian Gland         |
| * Heart                     | * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum |
| * Intestine Small, Duodenum | * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      |
| * Kidney                    | * Liver                  | * Lymph Node, Bronchial    | * Lymph Node, Mandibular  |
| * Lymph Node, Mesenteric    | * Ovary                  | * Pancreas                 | * Parathyroid Gland       |
| Peripheral Nerve            | * Salivary Glands        | * Skin                     | Spinal Cord               |
| * Spleen                    | * Stomach, Forestomach   | * Stomach, Glandular       | * Thymus                  |
| * Thyroid Gland             | * Trachea                | * Urinary Bladder          | * Uterus                  |

MISSING

- \* Lymph Node, Mediastinal

OBSERVATIONS

- |                   |                                      |                               |                        |
|-------------------|--------------------------------------|-------------------------------|------------------------|
| * Adrenal Cortex  |                                      | Adenoma                       |                        |
|                   |                                      | Hyperplasia                   | Moderate               |
|                   |                                      | Hypertrophy                   | Mild                   |
| * Larynx          |                                      | Metaplasia                    | Squamous, Moderate     |
| * Lung            | Bronchiole                           | Hyperplasia                   | Minimal                |
|                   |                                      | Inflammation                  | Granulomatous, Minimal |
| * Mammary Gland   |                                      | Fibroadenoma                  | Multiple               |
|                   | [ Fibroadenoma TGLs = 1,2-14+15+16 ] |                               |                        |
| * Nose            |                                      | Accumulation, Hyaline Droplet | Moderate               |
|                   | Glands, Olfactory Epi                | Hyperplasia                   | Mild                   |
| * Pituitary Gland | Pars Distalis                        | Hyperplasia                   | Mild                   |
|                   | [ Hyperplasia TGLs = 3-10 ]          |                               |                        |

PRIMARY CAUSE OF DEATH - Mammary Gland Fibroadenoma

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 544

TRT#: 6

SEX: Female

DAY ON TEST: 732

DOSE: 30 mg/m3

DISP: Terminal Sacrifice

HISTO: 57113

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Medulla
- \* Clitoral Gland
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Lymph Node, Mandibular
- \* Parathyroid Gland
- \* Stomach, Forestomach
- \* Urinary Bladder
- \* Bone
- \* Esophagus
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Lymph Node, Mediastinal
- \* Salivary Glands
- \* Stomach, Glandular
- \* Uterus
- \* Bone Marrow
- \* Eye
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Lymph Node, Mesenteric
- \* Skin
- \* Thymus
- \* Brain
- \* Harderian Gland
- \* Intestine Small, Duodenum
- \* Lymph Node, Bronchial
- \* Pancreas
- \* Spleen
- \* Trachea

OBSERVATIONS

- \* Adrenal Cortex
  - Degeneration
  - Hyperplasia
  - Hypertrophy
  - Cystic, Mild
  - Mild
  - Mild
- [ Degeneration TGLs = 2-7 ]
- \* Heart
  - Cardiomyopathy
  - Mild
- \* Kidney
  - Nephropathy
  - Minimal
- \* Larynx
  - Metaplasia
  - Squamous, Moderate
- \* Liver
  - Angiectasis
  - Mild
  - Basophilic Focus
  - Clear Cell Focus
- \* Lung
  - Bronchiole
  - Hyperplasia
  - Inflammation
  - Granulomatous, Minimal
- \* Mammary Gland
  - Fibroadenoma
  - Multiple
- [ Fibroadenoma TGLs = 1-14 ]
- \* Nose
  - Accumulation, Hyaline Droplet
  - Mild
- \* Ovary
  - Glands, Olfactory Epi
  - Hyperplasia
  - Mild
  - Cyst
  - Mild
- [ Cyst TGLs = 3-9 ]
- \* Pituitary Gland
  - Pars Distalis
  - Hyperplasia
  - Moderate
- \* Thyroid Gland
  - Follicular Cel
  - Hyperplasia
  - Minimal

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 545

TRT#: 6

SEX: Female

DAY ON TEST: 732

DOSE: 30 mg/m3

DISP: Terminal Sacrifice

HISTO: 57114

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Medulla
- \* Esophagus
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Ovary
- \* Salivary Glands
- \* Stomach, Forestomach
- \* Urinary Bladder
- \* Bone
- \* Eye
- \* Intestine Small, Duodenum
- \* Kidney
- \* Pancreas
- \* Skin
- \* Stomach, Glandular
- \* Bone Marrow
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Lymph Node, Mandibular
- \* Parathyroid Gland
- \* Spinal Cord
- \* Thymus
- \* Brain
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Lymph Node, Mediastinal
- \* Peripheral Nerve
- \* Spleen
- \* Trachea

MISSING

- \* Lymph Node, Bronchial

OBSERVATIONS

- \* Adrenal Cortex
  - Degeneration
  - Hyperplasia
  - Hypertrophy
  - Inflammation
  - Cystic, Mild
  - Mild
  - Mild
  - Chronic Active, Moderate
- \* Clitoral Gland
  - [ Inflammation TGLs = 1-9 ]
  - Hyperplasia
  - Cardiomyopathy
  - Metaplasia
  - Basophilic Focus
  - Minimal
  - Minimal
  - Squamous, Mild
- \* Harderian Gland
  - Hyperplasia
  - Inflammation
  - Hemangiosarcoma
  - Minimal
  - Granulomatous, Minimal
- \* Heart
  - Hyperplasia
  - Fibroadenoma
  - Multiple
- \* Larynx
  - Hyperplasia
  - Inflammation
  - Hemangiosarcoma
  - Minimal
  - Granulomatous, Minimal
- \* Liver
  - Hyperplasia
  - Inflammation
  - Hemangiosarcoma
  - Minimal
  - Granulomatous, Minimal
- \* Lung
  - Bronchiole
  - Hyperplasia
  - Inflammation
  - Hemangiosarcoma
  - Minimal
  - Granulomatous, Minimal
- \* Lymph Node, Mesenteric
  - Hyperplasia
  - Fibroadenoma
  - Multiple
- \* Mammary Gland
  - [ Fibroadenoma TGLs = 2-15+16 ]
  - Hyperplasia
  - Fibroadenoma
  - Multiple
- \* Nose
  - Accumulation, Hyaline Droplet
  - Hyperplasia
  - Adenoma
  - Marked
  - Mild
- \* Pituitary Gland
  - Glands, Olfactory Epi
  - Pars Distalis
  - Hyperplasia
  - Adenoma
  - Mild
- \* Thyroid Gland
  - [ Adenoma TGLs = 3-10 ]
  - C Cell
  - Hyperplasia
  - Mild

\* PROTOCOL REQUIRED TISSUE



**TDMS No.** 20515 - 03

**Test Type:** CHRONIC

**Route:** RESPIRATORY EXPOSURE WHOLE BODY

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

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Metal working fluids (CIMSTAR 3800)

**CAS Number:** CIMSTAR3800

**Date Report Requested:** 01/21/2011

**Time Report Requested:** 07:49:51

**First Dose M/F:** 04/14/08 / 04/14/08

**Lab:** BNW

---

**ANIMAL ID:** 545

**TRT#:** 6

**SEX:** Female

**DAY ON TEST:** 732

**DOSE:** 30 mg/m3

**DISP:** Terminal Sacrifice

**HISTO:** 57114

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**ORGAN AND ACCOUNTABLE SITE STATUS**

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\* Uterus

Polyp Stromal

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TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 546

TRT#: 6

SEX: Female

DAY ON TEST: 731

DOSE: 30 mg/m3

DISP: Terminal Sacrifice

HISTO: 57115

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                             |                          |                            |                           |
|-----------------------------|--------------------------|----------------------------|---------------------------|
| * Adrenal Cortex            | * Adrenal Medulla        | * Bone                     | * Bone Marrow             |
| * Brain                     | * Clitoral Gland         | * Esophagus                | * Eye                     |
| * Harderian Gland           | * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum |
| * Intestine Small, Duodenum | * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      |
| * Liver                     | * Lymph Node, Bronchial  | * Lymph Node, Mandibular   | * Lymph Node, Mediastinal |
| * Lymph Node, Mesenteric    | * Ovary                  | * Pancreas                 | * Salivary Glands         |
| * Skin                      | * Spleen                 | * Stomach, Forestomach     | * Stomach, Glandular      |
| * Thymus                    | * Trachea                | * Urinary Bladder          |                           |

MISSING

- \* Parathyroid Gland

OBSERVATIONS

- |                   |                                |                               |                        |
|-------------------|--------------------------------|-------------------------------|------------------------|
| * Heart           |                                | Cardiomyopathy                | Minimal                |
| * Kidney          |                                | Nephropathy                   | Minimal                |
| * Larynx          |                                | Metaplasia                    | Squamous, Moderate     |
| * Lung            | Bronchiole                     | Hyperplasia                   | Minimal                |
|                   | [ Inflammation TGLs = 4-5 ]    | Inflammation                  | Granulomatous, Minimal |
| * Mammary Gland   |                                | Carcinoma                     | Multiple               |
|                   | [ Carcinoma TGLs = 2,3-14+15 ] |                               |                        |
| * Nose            |                                | Accumulation, Hyaline Droplet | Moderate               |
|                   | Glands, Olfactory Epi          | Hyperplasia                   | Moderate               |
| * Pituitary Gland | Pars Distalis                  | Adenoma                       |                        |
|                   | [ Adenoma TGLs = 1-10 ]        |                               |                        |
| * Thyroid Gland   | C Cell                         | Hyperplasia                   | Mild                   |
| * Uterus          | Endometrium                    | Hyperplasia                   | Cystic, Minimal        |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 547

TRT#: 6

SEX: Female

DAY ON TEST: 733

DOSE: 30 mg/m3

DISP: Terminal Sacrifice

HISTO: 57116

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                          |                            |                           |                             |
|--------------------------|----------------------------|---------------------------|-----------------------------|
| * Adrenal Medulla        | * Bone                     | * Bone Marrow             | * Brain                     |
| * Clitoral Gland         | * Esophagus                | * Harderian Gland         | * Heart                     |
| * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum | * Intestine Small, Duodenum |
| * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      | * Kidney                    |
| * Lymph Node, Mesenteric | * Ovary                    | * Pancreas                | * Parathyroid Gland         |
| * Salivary Glands        | * Skin                     | * Spleen                  | * Stomach, Forestomach      |
| * Stomach, Glandular     | * Trachea                  | * Urinary Bladder         |                             |

MISSING

- |                         |                          |                           |          |
|-------------------------|--------------------------|---------------------------|----------|
| * Lymph Node, Bronchial | * Lymph Node, Mandibular | * Lymph Node, Mediastinal | * Thymus |
|-------------------------|--------------------------|---------------------------|----------|

OBSERVATIONS

- |                   |                                 |                               |                        |
|-------------------|---------------------------------|-------------------------------|------------------------|
| * Adrenal Cortex  |                                 | Degeneration                  | Cystic, Mild           |
|                   |                                 | Hyperplasia                   | Mild                   |
|                   |                                 | Hypertrophy                   | Mild                   |
| * Eye             | Retina                          | Atrophy                       | Mild                   |
| * Larynx          |                                 | Metaplasia                    | Squamous, Mild         |
| * Liver           |                                 | Basophilic Focus              |                        |
| * Lung            |                                 | Inflammation                  | Granulomatous, Minimal |
| * Mammary Gland   |                                 | Fibroadenoma                  |                        |
|                   | [ Fibroadenoma TGLs = 1-14+15 ] |                               |                        |
| * Nose            |                                 | Accumulation, Hyaline Droplet | Marked                 |
|                   | Glands, Olfactory Epi           | Hyperplasia                   | Moderate               |
| * Pituitary Gland | Pars Distalis                   | Adenoma                       |                        |
|                   | [ Adenoma TGLs = 2-10 ]         |                               |                        |
| * Thyroid Gland   | C Cell                          | Hyperplasia                   | Mild                   |
| * Uterus          | Endometrium                     | Hyperplasia                   | Cystic, Mild           |
|                   | [ Hyperplasia TGLs = 3-10 ]     |                               |                        |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 548

TRT#: 6

SEX: Female

DAY ON TEST: 732

DOSE: 30 mg/m3

DISP: Terminal Sacrifice

HISTO: 57117

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                             |                          |                            |                           |
|-----------------------------|--------------------------|----------------------------|---------------------------|
| * Adrenal Medulla           | * Bone                   | * Bone Marrow              | * Brain                   |
| * Clitoral Gland            | * Esophagus              | * Eye                      | * Harderian Gland         |
| * Heart                     | * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum |
| * Intestine Small, Duodenum | * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      |
| * Kidney                    | * Lymph Node, Bronchial  | * Lymph Node, Mandibular   | * Lymph Node, Mediastinal |
| * Lymph Node, Mesenteric    | * Mammary Gland          | * Ovary                    | * Pancreas                |
| * Pituitary Gland           | * Salivary Glands        | * Skin                     | * Spleen                  |
| * Stomach, Forestomach      | * Stomach, Glandular     | * Thymus                   | * Trachea                 |
| * Urinary Bladder           |                          |                            |                           |

MISSING

- \* Parathyroid Gland

OBSERVATIONS

- |                  |                                  |                               |                        |
|------------------|----------------------------------|-------------------------------|------------------------|
| * Adrenal Cortex |                                  | Degeneration                  | Cystic, Moderate       |
|                  |                                  | Hyperplasia                   | Mild                   |
|                  |                                  | Hypertrophy                   | Mild                   |
| * Larynx         |                                  | Metaplasia                    | Squamous, Moderate     |
| * Liver          |                                  | Basophilic Focus              |                        |
|                  |                                  | Clear Cell Focus              |                        |
|                  | [ Basophilic Focus TGLs = 2-14 ] |                               |                        |
| * Lung           |                                  | Inflammation                  | Granulomatous, Minimal |
| * Nose           |                                  | Accumulation, Hyaline Droplet | Mild                   |
|                  | Glands, Olfactory Epi            | Hyperplasia                   | Minimal                |
| * Thyroid Gland  | C Cell                           | Hyperplasia                   | Moderate               |
| * Uterus         | Endometrium                      | Hyperplasia                   | Cystic, Moderate       |
|                  | [ Hyperplasia TGLs = 1-15 ]      |                               |                        |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 549

TRT#: 6

SEX: Female

DAY ON TEST: 732

DOSE: 30 mg/m3

DISP: Terminal Sacrifice

HISTO: 57118

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                             |                          |                            |                           |
|-----------------------------|--------------------------|----------------------------|---------------------------|
| * Adrenal Medulla           | * Bone                   | * Bone Marrow              | * Brain                   |
| * Clitoral Gland            | * Esophagus              | * Eye                      | * Harderian Gland         |
| * Heart                     | * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum |
| * Intestine Small, Duodenum | * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      |
| * Kidney                    | * Lung                   | * Lymph Node, Mandibular   | * Lymph Node, Mediastinal |
| * Lymph Node, Mesenteric    | * Mammary Gland          | * Ovary                    | * Pancreas                |
| * Parathyroid Gland         | * Salivary Glands        | * Skin                     | * Spleen                  |
| * Stomach, Forestomach      | * Stomach, Glandular     | * Thymus                   | * Trachea                 |
| * Urinary Bladder           |                          |                            |                           |

MISSING

- \* Lymph Node, Bronchial

OBSERVATIONS

- |                   |                         |                               |                  |
|-------------------|-------------------------|-------------------------------|------------------|
| * Adrenal Cortex  |                         | Degeneration                  | Cystic, Moderate |
|                   |                         | Hyperplasia                   | Mild             |
|                   |                         | Hypertrophy                   | Mild             |
| * Larynx          |                         | Metaplasia                    | Squamous, Mild   |
| * Liver           |                         | Basophilic Focus              |                  |
| * Nose            |                         | Accumulation, Hyaline Droplet | Moderate         |
|                   | Glands, Olfactory Epi   | Hyperplasia                   | Mild             |
| * Pituitary Gland | Pars Distalis           | Adenoma                       |                  |
|                   | [ Adenoma TGLs = 1-10 ] |                               |                  |
| * Thyroid Gland   | C Cell                  | Adenoma                       |                  |
| * Uterus          | Endometrium             | Hyperplasia                   | Cystic, Mild     |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 550

TRT#: 6

SEX: Female

DAY ON TEST: 646

DOSE: 30 mg/m3

DISP: Moribund Sacrifice

HISTO: 57119

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

* Adrenal Cortex	* Adrenal Medulla	* Bone	* Bone Marrow
* Brain	* Clitoral Gland	* Esophagus	* Eye
* Harderian Gland	* Heart	* Intestine Large, Cecum	* Intestine Large, Colon
* Intestine Large, Rectum	* Intestine Small, Duodenum	* Intestine Small, Ileum	* Intestine Small, Jejunum
* Islets, Pancreatic	* Lymph Node, Bronchial	* Lymph Node, Mandibular	* Lymph Node, Mediastinal
* Lymph Node, Mesenteric	* Ovary	* Pancreas	* Parathyroid Gland
* Salivary Glands	* Skin	* Stomach, Forestomach	* Stomach, Glandular
* Thymus	* Thyroid Gland	* Trachea	* Urinary Bladder

OBSERVATIONS

* Kidney		Cyst	Mild
		Nephropathy	Minimal
* Larynx		Metaplasia	Squamous, Mild
* Liver		Basophilic Focus	
* Lung		Inflammation	Granulomatous, Minimal
* Mammary Gland		Adenoma	
	[ Galactocoele TGLs = 1-16 ]	Galactocoele	Moderate
* Nose		Accumulation, Hyaline Droplet	Marked
	Glands, Olfactory Epi	Hyperplasia	Mild
* Pituitary Gland	Pars Distalis	Adenoma	
	[ Adenoma TGLs = 5-10 ]		
* Spleen		Hematopoietic Cell Proliferation	Moderate
	[ Hematopoietic Cell Proliferation TGLs = 2-6 ]		
* Uterus	Endometrium	Carcinoma	
		Polyp Stromal	
	[ Carcinoma TGLs = 3-14 ]		
	[ Polyp Stromal TGLs = 4-15 ]		

PRIMARY CAUSE OF DEATH - Uterus Endometrium Carcinoma

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 701

TRT#: 8

SEX: Female

DAY ON TEST: 715

DOSE: 100 mg/m3

DISP: Moribund Sacrifice

HISTO: 56970

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Medulla
- \* Clitoral Gland
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Lymph Node, Mediastinal
- \* Pancreas
- \* Stomach, Forestomach
- \* Urinary Bladder
- \* Bone
- \* Esophagus
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Lymph Node, Mesenteric
- \* Pituitary Gland
- \* Stomach, Glandular
- \* Bone Marrow
- \* Eye
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Mammary Gland
- \* Salivary Glands
- \* Thymus
- \* Brain
- \* Harderian Gland
- \* Intestine Small, Duodenum
- \* Lymph Node, Mandibular
- \* Ovary
- \* Skin
- \* Trachea

MISSING

- \* Lymph Node, Bronchial
- \* Parathyroid Gland

OBSERVATIONS

- \* Adrenal Cortex
- \* Heart
- \* Kidney
- \* Larynx
- \* Liver
- \* Lung
- [ Inflammation TGLs = 5-4+5 ]
- \* Nose
- Bronchiole
- Glands, Olfactory Epi
- \* Spleen
- [ Hematopoietic Cell Proliferation TGLs = 1-14 ]
- \* Thyroid Gland
- C Cell
- \* Uterus
- Endometrium
- [ Hyperplasia TGLs = 4-15 ]
- [ Sarcoma Stromal TGLs = 2,3-16+17+15 ]

- Degeneration
- Cardiomyopathy
- Nephropathy
- Metaplasia
- Clear Cell Focus
- Hyperplasia
- Inflammation
- Accumulation, Hyaline Droplet
- Hyperplasia
- Hematopoietic Cell Proliferation
- Hyperplasia
- Hyperplasia
- Sarcoma Stromal
- Cystic, Minimal
- Minimal
- Minimal
- Squamous, Mild
- Minimal
- Granulomatous, Mild
- Marked
- Mild
- Marked
- Mild
- Cystic, Marked
- Multiple

PRIMARY CAUSE OF DEATH - Uterus Endometrium Hyperplasia

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 702

TRT#: 8

SEX: Female

DAY ON TEST: 731

DOSE: 100 mg/m3

DISP: Terminal Sacrifice

HISTO: 56971

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                          |                            |                          |                             |
|--------------------------|----------------------------|--------------------------|-----------------------------|
| * Adrenal Medulla        | * Bone                     | * Bone Marrow            | * Brain                     |
| * Clitoral Gland         | * Esophagus                | * Eye                    | * Harderian Gland           |
| * Heart                  | * Intestine Large, Cecum   | * Intestine Large, Colon | * Intestine Small, Duodenum |
| * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic     | * Lymph Node, Bronchial     |
| * Lymph Node, Mandibular | * Lymph Node, Mediastinal  | * Lymph Node, Mesenteric | * Mammary Gland             |
| * Ovary                  | * Pancreas                 | * Parathyroid Gland      | * Salivary Glands           |
| * Spleen                 | * Stomach, Forestomach     | * Stomach, Glandular     | * Thymus                    |
| * Trachea                | * Urinary Bladder          |                          |                             |

INSUFFICIENT TISSUE

- \* Intestine Large, Rectum

OBSERVATIONS

- |                   |                                 |                               |                        |
|-------------------|---------------------------------|-------------------------------|------------------------|
| * Adrenal Cortex  |                                 | Hypertrophy                   | Mild                   |
| * Kidney          |                                 | Hydronephrosis                | Moderate               |
|                   |                                 | Nephropathy                   | Mild                   |
|                   | [ Hydronephrosis TGLs = 3,4-7 ] |                               |                        |
| * Larynx          |                                 | Metaplasia                    | Squamous, Moderate     |
| * Liver           |                                 | Basophilic Focus              |                        |
|                   |                                 | Clear Cell Focus              |                        |
| * Lung            | Bronchiole                      | Hyperplasia                   | Minimal                |
|                   |                                 | Inflammation                  | Granulomatous, Mild    |
|                   | [ Inflammation TGLs = 5-4 ]     |                               |                        |
| * Nose            |                                 | Accumulation, Hyaline Droplet | Mild                   |
| * Pituitary Gland | Pars Distalis                   | Adenoma                       |                        |
|                   | [ Adenoma TGLs = 2-10 ]         |                               |                        |
| * Skin            |                                 | Inflammation                  | Chronic Active, Marked |
|                   | [ Inflammation TGLs = 1-14 ]    |                               |                        |
| * Thyroid Gland   | C Cell                          | Hyperplasia                   | Minimal                |
| * Uterus          | Endometrium                     | Hyperplasia                   | Cystic, Minimal        |

\* PROTOCOL REQUIRED TISSUE



TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 703

TRT#: 8

SEX: Female

DAY ON TEST: 703

DOSE: 100 mg/m3

DISP: Moribund Sacrifice

HISTO: 56972

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                             |                          |                            |                           |
|-----------------------------|--------------------------|----------------------------|---------------------------|
| * Adrenal Medulla           | * Bone                   | * Bone Marrow              | * Brain                   |
| * Clitoral Gland            | * Esophagus              | * Eye                      | * Harderian Gland         |
| * Heart                     | * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum |
| * Intestine Small, Duodenum | * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      |
| * Kidney                    | * Liver                  | * Lymph Node, Mandibular   | * Lymph Node, Mediastinal |
| * Lymph Node, Mesenteric    | * Mammary Gland          | * Ovary                    | * Pancreas                |
| * Parathyroid Gland         | * Salivary Glands        | * Skin                     | * Spleen                  |
| * Stomach, Forestomach      | * Stomach, Glandular     | * Thymus                   | * Trachea                 |
| * Urinary Bladder           | * Uterus                 |                            |                           |

MISSING

- \* Lymph Node, Bronchial

OBSERVATIONS

- |                   |                               |                               |                     |
|-------------------|-------------------------------|-------------------------------|---------------------|
| * Adrenal Cortex  |                               | Adenoma                       |                     |
|                   |                               | Degeneration                  | Cystic, Moderate    |
| * Larynx          |                               | Metaplasia                    | Squamous, Moderate  |
| * Lung            | Bronchiole                    | Hyperplasia                   | Minimal             |
|                   |                               | Inflammation                  | Granulomatous, Mild |
|                   | [ Inflammation TGLs = 1-4+5 ] |                               |                     |
| * Nose            |                               | Accumulation, Hyaline Droplet | Marked              |
|                   | Glands, Olfactory Epi         | Hyperplasia                   | Mild                |
| * Pituitary Gland | Pars Distalis                 | Adenoma                       |                     |
|                   | [ Adenoma TGLs = 2-10 ]       |                               |                     |
| * Thyroid Gland   | C Cell                        | Hyperplasia                   | Mild                |

PRIMARY CAUSE OF DEATH - Pituitary Gland Pars Distalis Adenoma

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 704

TRT#: 8

SEX: Female

DAY ON TEST: 633

DOSE: 100 mg/m3

DISP: Moribund Sacrifice

HISTO: 56973

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                             |                          |                            |                           |
|-----------------------------|--------------------------|----------------------------|---------------------------|
| * Adrenal Medulla           | * Bone                   | * Bone Marrow              | * Brain                   |
| * Clitoral Gland            | * Esophagus              | * Eye                      | * Harderian Gland         |
| * Heart                     | * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum |
| * Intestine Small, Duodenum | * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      |
| * Kidney                    | * Lymph Node, Mandibular | * Lymph Node, Mediastinal  | * Lymph Node, Mesenteric  |
| * Pancreas                  | * Parathyroid Gland      | * Pituitary Gland          | * Salivary Glands         |
| * Skin                      | * Spleen                 | * Stomach, Forestomach     | * Stomach, Glandular      |
| * Thymus                    | * Thyroid Gland          | * Trachea                  | * Urinary Bladder         |
| * Uterus                    |                          |                            |                           |

MISSING

- \* Lymph Node, Bronchial

OBSERVATIONS

- |                              |                       |                               |                        |
|------------------------------|-----------------------|-------------------------------|------------------------|
| * Adrenal Cortex             |                       | Degeneration                  | Cystic, Mild           |
| * Larynx                     |                       | Metaplasia                    | Squamous, Moderate     |
| * Liver                      |                       | Basophilic Focus              |                        |
| * Lung                       | Bronchiole            | Hyperplasia                   | Minimal                |
|                              |                       | Inflammation                  | Granulomatous, Minimal |
|                              |                       | Fibroadenoma                  |                        |
| * Mammary Gland              |                       |                               |                        |
| [ Fibroadenoma TGLs = 1-14 ] |                       |                               |                        |
| * Nose                       |                       | Accumulation, Hyaline Droplet | Marked                 |
|                              | Glands, Olfactory Epi | Hyperplasia                   | Mild                   |
| * Ovary                      |                       | Cyst                          | Moderate               |
| [ Cyst TGLs = 2-9 ]          |                       |                               |                        |

PRIMARY CAUSE OF DEATH - Mammary Gland Fibroadenoma

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 705

TRT#: 8

SEX: Female

DAY ON TEST: 732

DOSE: 100 mg/m3

DISP: Terminal Sacrifice

HISTO: 56974

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                             |                          |                            |                           |
|-----------------------------|--------------------------|----------------------------|---------------------------|
| * Adrenal Medulla           | * Bone                   | * Bone Marrow              | * Brain                   |
| * Clitoral Gland            | * Esophagus              | * Eye                      | * Harderian Gland         |
| * Heart                     | * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum |
| * Intestine Small, Duodenum | * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      |
| * Kidney                    | * Lymph Node, Bronchial  | * Lymph Node, Mandibular   | * Lymph Node, Mediastinal |
| * Lymph Node, Mesenteric    | * Mammary Gland          | * Ovary                    | * Parathyroid Gland       |
| * Pituitary Gland           | * Salivary Glands        | * Spleen                   | * Stomach, Forestomach    |
| * Stomach, Glandular        | * Thymus                 | * Trachea                  | * Urinary Bladder         |

OBSERVATIONS

- |                  |                               |  |   |
|------------------|-------------------------------|--|---|
| * Adrenal Cortex |                               | Hypertrophy                                  | Mild                                      |
| * Larynx         |                               | Metaplasia                                   | Squamous, Moderate                        |
| * Liver          |                               | Basophilic Focus                             |   |
| * Lung           | Alveolar Epith<br>Bronchiole  | Hyperplasia<br>Hyperplasia<br>Inflammation   | Minimal<br>Minimal<br>Granulomatous, Mild |
|                  | [ Inflammation TGLs = 3-4+5 ] |  |   |
| Mesentery        | Fat                           | Necrosis                                     | Mild                                      |
|                  | [ Necrosis TGLs = 1-14 ]      |  |   |
| * Nose           | Glands, Olfactory Epi         | Accumulation, Hyaline Droplet<br>Hyperplasia | Marked<br>Moderate                        |
| * Pancreas       |                               | Atrophy                                      | Minimal                                   |
| * Skin           |                               | Inflammation                                 | Chronic Active, Mild                      |
| * Thyroid Gland  | C Cell                        | Hyperplasia                                  | Minimal                                   |
| * Uterus         |                               | Polyp Stromal                                |   |
|                  | [ Polyp Stromal TGLs = 2-10 ] |  |   |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 706

TRT#: 8

SEX: Female

DAY ON TEST: 732

DOSE: 100 mg/m3

DISP: Terminal Sacrifice

HISTO: 56975

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                          |                            |                           |                             |
|--------------------------|----------------------------|---------------------------|-----------------------------|
| * Adrenal Medulla        | * Bone                     | * Bone Marrow             | * Clitoral Gland            |
| * Esophagus              | * Eye                      | * Harderian Gland         | * Heart                     |
| * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum | * Intestine Small, Duodenum |
| * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      | * Kidney                    |
| * Lymph Node, Mandibular | * Lymph Node, Mediastinal  | * Lymph Node, Mesenteric  | * Mammary Gland             |
| * Ovary                  | * Pancreas                 | * Parathyroid Gland       | * Salivary Glands           |
| * Skin                   | * Spleen                   | * Stomach, Forestomach    | * Stomach, Glandular        |
| * Trachea                | * Urinary Bladder          | * Uterus                  |                             |

MISSING

- \* Lymph Node, Bronchial

OBSERVATIONS

- |                   |  |                               |                     |
|-------------------|--|-------------------------------|---------------------|
| * Adrenal Cortex  |  | Degeneration                  | Cystic, Mild        |
| * Brain           |  | Granular Cell Tumor Malignant |                     |
|                   | [ Granular Cell Tumor Malignant TGLs = 4-1 ] |                               |                     |
| * Larynx          |  | Metaplasia                    | Squamous, Moderate  |
| * Liver           |  | Basophilic Focus              |                     |
| * Lung            |  | Hyperplasia                   | Minimal             |
|                   | Bronchiole                                   | Inflammation                  | Granulomatous, Mild |
|                   | [ Inflammation TGLs = 5-4+5 ]                |                               |                     |
| * Nose            |  | Accumulation, Hyaline Droplet | Marked              |
|                   | Glands, Olfactory Epi                        | Hyperplasia                   | Moderate            |
| * Pituitary Gland |  | Adenoma                       |                     |
|                   | [ Adenoma TGLs = 6-10 ]                      |                               |                     |
| * Thymus          |  | Lymphoma Malignant            |                     |
|                   | [ Lymphoma Malignant TGLs = 1-14 ]           |                               |                     |
| * Thyroid Gland   |  | Hyperplasia                   | Minimal             |
|                   | C Cell                                       |                               |                     |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 707

TRT#: 8

SEX: Female

DAY ON TEST: 663

DOSE: 100 mg/m3

DISP: Moribund Sacrifice

HISTO: 56976

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                           |                            |                           |                             |
|---------------------------|----------------------------|---------------------------|-----------------------------|
| * Adrenal Medulla         | * Bone                     | * Bone Marrow             | * Brain                     |
| * Clitoral Gland          | * Esophagus                | * Eye                     | * Harderian Gland           |
| * Intestine Large, Cecum  | * Intestine Large, Colon   | * Intestine Large, Rectum | * Intestine Small, Duodenum |
| * Intestine Small, Ileum  | * Intestine Small, Jejunum | * Islets, Pancreatic      | * Lymph Node, Mandibular    |
| * Lymph Node, Mediastinal | * Lymph Node, Mesenteric   | * Ovary                   | * Pancreas                  |
| * Parathyroid Gland       | * Salivary Glands          | * Skin                    | * Spleen                    |
| * Stomach, Forestomach    | * Thymus                   | * Thyroid Gland           | * Trachea                   |
| * Urinary Bladder         | * Uterus                   |                           |                             |

MISSING

- \* Lymph Node, Bronchial

OBSERVATIONS

- |                      |                            |                               |                        |
|----------------------|----------------------------|-------------------------------|------------------------|
| * Adrenal Cortex     |                            | Degeneration                  | Cystic, Minimal        |
| * Heart              |                            | Cardiomyopathy                | Mild                   |
|                      |                            | Mineralization                | Mild                   |
| * Kidney             |                            | Nephropathy                   | Marked                 |
|                      | [ Nephropathy TGLs = 4-7 ] |                               |                        |
| * Larynx             |                            | Metaplasia                    | Squamous, Moderate     |
| * Liver              |                            | Basophilic Focus              |                        |
| * Lung               |                            | Hyperplasia                   | Minimal                |
|                      | Alveolar Epith             | Hyperplasia                   | Minimal                |
|                      | Bronchiole                 | Inflammation                  | Granulomatous, Minimal |
|                      |                            | Carcinoma                     |                        |
| * Mammary Gland      |                            |                               |                        |
|                      | [ Carcinoma TGLs = 3-14 ]  |                               |                        |
| * Nose               |                            | Accumulation, Hyaline Droplet | Marked                 |
| * Pituitary Gland    |                            | Adenoma                       |                        |
|                      | Pars Distalis              |                               |                        |
|                      | [ Adenoma TGLs = 2-10 ]    |                               |                        |
| * Stomach, Glandular |                            | Inflammation                  | Chronic Active, Mild   |

PRIMARY CAUSE OF DEATH - Pituitary Gland Pars Distalis Adenoma

CONTRIBUTORY CAUSE OF DEATH - Mammary Gland Carcinoma

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 708

TRT#: 8

SEX: Female

DAY ON TEST: 523

DOSE: 100 mg/m3

DISP: Moribund Sacrifice

HISTO: 56977

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                          |                            |                           |                             |
|--------------------------|----------------------------|---------------------------|-----------------------------|
| * Adrenal Medulla        | * Bone                     | * Bone Marrow             | * Clitoral Gland            |
| * Esophagus              | * Eye                      | * Harderian Gland         | * Heart                     |
| * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum | * Intestine Small, Duodenum |
| * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      | * Kidney                    |
| * Liver                  | * Lymph Node, Bronchial    | * Lymph Node, Mandibular  | * Lymph Node, Mediastinal   |
| * Lymph Node, Mesenteric | * Mammary Gland            | * Ovary                   | * Parathyroid Gland         |
| * Pituitary Gland        | * Salivary Glands          | * Skin                    | * Spleen                    |
| * Stomach, Forestomach   | * Stomach, Glandular       | * Thymus                  | * Trachea                   |
| * Urinary Bladder        | * Uterus                   |                           |                             |

OBSERVATIONS

- |                  |  |                               |                     |
|------------------|--|-------------------------------|---------------------|
| * Adrenal Cortex |  | Hyperplasia                   | Mild                |
| * Brain          |  | Oligodendroglioma Malignant   |                     |
|                  | [ Oligodendroglioma Malignant TGLs = 4-1 ] |                               |                     |
| * Larynx         |  | Metaplasia                    | Squamous, Moderate  |
| * Lung           | Bronchiole                                 | Hyperplasia                   | Minimal             |
|                  | [ Inflammation TGLs = 3-4+5 ]              | Inflammation                  | Granulomatous, Mild |
| * Nose           |  | Accumulation, Hyaline Droplet | Marked              |
|                  | Glands, Olfactory Epi                      | Hyperplasia                   | Moderate            |
| * Pancreas       |  | Atrophy                       | Minimal             |
| * Thyroid Gland  | C Cell                                     | Hyperplasia                   | Minimal             |

PRIMARY CAUSE OF DEATH - Brain Oligodendroglioma Malignant

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 709

TRT#: 8

SEX: Female

DAY ON TEST: 717

DOSE: 100 mg/m3

DISP: Moribund Sacrifice

HISTO: 56978

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                           |                             |                          |                            |
|---------------------------|-----------------------------|--------------------------|----------------------------|
| * Adrenal Cortex          | * Adrenal Medulla           | * Bone                   | * Bone Marrow              |
| * Brain                   | * Clitoral Gland            | * Esophagus              | * Eye                      |
| * Harderian Gland         | * Heart                     | * Intestine Large, Cecum | * Intestine Large, Colon   |
| * Intestine Large, Rectum | * Intestine Small, Duodenum | * Intestine Small, Ileum | * Intestine Small, Jejunum |
| * Islets, Pancreatic      | * Kidney                    | * Lymph Node, Bronchial  | * Lymph Node, Mandibular   |
| * Lymph Node, Mediastinal | * Lymph Node, Mesenteric    | * Pancreas               | * Parathyroid Gland        |
| Peripheral Nerve          | * Salivary Glands           | * Skin                   | Spinal Cord                |
| * Spleen                  | * Stomach, Forestomach      | * Stomach, Glandular     | * Thymus                   |
| * Trachea                 | * Urinary Bladder           | * Uterus                 |                            |

OBSERVATIONS

- |                   |                             |                       |                               |
|-------------------|-----------------------------|-----------------------|-------------------------------|
| * Larynx          |                             | Metaplasia            | Squamous, Moderate            |
| * Liver           |                             | Basophilic Focus      |                               |
|                   |                             | Cholangioma           |                               |
|                   |                             | Clear Cell Focus      |                               |
| * Lung            | [ Cholangioma TGLs = 2-6 ]  | Bronchiole            | Hyperplasia                   |
|                   |                             |                       | Inflammation                  |
|                   | [ Inflammation TGLs = 3-5 ] |                       | Minimal                       |
| * Mammary Gland   |                             |                       | Granulomatous, Mild           |
| * Nose            |                             | Glands, Olfactory Epi | Hyperplasia                   |
|                   |                             |                       | Accumulation, Hyaline Droplet |
| * Ovary           |                             |                       | Hyperplasia                   |
| * Pituitary Gland |                             | Pars Distalis         | Cyst                          |
|                   | [ Adenoma TGLs = 1-10 ]     |                       | Adenoma                       |
| * Thyroid Gland   |                             | C Cell                | Hyperplasia                   |
|                   |                             |                       | Minimal                       |

PRIMARY CAUSE OF DEATH - Pituitary Gland Pars Distalis Adenoma

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 710

TRT#: 8

SEX: Female

DAY ON TEST: 703

DOSE: 100 mg/m3

DISP: Moribund Sacrifice

HISTO: 56979

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                          |                            |                           |                             |
|--------------------------|----------------------------|---------------------------|-----------------------------|
| * Adrenal Medulla        | * Bone                     | * Bone Marrow             | * Brain                     |
| * Esophagus              | * Eye                      | * Harderian Gland         | * Heart                     |
| * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum | * Intestine Small, Duodenum |
| * Intestine Small, Ileum | * Intestine Small, Jejunum | * Lymph Node, Bronchial   | * Lymph Node, Mediastinal   |
| * Lymph Node, Mesenteric | * Ovary                    | * Pancreas                | * Parathyroid Gland         |
| Peripheral Nerve         | * Salivary Glands          | * Skin                    | Spinal Cord                 |
| * Spleen                 | * Stomach, Forestomach     | * Stomach, Glandular      | * Thymus                    |
| * Trachea                | * Urinary Bladder          |                           |                             |

MISSING

- \* Clitoral Gland

OBSERVATIONS

- |                          |                                   |  |  |
|--------------------------|-----------------------------------|--|--|
| * Adrenal Cortex         |                                   | Degeneration<br>Hyperplasia<br>Hypertrophy | Cystic, Mild<br>Mild<br>Mild           |
|                          | [ Degeneration TGLs = 4-7 ]       |  |  |
|                          | [ Hyperplasia TGLs = 3-7 ]        |  |  |
| * Islets, Pancreatic     |                                   | Hyperplasia                                | Moderate                               |
| * Kidney                 |                                   | Nephropathy                                | Mild                                   |
| * Larynx                 |                                   | Metaplasia                                 | Squamous, Moderate                     |
| * Liver                  |                                   | Basophilic Focus<br>Clear Cell Focus       |  |
|                          | Bile Duct                         | Hyperplasia                                | Minimal                                |
| * Lung                   | Bronchiole                        | Hyperplasia<br>Inflammation<br>Ectasia     | Minimal<br>Granulomatous, Mild<br>Mild |
| * Lymph Node, Mandibular |                                   |  |  |
|                          | [ Ectasia TGLs = 1-9 ]            |  |  |
| * Mammary Gland          |                                   | Fibroadenoma                               |  |
|                          | [ Fibroadenoma TGLs = 6-9+14+15 ] |  |  |
| * Nose                   |                                   | Accumulation, Hyaline Droplet              | Mild                                   |
|                          | Glands, Olfactory Epi             | Hyperplasia                                | Mild                                   |

\* PROTOCOL REQUIRED TISSUE



TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 710

TRT#: 8

SEX: Female

DAY ON TEST: 703

DOSE: 100 mg/m3

DISP: Moribund Sacrifice

HISTO: 56979

ORGAN AND ACCOUNTABLE SITE STATUS

* Pituitary Gland [ Adenoma TGLs = 2-10 ]	Pars Distalis	Adenoma	
* Thyroid Gland	C Cell	Hyperplasia	Mild
* Uterus [ Hyperplasia TGLs = 5-10 ]	Endometrium	Hyperplasia	Cystic, Moderate

PRIMARY CAUSE OF DEATH - Pituitary Gland Pars Distalis Adenoma

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 711

TRT#: 8

SEX: Female

DAY ON TEST: 733

DOSE: 100 mg/m3

DISP: Terminal Sacrifice

HISTO: 56980

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                          |                            |                           |                             |
|--------------------------|----------------------------|---------------------------|-----------------------------|
| * Bone                   | * Bone Marrow              | * Brain                   | * Clitoral Gland            |
| * Esophagus              | * Eye                      | * Harderian Gland         | * Heart                     |
| * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum | * Intestine Small, Duodenum |
| * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      | * Kidney                    |
| * Liver                  | * Lymph Node, Bronchial    | * Lymph Node, Mandibular  | * Lymph Node, Mediastinal   |
| * Lymph Node, Mesenteric | * Mammary Gland            | * Parathyroid Gland       | * Salivary Glands           |
| * Skin                   | * Spleen                   | * Stomach, Forestomach    | * Stomach, Glandular        |
| * Thymus                 | * Trachea                  | * Urinary Bladder         | * Uterus                    |

MISSING

- \* Adrenal Medulla

OBSERVATIONS

- |                   |                               |                               |                     |
|-------------------|-------------------------------|-------------------------------|---------------------|
| * Adrenal Cortex  |                               | Degeneration                  | Cystic, Moderate    |
|                   |                               | Hyperplasia                   | Mild                |
|                   |                               | Hypertrophy                   | Mild                |
| * Larynx          |                               | Metaplasia                    | Squamous, Moderate  |
| * Lung            | Bronchiole                    | Hyperplasia                   | Minimal             |
|                   |                               | Inflammation                  | Granulomatous, Mild |
|                   | [ Inflammation TGLs = 1-4+5 ] |                               |                     |
| * Nose            |                               | Accumulation, Hyaline Droplet | Marked              |
|                   | Glands, Olfactory Epi         | Hyperplasia                   | Moderate            |
| * Ovary           |                               | Cyst                          | Mild                |
|                   | [ Cyst TGLs = 3-9 ]           |                               |                     |
| * Pancreas        |                               | Atrophy                       | Minimal             |
| * Pituitary Gland | Pars Distalis                 | Adenoma                       |                     |
|                   | [ Adenoma TGLs = 2-10 ]       |                               |                     |
| * Thyroid Gland   | C Cell                        | Hyperplasia                   | Minimal             |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 712

TRT#: 8

SEX: Female

DAY ON TEST: 731

DOSE: 100 mg/m3

DISP: Terminal Sacrifice

HISTO: 56981

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                             |                          |                            |                           |
|-----------------------------|--------------------------|----------------------------|---------------------------|
| * Adrenal Medulla           | * Bone                   | * Bone Marrow              | * Brain                   |
| * Clitoral Gland            | * Esophagus              | * Eye                      | * Harderian Gland         |
| * Heart                     | * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum |
| * Intestine Small, Duodenum | * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      |
| * Kidney                    | * Lymph Node, Bronchial  | * Lymph Node, Mediastinal  | * Lymph Node, Mesenteric  |
| * Mammary Gland             | * Ovary                  | * Parathyroid Gland        | * Salivary Glands         |
| * Skin                      | * Spleen                 | * Stomach, Forestomach     | * Stomach, Glandular      |
| * Trachea                   | * Urinary Bladder        | * Uterus                   |                           |

MISSING

- \* Thymus

OBSERVATIONS

- |                          |                               |                               |                     |
|--------------------------|-------------------------------|-------------------------------|---------------------|
| * Adrenal Cortex         |                               | Hypertrophy                   | Mild                |
| * Larynx                 |                               | Metaplasia                    | Squamous, Moderate  |
| * Liver                  |                               | Basophilic Focus              |                     |
|                          |                               | Cholangioma                   |                     |
|                          |                               | Clear Cell Focus              |                     |
|                          | Bile Duct                     | Dilatation                    | Marked              |
|                          |                               | Eosinophilic Focus            |                     |
|                          | [ Cholangioma TGLs = 4-6 ]    |                               |                     |
|                          | [ Dilatation TGLs = 3-14 ]    |                               |                     |
| * Lung                   | Bronchiole                    | Hyperplasia                   | Minimal             |
|                          |                               | Inflammation                  | Granulomatous, Mild |
|                          | [ Inflammation TGLs = 2-4+5 ] |                               |                     |
| * Lymph Node, Mandibular |                               | Ectasia                       | Moderate            |
|                          | [ Ectasia TGLs = 1-9 ]        |                               |                     |
| * Nose                   |                               | Accumulation, Hyaline Droplet | Marked              |
|                          | Glands, Olfactory Epi         | Hyperplasia                   | Moderate            |
| * Pancreas               |                               | Atrophy                       | Moderate            |
| * Pituitary Gland        | Pars Distalis                 | Hyperplasia                   | Minimal             |
| * Thyroid Gland          | C Cell                        | Hyperplasia                   | Minimal             |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 713

TRT#: 8

SEX: Female

DAY ON TEST: 635

DOSE: 100 mg/m3

DISP: Moribund Sacrifice

HISTO: 56982

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Medulla
- \* Clitoral Gland
- \* Heart
- \* Intestine Small, Duodenum
- \* Lymph Node, Bronchial
- \* Ovary
- \* Salivary Glands
- \* Stomach, Glandular
- \* Uterus
- \* Bone
- \* Esophagus
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Lymph Node, Mandibular
- \* Pancreas
- \* Skin
- \* Thymus
- \* Bone Marrow
- \* Eye
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Lymph Node, Mediastinal
- \* Parathyroid Gland
- \* Spleen
- \* Trachea
- \* Brain
- \* Harderian Gland
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Lymph Node, Mesenteric
- \* Pituitary Gland
- \* Stomach, Forestomach
- \* Urinary Bladder

OBSERVATIONS

- |                  |                                    |                               |                     |
|------------------|------------------------------------|-------------------------------|---------------------|
| * Adrenal Cortex |                                    | Degeneration                  | Cystic, Minimal     |
| * Kidney         |                                    | Nephropathy                   | Minimal             |
| * Larynx         |                                    | Metaplasia                    | Squamous, Moderate  |
| * Liver          |                                    | Basophilic Focus              |                     |
| * Lung           | Bronchiole                         | Hyperplasia                   | Minimal             |
|                  |                                    | Inflammation                  | Granulomatous, Mild |
| * Mammary Gland  |                                    | Fibroadenoma                  |                     |
|                  | [ Fibroadenoma TGLs = 1-14+15+16 ] |                               |                     |
| * Nose           |                                    | Accumulation, Hyaline Droplet | Marked              |
|                  | Glands, Olfactory Epi              | Hyperplasia                   | Mild                |
| * Thyroid Gland  | C Cell                             | Hyperplasia                   | Minimal             |

PRIMARY CAUSE OF DEATH - Mammary Gland Fibroadenoma

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 714

TRT#: 8

SEX: Female

DAY ON TEST: 731

DOSE: 100 mg/m3

DISP: Terminal Sacrifice

HISTO: 56983

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Medulla
- \* Clitoral Gland
- \* Heart
- \* Intestine Small, Duodenum
- \* Kidney
- \* Mammary Gland
- \* Salivary Glands
- \* Stomach, Glandular
- \* Uterus
- \* Bone
- \* Esophagus
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Lymph Node, Mandibular
- \* Ovary
- \* Skin
- \* Thymus
- \* Bone Marrow
- \* Eye
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Lymph Node, Mediastinal
- \* Pancreas
- \* Spleen
- \* Trachea
- \* Brain
- \* Harderian Gland
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Lymph Node, Mesenteric
- \* Parathyroid Gland
- \* Stomach, Forestomach
- \* Urinary Bladder

MISSING

- \* Lymph Node, Bronchial

OBSERVATIONS

- |   |  |
|---|--|
| <ul style="list-style-type: none"> <li>* Adrenal Cortex</li> <li>* Larynx</li> <li>* Liver</li> <li>* Lung</li> </ul>                             | <ul style="list-style-type: none"> <li>Bile Duct</li> <li>Bronchiole</li> </ul>                |
| <ul style="list-style-type: none"> <li>[ Inflammation TGLs = 1-4+5 ]</li> </ul>   | <ul style="list-style-type: none"> <li>Glands, Olfactory Epi</li> <li>Pars Distalis</li> </ul> |
| <ul style="list-style-type: none"> <li>* Nose</li> <li>* Pituitary Gland</li> <li>[ Hyperplasia TGLs = 2-10 ]</li> <li>* Thyroid Gland</li> </ul> | <ul style="list-style-type: none"> <li>C Cell</li> </ul>                                       |

- Degeneration
- Metaplasia
- Hyperplasia
- Hyperplasia
- Inflammation
- Accumulation, Hyaline Droplet
- Hyperplasia
- Hyperplasia
- Adenoma
- Cystic, Mild
- Squamous, Moderate
- Mild
- Minimal
- Granulomatous, Mild
- Marked
- Moderate
- Mild

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 715

TRT#: 8

SEX: Female

DAY ON TEST: 732

DOSE: 100 mg/m3

DISP: Terminal Sacrifice

HISTO: 56984

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Medulla
- \* Clitoral Gland
- \* Heart
- \* Intestine Small, Duodenum
- \* Kidney
- \* Lymph Node, Mesenteric
- \* Parathyroid Gland
- \* Stomach, Forestomach
- \* Urinary Bladder
- \* Bone
- \* Esophagus
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Liver
- \* Mammary Gland
- \* Salivary Glands
- \* Stomach, Glandular
- \* Uterus
- \* Bone Marrow
- \* Eye
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Lymph Node, Mandibular
- \* Ovary
- \* Skin
- \* Thymus
- \* Brain
- \* Harderian Gland
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Lymph Node, Mediastinal
- \* Pancreas
- \* Spleen
- \* Trachea

MISSING

- \* Lymph Node, Bronchial

OBSERVATIONS

- |   |  |   |   |
|---|--|---|---|
| <ul style="list-style-type: none"> <li>* Adrenal Cortex</li> <li>* Larynx</li> <li>* Lung</li> <li style="padding-left: 20px;">[ Inflammation TGLs = 1-4+5 ]</li> <li>* Nose</li> <li>* Pituitary Gland</li> <li>* Thyroid Gland</li> </ul> | <ul style="list-style-type: none"> <li>Bronchiole</li> <li>Glands, Olfactory Epi</li> <li>Pars Distalis</li> <li>C Cell</li> </ul> | <ul style="list-style-type: none"> <li>Hyperplasia</li> <li>Hypertrophy</li> <li>Metaplasia</li> <li>Hyperplasia</li> <li>Inflammation</li> <li>Accumulation, Hyaline Droplet</li> <li>Hyperplasia</li> <li>Hyperplasia</li> <li>Hyperplasia</li> </ul> | <ul style="list-style-type: none"> <li>Mild</li> <li>Mild</li> <li>Squamous, Moderate</li> <li>Minimal</li> <li>Granulomatous, Mild</li> <li>Moderate</li> <li>Mild</li> <li>Mild</li> <li>Minimal</li> </ul> |
|---|--|---|---|

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 716

TRT#: 8

SEX: Female

DAY ON TEST: 691

DOSE: 100 mg/m3

DISP: Moribund Sacrifice

HISTO: 56985

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Medulla
- \* Clitoral Gland
- \* Heart
- \* Intestine Small, Duodenum
- \* Lymph Node, Mandibular
- \* Ovary
- \* Spleen
- \* Urinary Bladder
- \* Bone
- \* Esophagus
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Lymph Node, Mediastinal
- \* Pancreas
- \* Stomach, Glandular
- \* Uterus
- \* Bone Marrow
- \* Eye
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Lymph Node, Mesenteric
- \* Parathyroid Gland
- \* Thymus
- \* Brain
- \* Harderian Gland
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Mammary Gland
- \* Salivary Glands
- \* Trachea

MISSING

- \* Lymph Node, Bronchial

OBSERVATIONS

- \* Adrenal Cortex
- \* Kidney
- \* Larynx
- \* Liver
- \* Lung
- \* Nose
- \* Pituitary Gland
- [ Adenoma TGLs = 1-10 ]
- \* Skin
- [ Keratoacanthoma TGLs = 2-14 ]
- \* Stomach, Forestomach
- [ Ulcer TGLs = 3-10 ]
- \* Thyroid Gland
- Bile Duct
- Bronchiole
- Glands, Olfactory Epi
- Pars Distalis
- C Cell
- Degeneration
- Nephropathy
- Metaplasia
- Hyperplasia
- Hyperplasia
- Inflammation
- Accumulation, Hyaline Droplet
- Hyperplasia
- Adenoma
- Keratoacanthoma
- Ulcer
- Carcinoma
- Cystic, Mild
- Minimal
- Squamous, Moderate
- Minimal
- Minimal
- Granulomatous, Mild
- Moderate
- Moderate
- Moderate

PRIMARY CAUSE OF DEATH

- Pituitary Gland Pars Distalis Adenoma

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 717

TRT#: 8

SEX: Female

DAY ON TEST: 732

DOSE: 100 mg/m3

DISP: Terminal Sacrifice

HISTO: 56986

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                          |                            |                           |                             |
|--------------------------|----------------------------|---------------------------|-----------------------------|
| * Adrenal Medulla        | * Bone                     | * Bone Marrow             | * Brain                     |
| * Clitoral Gland         | * Esophagus                | * Eye                     | * Harderian Gland           |
| * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum | * Intestine Small, Duodenum |
| * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      | * Kidney                    |
| * Liver                  | * Lymph Node, Bronchial    | * Lymph Node, Mandibular  | * Lymph Node, Mediastinal   |
| * Lymph Node, Mesenteric | * Ovary                    | * Pancreas                | * Salivary Glands           |
| * Skin                   | * Spleen                   | * Stomach, Forestomach    | * Stomach, Glandular        |
| * Thymus                 | * Trachea                  | * Urinary Bladder         | * Uterus                    |

MISSING

- \* Parathyroid Gland

OBSERVATIONS

- |                   |                               |                               |                     |
|-------------------|-------------------------------|-------------------------------|---------------------|
| * Adrenal Cortex  |                               | Degeneration                  | Cystic, Mild        |
| * Heart           |                               | Cardiomyopathy                | Minimal             |
| * Larynx          |                               | Metaplasia                    | Squamous, Moderate  |
| * Lung            | Bronchiole                    | Hyperplasia                   | Minimal             |
|                   | [ Inflammation TGLs = 3-4+5 ] | Inflammation                  | Granulomatous, Mild |
| * Mammary Gland   |                               | Fibroadenoma                  |                     |
|                   | [ Fibroadenoma TGLs = 1-14 ]  |                               |                     |
| * Nose            |                               | Accumulation, Hyaline Droplet | Marked              |
|                   | Glands, Olfactory Epi         | Hyperplasia                   | Moderate            |
| * Pituitary Gland | Pars Distalis                 | Adenoma                       |                     |
|                   | [ Adenoma TGLs = 2-10 ]       |                               |                     |
| * Thyroid Gland   | C Cell                        | Hyperplasia                   | Minimal             |

\* PROTOCOL REQUIRED TISSUE



TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 718

TRT#: 8

SEX: Female

DAY ON TEST: 733

DOSE: 100 mg/m3

DISP: Terminal Sacrifice

HISTO: 56987

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Medulla
- \* Clitoral Gland
- \* Heart
- \* Intestine Small, Duodenum
- \* Kidney
- \* Lymph Node, Mesenteric
- \* Parathyroid Gland
- \* Stomach, Forestomach
- \* Urinary Bladder
- \* Bone
- \* Esophagus
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Lymph Node, Bronchial
- \* Mammary Gland
- \* Salivary Glands
- \* Stomach, Glandular
- \* Uterus
- \* Bone Marrow
- \* Eye
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Lymph Node, Mandibular
- \* Ovary
- \* Skin
- \* Thymus
- \* Brain
- \* Harderian Gland
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Lymph Node, Mediastinal
- \* Pancreas
- \* Spleen
- \* Trachea

OBSERVATIONS

- \* Adrenal Cortex
  - Angiectasis Mild
  - Hyperplasia Mild
- \* Larynx
  - Metaplasia Squamous, Moderate
- \* Liver
  - Angiectasis Mild
  - Basophilic Focus
  - Clear Cell Focus
- \* Lung
  - [ Angiectasis TGLs = 2-14 ]
  - Bronchiole
    - Hyperplasia Minimal
    - Inflammation Granulomatous, Mild
  - [ Inflammation TGLs = 3-4+5 ]
- \* Nose
  - Accumulation, Hyaline Droplet Marked
- \* Pituitary Gland
  - Glands, Olfactory Epi
    - Hyperplasia Mild
  - Pars Distalis
    - Adenoma
  - Pars Intermed
    - Hyperplasia Mild
- \* Thyroid Gland
  - [ Adenoma TGLs = 1-10 ]
  - C Cell
    - Hyperplasia Minimal

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 719

TRT#: 8

SEX: Female

DAY ON TEST: 725

DOSE: 100 mg/m3

DISP: Moribund Sacrifice

HISTO: 56988

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                          |                            |                           |                             |
|--------------------------|----------------------------|---------------------------|-----------------------------|
| * Adrenal Medulla        | * Bone                     | * Bone Marrow             | * Brain                     |
| * Clitoral Gland         | * Esophagus                | * Harderian Gland         | * Heart                     |
| * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum | * Intestine Small, Duodenum |
| * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      | * Lymph Node, Bronchial     |
| * Lymph Node, Mandibular | * Lymph Node, Mediastinal  | * Lymph Node, Mesenteric  | * Pancreas                  |
| * Salivary Glands        | * Skin                     | * Spleen                  | * Stomach, Forestomach      |
| * Stomach, Glandular     | * Thymus                   | * Trachea                 | * Urinary Bladder           |

MISSING

- \* Parathyroid Gland

OBSERVATIONS

- |                                  |                       |                               |                        |
|----------------------------------|-----------------------|-------------------------------|------------------------|
| * Adrenal Cortex                 |                       | Degeneration                  | Cystic, Mild           |
| [ Degeneration TGLs = 9-7 ]      |                       |                               |                        |
| * Eye                            | Cornea                | Inflammation                  | Chronic Active, Marked |
| [ Inflammation TGLs = 3-13 ]     |                       |                               |                        |
| * Kidney                         |                       | Nephropathy                   | Mild                   |
| * Larynx                         |                       | Metaplasia                    | Squamous, Moderate     |
| * Liver                          |                       | Basophilic Focus              |                        |
| [ Basophilic Focus TGLs = 8-14 ] |                       |                               |                        |
| * Lung                           | Alveolar Epith        | Hyperplasia                   | Marked                 |
|                                  | Bronchiole            | Hyperplasia                   | Minimal                |
|                                  |                       | Inflammation                  | Granulomatous, Mild    |
| [ Hyperplasia TGLs = 4-4 ]       |                       |                               |                        |
| [ Inflammation TGLs = 12-4+5 ]   |                       |                               |                        |
| * Mammary Gland                  |                       | Carcinoma                     |                        |
|                                  |                       | Galactocele                   | Marked                 |
| [ Carcinoma TGLs = 1-15 ]        |                       |                               |                        |
| [ Galactocele TGLs = 2-16 ]      |                       |                               |                        |
| * Nose                           |                       | Accumulation, Hyaline Droplet | Moderate               |
|                                  | Glands, Olfactory Epi | Hyperplasia                   | Moderate               |
| Oral Mucosa                      |                       | Inflammation                  | Chronic Active, Marked |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 719

TRT#: 8

SEX: Female

DAY ON TEST: 725

DOSE: 100 mg/m3

DISP: Moribund Sacrifice

HISTO: 56988

ORGAN AND ACCOUNTABLE SITE STATUS

[ Inflammation TGLs = 6-11 ]

\* Ovary

Granulosa Cell Tumor Malignant

[ Granulosa Cell Tumor Malignant TGLs = 10-9 ]

\* Pituitary Gland

Pars Distalis

Adenoma

[ Adenoma TGLs = 7-10 ]

\* Thyroid Gland

C Cell

Hyperplasia

Minimal

\* Uterus

Polyp Stromal

Multiple

[ Polyp Stromal TGLs = 11-14 ]

Zymbal's Gland

Adenoma

PRIMARY CAUSE OF DEATH

- Mammary Gland Galactocele

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 720

TRT#: 8

SEX: Female

DAY ON TEST: 733

DOSE: 100 mg/m3

DISP: Terminal Sacrifice

HISTO: 56989

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Medulla
- \* Esophagus
- \* Intestine Large, Cecum
- \* Intestine Small, Jejunum
- \* Lymph Node, Mandibular
- \* Pancreas
- \* Spleen
- \* Trachea
- \* Bone
- \* Eye
- \* Intestine Large, Colon
- \* Islets, Pancreatic
- \* Lymph Node, Mediastinal
- \* Parathyroid Gland
- \* Stomach, Forestomach
- \* Urinary Bladder
- \* Bone Marrow
- \* Harderian Gland
- \* Intestine Small, Duodenum
- \* Kidney
- \* Lymph Node, Mesenteric
- \* Salivary Glands
- \* Stomach, Glandular
- \* Uterus
- \* Brain
- \* Heart
- \* Intestine Small, Ileum
- \* Lymph Node, Bronchial
- \* Ovary
- \* Skin
- \* Thymus

INSUFFICIENT TISSUE

- \* Intestine Large, Rectum

OBSERVATIONS

- \* Adrenal Cortex
  - Degeneration
  - Hypertrophy
  - Inflammation
  - Metaplasia
  - Basophilic Focus
  - Clear Cell Focus
  - Cystic, Mild
  - Moderate
- \* Clitoral Gland
  - Chronic Active, Marked
  - Squamous, Moderate
- \* Larynx
- \* Liver
- \* Lung
  - Bronchiole
    - Hyperplasia
    - Inflammation
    - Minimal
    - Granulomatous, Mild
  - [ Inflammation TGLs = 2-4+5 ]
- \* Mammary Gland
  - Carcinoma
  - [ Carcinoma TGLs = 1-14 ]
- \* Nose
  - Accumulation, Hyaline Droplet
  - Hyperplasia
  - Moderate
- \* Pituitary Gland
  - Glands, Olfactory Epi
  - Pars Distalis
  - Adenoma
- \* Thyroid Gland
  - C Cell
    - Hyperplasia
    - Minimal
  - [ Adenoma TGLs = 3-10 ]

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 721

TRT#: 8

SEX: Female

DAY ON TEST: 630

DOSE: 100 mg/m3

DISP: Natural Death

HISTO: 56990

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                           |                          |                         |                          |
|---------------------------|--------------------------|-------------------------|--------------------------|
| * Adrenal Medulla         | * Bone                   | * Bone Marrow           | * Brain                  |
| * Clitoral Gland          | * Esophagus              | * Eye                   | * Harderian Gland        |
| * Islets, Pancreatic      | * Kidney                 | * Lymph Node, Bronchial | * Lymph Node, Mandibular |
| * Lymph Node, Mediastinal | * Lymph Node, Mesenteric | * Mammary Gland         | * Ovary                  |
| * Pancreas                | * Parathyroid Gland      | * Pituitary Gland       | * Salivary Glands        |
| * Skin                    | * Spleen                 | * Stomach, Forestomach  | * Stomach, Glandular     |
| * Thymus                  | * Trachea                | * Urinary Bladder       | * Uterus                 |

AUTO PRECLUDES DIAG.

- |                          |                            |                           |                             |
|--------------------------|----------------------------|---------------------------|-----------------------------|
| * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum | * Intestine Small, Duodenum |
| * Intestine Small, Ileum | * Intestine Small, Jejunum | * Thyroid Gland           |                             |

OBSERVATIONS

- |                               |                       |                                      |                      |
|-------------------------------|-----------------------|--------------------------------------|----------------------|
| * Adrenal Cortex              |                       | Degeneration<br>Hypertrophy          | Cystic, Mild<br>Mild |
| [ Degeneration TGLs = 3-7 ]   |                       |                                      |                      |
| * Heart                       |                       | Cardiomyopathy                       | Minimal              |
| * Larynx                      |                       | Metaplasia                           | Squamous, Moderate   |
| * Liver                       |                       | Basophilic Focus<br>Clear Cell Focus |                      |
| * Lung                        |                       | Inflammation                         | Granulomatous, Mild  |
| [ Inflammation TGLs = 1-4+5 ] |                       |                                      |                      |
| * Nose                        |                       | Accumulation, Hyaline Droplet        | Marked               |
|                               | Glands, Olfactory Epi | Hyperplasia                          | Moderate             |

PRIMARY CAUSE OF DEATH

- UNCERTAIN

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 722

TRT#: 8

SEX: Female

DAY ON TEST: 731

DOSE: 100 mg/m3

DISP: Terminal Sacrifice

HISTO: 56991

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Medulla
- \* Clitoral Gland
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Lymph Node, Mediastinal
- \* Pancreas
- \* Spleen
- \* Trachea
- \* Bone
- \* Esophagus
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Lymph Node, Mesenteric
- \* Parathyroid Gland
- \* Stomach, Forestomach
- \* Urinary Bladder
- \* Bone Marrow
- \* Eye
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Mammary Gland
- \* Salivary Glands
- \* Stomach, Glandular
- \* Uterus
- \* Brain
- \* Harderian Gland
- \* Intestine Small, Duodenum
- \* Lymph Node, Mandibular
- \* Ovary
- \* Skin
- \* Thymus

MISSING

- \* Lymph Node, Bronchial

OBSERVATIONS

- |                   |                         |                               |                     |
|-------------------|-------------------------|-------------------------------|---------------------|
| * Adrenal Cortex  |                         | Hyperplasia                   | Mild                |
|                   |                         | Hypertrophy                   | Mild                |
| * Heart           |                         | Cardiomyopathy                | Minimal             |
| * Kidney          |                         | Nephropathy                   | Minimal             |
| * Larynx          |                         | Metaplasia                    | Squamous, Moderate  |
| * Liver           |                         | Basophilic Focus              |                     |
| * Lung            | Bronchiole              | Hyperplasia                   | Minimal             |
|                   |                         | Inflammation                  | Granulomatous, Mild |
| * Nose            |                         | Accumulation, Hyaline Droplet | Moderate            |
|                   | Glands, Olfactory Epi   | Hyperplasia                   | Mild                |
| * Pituitary Gland | Pars Distalis           | Adenoma                       |                     |
|                   | [ Adenoma TGLs = 1-10 ] |                               |                     |
| * Thyroid Gland   | C Cell                  | Adenoma                       |                     |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 723

TRT#: 8

SEX: Female

DAY ON TEST: 586

DOSE: 100 mg/m3

DISP: Moribund Sacrifice

HISTO: 56992

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                             |                          |                            |                           |
|-----------------------------|--------------------------|----------------------------|---------------------------|
| * Adrenal Medulla           | * Bone                   | * Bone Marrow              | * Brain                   |
| * Clitoral Gland            | * Esophagus              | * Eye                      | * Harderian Gland         |
| * Heart                     | * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum |
| * Intestine Small, Duodenum | * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      |
| * Lymph Node, Bronchial     | * Lymph Node, Mandibular | * Lymph Node, Mediastinal  | * Lymph Node, Mesenteric  |
| * Mammary Gland             | * Ovary                  | * Pancreas                 | * Parathyroid Gland       |
| Peripheral Nerve            | * Salivary Glands        | * Skin                     | Spinal Cord               |
| * Spleen                    | * Stomach, Forestomach   | * Stomach, Glandular       | * Thymus                  |
| * Trachea                   | * Urinary Bladder        | * Uterus                   |                           |

OBSERVATIONS

- |                               |                       |                               |                     |
|-------------------------------|-----------------------|-------------------------------|---------------------|
| * Adrenal Cortex              |                       | Degeneration                  | Cystic, Moderate    |
| [ Degeneration TGLs = 4-7 ]   |                       |                               |                     |
| * Kidney                      |                       | Nephropathy                   | Mild                |
| * Larynx                      |                       | Metaplasia                    | Squamous, Moderate  |
| * Liver                       |                       | Basophilic Focus              |                     |
|                               |                       | Cyst                          | Moderate            |
| [ Cyst TGLs = 3-6 ]           |                       |                               |                     |
| * Lung                        | Alveolar Epith        | Hyperplasia                   | Minimal             |
|                               | Bronchiole            | Hyperplasia                   | Minimal             |
|                               |                       | Inflammation                  | Granulomatous, Mild |
| [ Inflammation TGLs = 1-4+5 ] |                       |                               |                     |
| * Nose                        |                       | Accumulation, Hyaline Droplet | Moderate            |
|                               | Glands, Olfactory Epi | Hyperplasia                   | Mild                |
| * Pituitary Gland             | Pars Distalis         | Adenoma                       |                     |
| [ Adenoma TGLs = 2-10 ]       |                       |                               |                     |
| * Thyroid Gland               | C Cell                | Hyperplasia                   | Minimal             |

PRIMARY CAUSE OF DEATH - Pituitary Gland Pars Distalis Adenoma

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 724

TRT#: 8

SEX: Female

DAY ON TEST: 670

DOSE: 100 mg/m3

DISP: Moribund Sacrifice

HISTO: 56993

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                             |                          |                            |                           |
|-----------------------------|--------------------------|----------------------------|---------------------------|
| * Adrenal Medulla           | * Bone                   | * Bone Marrow              | * Brain                   |
| * Clitoral Gland            | * Esophagus              | * Eye                      | * Harderian Gland         |
| * Heart                     | * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum |
| * Intestine Small, Duodenum | * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      |
| * Lymph Node, Bronchial     | * Lymph Node, Mandibular | * Lymph Node, Mesenteric   | * Mammary Gland           |
| * Ovary                     | * Pancreas               | * Parathyroid Gland        | * Salivary Glands         |
| * Skin                      | * Spleen                 | * Stomach, Forestomach     | * Stomach, Glandular      |
| * Thymus                    | * Trachea                | * Urinary Bladder          | * Uterus                  |

MISSING

- \* Lymph Node, Mediastinal

OBSERVATIONS

- |                   |                         |                               |                     |
|-------------------|-------------------------|-------------------------------|---------------------|
| * Adrenal Cortex  |                         | Degeneration                  | Cystic, Minimal     |
| * Kidney          |                         | Nephropathy                   | Minimal             |
| * Larynx          |                         | Metaplasia                    | Squamous, Moderate  |
| * Liver           |                         | Basophilic Focus              |                     |
| * Lung            | Bronchiole              | Hyperplasia                   | Minimal             |
|                   |                         | Inflammation                  | Granulomatous, Mild |
| * Nose            |                         | Accumulation, Hyaline Droplet | Marked              |
|                   | Glands, Olfactory Epi   | Hyperplasia                   | Moderate            |
| * Pituitary Gland | Pars Distalis           | Adenoma                       |                     |
|                   | [ Adenoma TGLs = 1-10 ] |                               |                     |
| * Thyroid Gland   | C Cell                  | Carcinoma                     |                     |

PRIMARY CAUSE OF DEATH - Pituitary Gland Pars Distalis Adenoma

\* PROTOCOL REQUIRED TISSUE



TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 725

TRT#: 8

SEX: Female

DAY ON TEST: 639

DOSE: 100 mg/m3

DISP: Moribund Sacrifice

HISTO: 56994

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Medulla
- \* Clitoral Gland
- \* Heart
- \* Intestine Small, Duodenum
- \* Lymph Node, Bronchial
- \* Parathyroid Gland
- Spinal Cord
- \* Thymus
- \* Uterus
- \* Bone
- \* Esophagus
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Lymph Node, Mandibular
- Peripheral Nerve
- \* Spleen
- \* Thyroid Gland
- \* Bone Marrow
- \* Eye
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Lymph Node, Mesenteric
- \* Salivary Glands
- \* Stomach, Forestomach
- \* Trachea
- \* Brain
- \* Harderian Gland
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Pancreas
- \* Skin
- \* Stomach, Glandular
- \* Urinary Bladder

OBSERVATIONS

- \* Adrenal Cortex
  - Degeneration
  - Hyperplasia
 Cystic, Mild
- \* Kidney
  - Nephropathy
 Mild
- \* Larynx
  - Metaplasia
 Minimal
- \* Liver
  - Basophilic Focus
 Squamous, Moderate
- \* Lung
  - Bronchiole
    - Hyperplasia
    - Inflammation
 Minimal
  - [ Inflammation TGLs = 3-4+5 ]
    - Granulomatous, Mild
- \* Lymph Node, Mediastinal
  - Hyperplasia
 Lymphoid, Moderate
- \* Mammary Gland
  - [ Carcinoma TGLs = 1,2,6-14+15+16 ]
    - Carcinoma
 Multiple
- \* Nose
  - Glands, Olfactory Epi
    - Accumulation, Hyaline Droplet
    - Hyperplasia
 Marked
- \* Ovary
  - Interstit Cell
    - Cyst
    - Hyperplasia
 Mild
  - [ Cyst TGLs = 5-9 ]
    - Moderate
- \* Pituitary Gland
  - Pars Distalis
    - Adenoma
  - [ Adenoma TGLs = 4-10 ]

PRIMARY CAUSE OF DEATH - Pituitary Gland Pars Distalis Adenoma

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 726

TRT#: 8

SEX: Female

DAY ON TEST: 732

DOSE: 100 mg/m3

DISP: Terminal Sacrifice

HISTO: 56995

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                             |                          |                            |                           |
|-----------------------------|--------------------------|----------------------------|---------------------------|
| * Adrenal Medulla           | * Bone                   | * Bone Marrow              | * Brain                   |
| * Clitoral Gland            | * Esophagus              | * Eye                      | * Harderian Gland         |
| * Heart                     | * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum |
| * Intestine Small, Duodenum | * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      |
| * Liver                     | * Lymph Node, Bronchial  | * Lymph Node, Mandibular   | * Lymph Node, Mediastinal |
| * Lymph Node, Mesenteric    | * Ovary                  | * Pancreas                 | * Parathyroid Gland       |
| * Salivary Glands           | * Spleen                 | * Stomach, Forestomach     | * Stomach, Glandular      |
| * Thymus                    | * Trachea                | * Urinary Bladder          | * Uterus                  |

OBSERVATIONS

- |                   |   |   |                                |
|-------------------|---|---|--------------------------------|
| * Adrenal Cortex  |   | Hyperplasia   | Mild                           |
| * Kidney          |   | Nephropathy   | Minimal                        |
| * Larynx          |   | Metaplasia  | Squamous, Moderate             |
| * Lung            | Bronchiole                              | Hyperplasia<br>Inflammation                             | Minimal<br>Granulomatous, Mild |
|                   | [ Inflammation TGLs = 6-4+5 ]           |   |                                |
| * Mammary Gland   |   | Fibroadenoma  | Multiple                       |
|                   | [ Fibroadenoma TGLs = 1,2,3-14+15+16 ]  |   |                                |
| * Nose            | Glands, Olfactory Epi<br>Pars Distalis  | Accumulation, Hyaline Droplet<br>Hyperplasia<br>Adenoma | Moderate<br>Moderate           |
| * Pituitary Gland |   |   |                                |
|                   | [ Adenoma TGLs = 5-10 ]                 |   |                                |
| * Skin            |   | Squamous Cell Papilloma                                 |                                |
|                   | [ Squamous Cell Papilloma TGLs = 4-17 ] |   |                                |
| * Thyroid Gland   | C Cell                                  | Hyperplasia   | Minimal                        |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 727

TRT#: 8

SEX: Female

DAY ON TEST: 733

DOSE: 100 mg/m3

DISP: Terminal Sacrifice

HISTO: 56996

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                             |                          |                            |                           |
|-----------------------------|--------------------------|----------------------------|---------------------------|
| * Adrenal Medulla           | * Bone                   | * Bone Marrow              | * Brain                   |
| * Clitoral Gland            | * Esophagus              | * Eye                      | * Harderian Gland         |
| * Heart                     | * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum |
| * Intestine Small, Duodenum | * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      |
| * Kidney                    | * Liver                  | * Lymph Node, Bronchial    | * Lymph Node, Mandibular  |
| * Lymph Node, Mediastinal   | * Lymph Node, Mesenteric | * Mammary Gland            | * Ovary                   |
| * Pancreas                  | * Parathyroid Gland      | * Salivary Glands          | * Skin                    |
| * Spleen                    | * Stomach, Forestomach   | * Stomach, Glandular       | * Thymus                  |
| * Trachea                   | * Urinary Bladder        | * Uterus                   |                           |

OBSERVATIONS

- |                   |                               |                               |                     |
|-------------------|-------------------------------|-------------------------------|---------------------|
| * Adrenal Cortex  |                               | Degeneration                  | Cystic, Moderate    |
|                   |                               | Hypertrophy                   | Mild                |
| * Larynx          |                               | Metaplasia                    | Squamous, Moderate  |
| * Lung            | Bronchiole                    | Hyperplasia                   | Minimal             |
|                   | [ Inflammation TGLs = 1-4+5 ] | Inflammation                  | Granulomatous, Mild |
| * Nose            |                               | Accumulation, Hyaline Droplet | Marked              |
|                   | Glands, Olfactory Epi         | Hyperplasia                   | Moderate            |
| * Pituitary Gland | Pars Distalis                 | Hyperplasia                   | Moderate            |
| * Thyroid Gland   | C Cell                        | Hyperplasia                   | Mild                |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 728

TRT#: 8

SEX: Female

DAY ON TEST: 730

DOSE: 100 mg/m3

DISP: Moribund Sacrifice

HISTO: 56997

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                          |                            |                           |                             |
|--------------------------|----------------------------|---------------------------|-----------------------------|
| * Adrenal Medulla        | * Bone                     | * Bone Marrow             | * Brain                     |
| * Clitoral Gland         | * Esophagus                | * Eye                     | * Harderian Gland           |
| * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum | * Intestine Small, Duodenum |
| * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      | * Liver                     |
| * Lymph Node, Bronchial  | * Lymph Node, Mandibular   | * Lymph Node, Mediastinal | * Lymph Node, Mesenteric    |
| * Mammary Gland          | * Pancreas                 | * Parathyroid Gland       | * Salivary Glands           |
| * Spleen                 | * Stomach, Forestomach     | * Stomach, Glandular      | * Thymus                    |
| * Trachea                | * Urinary Bladder          | * Uterus                  |                             |

OBSERVATIONS

- |                   |                               |                               |                          |
|-------------------|-------------------------------|-------------------------------|--------------------------|
| * Adrenal Cortex  |                               | Hyperplasia                   | Mild                     |
|                   |                               | Hypertrophy                   | Mild                     |
| * Heart           |                               | Cardiomyopathy                | Minimal                  |
| * Kidney          |                               | Nephropathy                   | Minimal                  |
| * Larynx          |                               | Metaplasia                    | Squamous, Moderate       |
| * Lung            | Bronchiole                    | Hyperplasia                   | Minimal                  |
|                   | [ Inflammation TGLs = 1-4+5 ] | Inflammation                  | Granulomatous, Mild      |
| * Nose            |                               | Accumulation, Hyaline Droplet | Marked                   |
|                   | Glands, Olfactory Epi         | Hyperplasia                   | Moderate                 |
| * Ovary           |                               | Cyst                          | Mild                     |
| * Pituitary Gland | Pars Distalis                 | Adenoma                       |                          |
|                   | [ Adenoma TGLs = 2-10 ]       |                               |                          |
| * Skin            |                               | Inflammation                  | Chronic Active, Moderate |
|                   | [ Inflammation TGLs = 3-14 ]  |                               |                          |
| * Thyroid Gland   | C Cell                        | Hyperplasia                   | Minimal                  |

PRIMARY CAUSE OF DEATH - Pituitary Gland Pars Distalis Adenoma

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 729

TRT#: 8

SEX: Female

DAY ON TEST: 725

DOSE: 100 mg/m3

DISP: Moribund Sacrifice

HISTO: 56998

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Medulla
- \* Clitoral Gland
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Lymph Node, Mediastinal
- \* Salivary Glands
- \* Stomach, Glandular
- \* Urinary Bladder
- \* Bone
- \* Esophagus
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Lymph Node, Mesenteric
- \* Skin
- \* Thymus
- \* Bone Marrow
- \* Eye
- \* Intestine Small, Duodenum
- \* Lymph Node, Bronchial
- \* Pancreas
- \* Spleen
- \* Thyroid Gland
- \* Brain
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Lymph Node, Mandibular
- \* Parathyroid Gland
- \* Stomach, Forestomach
- \* Trachea

OBSERVATIONS

- \* Adrenal Cortex [ Carcinoma TGLs = 5-7 ] Bilateral Carcinoma
- \* Harderian Gland Hyperplasia Mild
- \* Heart Cardiomyopathy Mild
- \* Kidney Nephropathy Mild
- \* Larynx Metaplasia Squamous, Moderate
- \* Liver Basophilic Focus
- \* Lung [ Inflammation TGLs = 1-4+5 ] Bronchiole Hyperplasia Minimal  
Inflammation Granulomatous, Mild
- \* Mammary Gland [ Fibroadenoma TGLs = 6-14 ] Fibroadenoma
- \* Nose Accumulation, Hyaline Droplet Marked
- \* Ovary Glands, Olfactory Epi Hyperplasia Mild  
Cyst Mild
- \* Pituitary Gland [ Cyst TGLs = 3-9 ] Pars Distalis Adenoma
- \* Uterus [ Adenoma TGLs = 2-10 ] Polyp Stromal
- [ Polyp Stromal TGLs = 4-10 ]

\* PROTOCOL REQUIRED TISSUE

**TDMS No.** 20515 - 03

**Test Type:** CHRONIC

**Route:** RESPIRATORY EXPOSURE WHOLE BODY

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

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Metal working fluids (CIMSTAR 3800)

**CAS Number:** CIMSTAR3800

**Date Report Requested:** 01/21/2011

**Time Report Requested:** 07:49:51

**First Dose M/F:** 04/14/08 / 04/14/08

**Lab:** BNW

---

**ANIMAL ID:** 729

**TRT#:** 8

**SEX:** Female

**DAY ON TEST:** 725

**DOSE:** 100 mg/m3

**DISP:** Moribund Sacrifice

**HISTO:** 56998

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**ORGAN AND ACCOUNTABLE SITE STATUS**

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PRIMARY CAUSE OF DEATH

- Pituitary Gland Pars Distalis Adenoma

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TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 730

TRT#: 8

SEX: Female

DAY ON TEST: 681

DOSE: 100 mg/m3

DISP: Moribund Sacrifice

HISTO: 56999

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Medulla
- \* Esophagus
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Lymph Node, Mediastinal
- \* Pancreas
- \* Stomach, Forestomach
- \* Trachea
- \* Bone
- \* Eye
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Lymph Node, Mesenteric
- \* Salivary Glands
- \* Stomach, Glandular
- \* Urinary Bladder
- \* Bone Marrow
- \* Harderian Gland
- \* Intestine Small, Duodenum
- \* Liver
- \* Mammary Gland
- \* Skin
- \* Thymus
- \* Uterus
- \* Clitoral Gland
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Lymph Node, Mandibular
- \* Ovary
- \* Spleen
- \* Thyroid Gland

MISSING

- \* Lymph Node, Bronchial
- \* Parathyroid Gland

OBSERVATIONS

- \* Adrenal Cortex
  - Degeneration
  - Hyperplasia
  - Granular Cell Tumor Malignant
- \* Brain
  - [ Granular Cell Tumor Malignant TGLs = 3-14 ]
  - Cystic, Mild
  - Mild
- \* Heart
  - Cardiomyopathy
  - Minimal
- \* Kidney
  - Renal Tubule
  - Hyperplasia
  - Minimal
- \* Larynx
  - Metaplasia
  - Squamous, Moderate
- \* Lung
  - Bronchiole
  - Hyperplasia
  - Minimal
  - Inflammation
  - Granulomatous, Mild
- \* Nose
  - Accumulation, Hyaline Droplet
  - Marked
- \* Pituitary Gland
  - Glands, Olfactory Epi
  - Pars Distalis
  - Hyperplasia
  - Hyperplasia
  - Minimal
  - Moderate
- [ Hyperplasia TGLs = 4-10 ]

PRIMARY CAUSE OF DEATH - Brain Granular Cell Tumor Malignant

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 731

TRT#: 8

SEX: Female

DAY ON TEST: 673

DOSE: 100 mg/m3

DISP: Moribund Sacrifice

HISTO: 57000

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                          |                            |                           |                             |
|--------------------------|----------------------------|---------------------------|-----------------------------|
| * Adrenal Medulla        | * Bone                     | * Bone Marrow             | * Brain                     |
| * Clitoral Gland         | * Esophagus                | * Eye                     | * Heart                     |
| * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum | * Intestine Small, Duodenum |
| * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      | * Kidney                    |
| * Lymph Node, Bronchial  | * Lymph Node, Mandibular   | * Lymph Node, Mediastinal | * Lymph Node, Mesenteric    |
| * Mammary Gland          | * Ovary                    | * Pancreas                | * Parathyroid Gland         |
| * Salivary Glands        | * Spleen                   | * Stomach, Glandular      | * Thymus                    |
| * Thyroid Gland          | * Trachea                  | * Urinary Bladder         | * Uterus                    |

OBSERVATIONS

- |                        |                               |                               |                      |
|------------------------|-------------------------------|-------------------------------|----------------------|
| * Adrenal Cortex       |                               | Degeneration                  | Cystic, Mild         |
| * Harderian Gland      |                               | Hyperplasia                   | Minimal              |
| * Larynx               |                               | Metaplasia                    | Squamous, Mild       |
| * Liver                |                               | Basophilic Focus              |                      |
|                        |                               | Fatty Change                  | Mild                 |
| * Lung                 | Bronchiole                    | Hyperplasia                   | Minimal              |
|                        |                               | Inflammation                  | Granulomatous, Mild  |
|                        | [ Inflammation TGLs = 5-4+5 ] |                               |                      |
| Mesentery              |                               | Inflammation                  | Chronic Active, Mild |
| * Nose                 |                               | Accumulation, Hyaline Droplet | Marked               |
|                        | Glands, Olfactory Epi         | Hyperplasia                   | Mild                 |
| * Pituitary Gland      | Pars Distalis                 | Adenoma                       |                      |
|                        | [ Adenoma TGLs = 3-10 ]       |                               |                      |
| * Skin                 |                               | Inflammation                  | Chronic Active, Mild |
|                        | [ Inflammation TGLs = 4-14 ]  |                               |                      |
| * Stomach, Forestomach |                               | Ulcer                         | Moderate             |

PRIMARY CAUSE OF DEATH - Pituitary Gland Pars Distalis Adenoma

\* PROTOCOL REQUIRED TISSUE



TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 732

TRT#: 8

SEX: Female

DAY ON TEST: 731

DOSE: 100 mg/m3

DISP: Terminal Sacrifice

HISTO: 57001

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                            |                           |                             |                          |
|----------------------------|---------------------------|-----------------------------|--------------------------|
| * Adrenal Medulla          | * Bone                    | * Bone Marrow               | * Brain                  |
| * Clitoral Gland           | * Esophagus               | * Harderian Gland           | * Intestine Large, Cecum |
| * Intestine Large, Colon   | * Intestine Large, Rectum | * Intestine Small, Duodenum | * Intestine Small, Ileum |
| * Intestine Small, Jejunum | * Islets, Pancreatic      | * Kidney                    | * Lymph Node, Bronchial  |
| * Lymph Node, Mandibular   | * Lymph Node, Mediastinal | * Lymph Node, Mesenteric    | * Mammary Gland          |
| * Ovary                    | * Pancreas                | * Salivary Glands           | * Skin                   |
| * Spleen                   | * Stomach, Forestomach    | * Stomach, Glandular        | * Thymus                 |
| * Trachea                  | * Urinary Bladder         | * Uterus                    |                          |

MISSING

- \* Parathyroid Gland

OBSERVATIONS

- |                   |                               |                               |                     |
|-------------------|-------------------------------|-------------------------------|---------------------|
| * Adrenal Cortex  |                               | Hypertrophy                   | Mild                |
| * Eye             | Retina                        | Atrophy                       | Moderate            |
| * Heart           |                               | Cardiomyopathy                | Minimal             |
| * Larynx          |                               | Metaplasia                    | Squamous, Moderate  |
| * Liver           |                               | Clear Cell Focus              |                     |
|                   | Bile Duct                     | Hyperplasia                   | Minimal             |
| * Lung            | Alveolar Epith                | Hyperplasia                   | Mild                |
|                   | Bronchiole                    | Hyperplasia                   | Minimal             |
|                   |                               | Inflammation                  | Granulomatous, Mild |
|                   | [ Inflammation TGLs = 1-4+5 ] |                               |                     |
| * Nose            |                               | Accumulation, Hyaline Droplet | Marked              |
|                   | Glands, Olfactory Epi         | Hyperplasia                   | Moderate            |
| * Pituitary Gland | Pars Distalis                 | Hyperplasia                   | Mild                |
| * Thyroid Gland   | C Cell                        | Hyperplasia                   | Mild                |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 733

TRT#: 8

SEX: Female

DAY ON TEST: 732

DOSE: 100 mg/m3

DISP: Terminal Sacrifice

HISTO: 57002

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                            |                           |                             |                          |
|----------------------------|---------------------------|-----------------------------|--------------------------|
| * Adrenal Medulla          | * Bone                    | * Bone Marrow               | * Brain                  |
| * Clitoral Gland           | * Esophagus               | * Eye                       | * Intestine Large, Cecum |
| * Intestine Large, Colon   | * Intestine Large, Rectum | * Intestine Small, Duodenum | * Intestine Small, Ileum |
| * Intestine Small, Jejunum | * Islets, Pancreatic      | * Kidney                    | * Lymph Node, Bronchial  |
| * Lymph Node, Mandibular   | * Lymph Node, Mediastinal | * Lymph Node, Mesenteric    | * Ovary                  |
| * Pancreas                 | * Parathyroid Gland       | * Pituitary Gland           | * Salivary Glands        |
| * Skin                     | * Spleen                  | * Stomach, Forestomach      | * Stomach, Glandular     |
| * Thymus                   | * Trachea                 | * Urinary Bladder           | * Uterus                 |

OBSERVATIONS

- |                   |                                   |                               |                     |
|-------------------|-----------------------------------|-------------------------------|---------------------|
| * Adrenal Cortex  |                                   | Hyperplasia                   | Mild                |
|                   |                                   | Hypertrophy                   | Mild                |
| * Harderian Gland |                                   | Hyperplasia                   | Minimal             |
| * Heart           |                                   | Cardiomyopathy                | Minimal             |
| * Larynx          |                                   | Metaplasia                    | Squamous, Moderate  |
| * Liver           |                                   | Basophilic Focus              |                     |
|                   |                                   | Clear Cell Focus              |                     |
| * Lung            | Bronchiole                        | Hyperplasia                   | Minimal             |
|                   |                                   | Inflammation                  | Granulomatous, Mild |
|                   | [ Inflammation TGLs = 2-4+5 ]     |                               |                     |
| * Mammary Gland   |                                   | Fibroadenoma                  | Multiple            |
|                   | [ Fibroadenoma TGLs = 1,3-14+15 ] |                               |                     |
| Mesentery         | Fat                               | Necrosis                      | Mild                |
|                   | [ Necrosis TGLs = 4-16 ]          |                               |                     |
| * Nose            |                                   | Accumulation, Hyaline Droplet | Marked              |
|                   | Glands, Olfactory Epi             | Hyperplasia                   | Moderate            |
| * Thyroid Gland   | C Cell                            | Hyperplasia                   | Minimal             |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 734

TRT#: 8

SEX: Female

DAY ON TEST: 733

DOSE: 100 mg/m3

DISP: Terminal Sacrifice

HISTO: 57003

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                             |                          |                            |                           |
|-----------------------------|--------------------------|----------------------------|---------------------------|
| * Adrenal Medulla           | * Bone                   | * Bone Marrow              | * Brain                   |
| * Clitoral Gland            | * Esophagus              | * Eye                      | * Harderian Gland         |
| * Heart                     | * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum |
| * Intestine Small, Duodenum | * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      |
| * Kidney                    | * Liver                  | * Lymph Node, Mandibular   | * Lymph Node, Mediastinal |
| * Lymph Node, Mesenteric    | * Mammary Gland          | * Ovary                    | * Pancreas                |
| * Parathyroid Gland         | * Salivary Glands        | * Skin                     | * Spleen                  |
| * Stomach, Forestomach      | * Stomach, Glandular     | * Thymus                   | * Trachea                 |
| * Urinary Bladder           | * Uterus                 |                            |                           |

MISSING

- \* Lymph Node, Bronchial

OBSERVATIONS

- |                   |                               |                               |                     |
|-------------------|-------------------------------|-------------------------------|---------------------|
| * Adrenal Cortex  |                               | Degeneration                  | Cystic, Moderate    |
| * Larynx          |                               | Metaplasia                    | Squamous, Moderate  |
| * Lung            | Bronchiole                    | Hyperplasia                   | Minimal             |
|                   | [ Inflammation TGLs = 2-4+5 ] | Inflammation                  | Granulomatous, Mild |
| * Nose            |                               | Accumulation, Hyaline Droplet | Moderate            |
|                   | Glands, Olfactory Epi         | Hyperplasia                   | Moderate            |
| * Pituitary Gland | Pars Distalis                 | Adenoma                       |                     |
|                   | [ Adenoma TGLs = 1-10 ]       |                               |                     |
| * Thyroid Gland   | C Cell                        | Hyperplasia                   | Minimal             |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 735

TRT#: 8

SEX: Female

DAY ON TEST: 733

DOSE: 100 mg/m3

DISP: Terminal Sacrifice

HISTO: 57004

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                          |                            |                           |                             |
|--------------------------|----------------------------|---------------------------|-----------------------------|
| * Adrenal Medulla        | * Bone                     | * Bone Marrow             | * Clitoral Gland            |
| * Esophagus              | * Eye                      | * Harderian Gland         | * Heart                     |
| * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum | * Intestine Small, Duodenum |
| * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      | * Lymph Node, Bronchial     |
| * Lymph Node, Mandibular | * Lymph Node, Mediastinal  | * Mammary Gland           | * Ovary                     |
| * Pancreas               | * Salivary Glands          | * Skin                    | * Spleen                    |
| * Stomach, Forestomach   | * Stomach, Glandular       | * Thymus                  | * Trachea                   |
| * Urinary Bladder        | * Uterus                   |                           |                             |

MISSING

- \* Parathyroid Gland

OBSERVATIONS

- |                          |                               |                               |                     |
|--------------------------|-------------------------------|-------------------------------|---------------------|
| * Adrenal Cortex         |                               | Degeneration                  | Cystic, Mild        |
|                          |                               | Hyperplasia                   | Mild                |
|                          |                               | Hypertrophy                   | Mild                |
| * Brain                  |                               | Granular Cell Tumor Benign    |                     |
| * Kidney                 |                               | Nephropathy                   | Minimal             |
| * Larynx                 |                               | Metaplasia                    | Squamous, Moderate  |
| * Liver                  |                               | Basophilic Focus              |                     |
| * Lung                   | Bronchiole                    | Hyperplasia                   | Minimal             |
|                          |                               | Inflammation                  | Granulomatous, Mild |
|                          | [ Inflammation TGLs = 2-4+5 ] |                               |                     |
| * Lymph Node, Mesenteric |                               | Ectasia                       | Mild                |
|                          | [ Ectasia TGLs = 3-14 ]       |                               |                     |
| * Nose                   |                               | Accumulation, Hyaline Droplet | Mild                |
|                          | Glands, Olfactory Epi         | Hyperplasia                   | Moderate            |
| * Pituitary Gland        | Pars Distalis                 | Adenoma                       |                     |
|                          | [ Adenoma TGLs = 1-10 ]       |                               |                     |
| * Thyroid Gland          | C Cell                        | Adenoma                       |                     |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 736

TRT#: 8

SEX: Female

DAY ON TEST: 732

DOSE: 100 mg/m3

DISP: Terminal Sacrifice

HISTO: 57005

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                             |                          |                            |                           |
|-----------------------------|--------------------------|----------------------------|---------------------------|
| * Adrenal Medulla           | * Bone                   | * Bone Marrow              | * Brain                   |
| * Clitoral Gland            | * Esophagus              | * Eye                      | * Harderian Gland         |
| * Heart                     | * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum |
| * Intestine Small, Duodenum | * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      |
| * Liver                     | * Lymph Node, Bronchial  | * Lymph Node, Mandibular   | * Lymph Node, Mediastinal |
| * Lymph Node, Mesenteric    | * Pancreas               | * Parathyroid Gland        | * Salivary Glands         |
| * Skin                      | * Spleen                 | * Stomach, Forestomach     | * Stomach, Glandular      |
| * Thymus                    | * Trachea                | * Urinary Bladder          | * Uterus                  |

OBSERVATIONS

- |                   |                               |  |                                 |
|-------------------|-------------------------------|--|---------------------------------|
| * Adrenal Cortex  |                               | Degeneration<br>Hyperplasia<br>Hypertrophy | Cystic, Minimal<br>Mild<br>Mild |
| * Kidney          |                               | Nephropathy                                | Minimal                         |
| * Larynx          |                               | Metaplasia                                 | Squamous, Moderate              |
| * Lung            | Bronchiole                    | Hyperplasia<br>Inflammation                | Minimal<br>Granulomatous, Mild  |
|                   | [ Inflammation TGLs = 1-4+5 ] |  |                                 |
| * Mammary Gland   |                               | Fibroadenoma                               |                                 |
|                   | [ Fibroadenoma TGLs = 2-14 ]  |  |                                 |
| * Nose            |                               | Accumulation, Hyaline Droplet              | Moderate                        |
|                   | Glands, Olfactory Epi         | Hyperplasia                                | Moderate                        |
| * Ovary           |                               | Cyst                                       | Mild                            |
|                   | [ Cyst TGLs = 3-9 ]           |  |                                 |
| * Pituitary Gland | Pars Distalis                 | Adenoma                                    |                                 |
| * Thyroid Gland   | C Cell                        | Carcinoma                                  |                                 |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 737

TRT#: 8

SEX: Female

DAY ON TEST: 733

DOSE: 100 mg/m3

DISP: Terminal Sacrifice

HISTO: 57006

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Medulla
- \* Clitoral Gland
- \* Heart
- \* Intestine Small, Duodenum
- \* Kidney
- \* Lymph Node, Mesenteric
- \* Pituitary Gland
- \* Stomach, Forestomach
- \* Urinary Bladder
- \* Bone
- \* Esophagus
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Lymph Node, Bronchial
- \* Mammary Gland
- \* Salivary Glands
- \* Stomach, Glandular
- \* Bone Marrow
- \* Eye
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Lymph Node, Mandibular
- \* Pancreas
- \* Skin
- \* Thymus
- \* Brain
- \* Harderian Gland
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Lymph Node, Mediastinal
- \* Parathyroid Gland
- \* Spleen
- \* Trachea

OBSERVATIONS

- \* Adrenal Cortex
  - Angiectasis Mild
  - Hyperplasia Mild
  - Hypertrophy Mild
  - [ Hyperplasia TGLs = 5-7 ]
- \* Larynx
  - Metaplasia Squamous, Moderate
- \* Liver
  - Basophilic Focus
  - Clear Cell Focus
- \* Lung
  - Bile Duct
    - Hyperplasia Minimal
  - Bronchiole
    - Hyperplasia Minimal
    - Inflammation Granulomatous, Mild
  - [ Inflammation TGLs = 4-4+5 ]
- Mesentery
  - Fat
    - Necrosis Mild
  - [ Necrosis TGLs = 2-15 ]
- \* Nose
  - Accumulation, Hyaline Droplet Moderate
- \* Ovary
  - Glands, Olfactory Epi
    - Hyperplasia Mild
  - Cyst Mild
  - [ Cyst TGLs = 1-9 ]
- \* Thyroid Gland
  - C Cell
    - Hyperplasia Mild
- \* Uterus
  - Endometrium
    - Hyperplasia Cystic, Minimal

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 738

TRT#: 8

SEX: Female

DAY ON TEST: 733

DOSE: 100 mg/m3

DISP: Terminal Sacrifice

HISTO: 57007

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                             |                          |                            |                           |
|-----------------------------|--------------------------|----------------------------|---------------------------|
| * Adrenal Medulla           | * Bone                   | * Bone Marrow              | * Brain                   |
| * Clitoral Gland            | * Esophagus              | * Eye                      | * Harderian Gland         |
| * Heart                     | * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum |
| * Intestine Small, Duodenum | * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      |
| * Kidney                    | * Lymph Node, Mandibular | * Lymph Node, Mediastinal  | * Lymph Node, Mesenteric  |
| * Mammary Gland             | * Ovary                  | * Pancreas                 | * Parathyroid Gland       |
| * Salivary Glands           | * Skin                   | * Spleen                   | * Stomach, Forestomach    |
| * Stomach, Glandular        | * Trachea                | * Urinary Bladder          | * Uterus                  |

MISSING

- |                         |          |
|-------------------------|----------|
| * Lymph Node, Bronchial | * Thymus |
|-------------------------|----------|

OBSERVATIONS

- |                   |                                 |                               |                     |
|-------------------|---------------------------------|-------------------------------|---------------------|
| * Adrenal Cortex  |                                 | Degeneration                  | Cystic, Mild        |
|                   |                                 | Hyperplasia                   | Mild                |
| * Larynx          |                                 | Metaplasia                    | Squamous, Moderate  |
| * Liver           |                                 | Basophilic Focus              |                     |
| * Lung            | Bronchiole                      | Hyperplasia                   | Minimal             |
|                   | [ Inflammation TGLs = 1,2-4+5 ] | Inflammation                  | Granulomatous, Mild |
| * Nose            |                                 | Accumulation, Hyaline Droplet | Moderate            |
|                   | Glands, Olfactory Epi           | Hyperplasia                   | Mild                |
| * Pituitary Gland | Pars Distalis                   | Adenoma                       |                     |
|                   | [ Adenoma TGLs = 3-10 ]         |                               |                     |
| * Thyroid Gland   | C Cell                          | Hyperplasia                   | Minimal             |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 739

TRT#: 8

SEX: Female

DAY ON TEST: 645

DOSE: 100 mg/m3

DISP: Moribund Sacrifice

HISTO: 57008

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                          |                            |                           |                             |
|--------------------------|----------------------------|---------------------------|-----------------------------|
| * Adrenal Medulla        | * Bone                     | * Bone Marrow             | * Brain                     |
| * Clitoral Gland         | * Esophagus                | * Eye                     | * Harderian Gland           |
| * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum | * Intestine Small, Duodenum |
| * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      | * Kidney                    |
| * Lymph Node, Bronchial  | * Lymph Node, Mandibular   | * Lymph Node, Mediastinal | * Lymph Node, Mesenteric    |
| * Ovary                  | * Pancreas                 | Peripheral Nerve          | * Salivary Glands           |
| Spinal Cord              | * Spleen                   | * Stomach, Forestomach    | * Stomach, Glandular        |
| * Thymus                 | * Trachea                  | * Urinary Bladder         | * Uterus                    |

MISSING

- \* Parathyroid Gland

OBSERVATIONS

- |                   |                              |                               |                          |
|-------------------|------------------------------|-------------------------------|--------------------------|
| * Adrenal Cortex  |                              | Degeneration                  | Cystic, Mild             |
|                   |                              | Hypertrophy                   | Mild                     |
| * Heart           |                              | Cardiomyopathy                | Minimal                  |
| * Larynx          |                              | Metaplasia                    | Squamous, Mild           |
| * Liver           |                              | Basophilic Focus              |                          |
|                   | Bile Duct                    | Dilatation                    | Marked                   |
|                   | [ Dilatation TGLs = 2-14 ]   |                               |                          |
| * Lung            | Bronchiole                   | Hyperplasia                   | Minimal                  |
|                   |                              | Inflammation                  | Granulomatous, Mild      |
|                   |                              | Fibroadenoma                  |                          |
| * Mammary Gland   |                              |                               |                          |
|                   | [ Fibroadenoma TGLs = 1-15 ] |                               |                          |
| * Nose            |                              | Accumulation, Hyaline Droplet | Moderate                 |
|                   | Glands, Olfactory Epi        | Hyperplasia                   | Moderate                 |
| * Pituitary Gland | Pars Distalis                | Adenoma                       |                          |
|                   | [ Adenoma TGLs = 4-10 ]      |                               |                          |
| * Skin            |                              | Inflammation                  | Chronic Active, Moderate |
|                   | [ Inflammation TGLs = 3-16 ] |                               |                          |
| * Thyroid Gland   | C Cell                       | Hyperplasia                   | Mild                     |

PRIMARY CAUSE OF DEATH - Pituitary Gland Pars Distalis Adenoma

\* PROTOCOL REQUIRED TISSUE





TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 741

TRT#: 8

SEX: Female

DAY ON TEST: 719

DOSE: 100 mg/m3

DISP: Moribund Sacrifice

HISTO: 57010

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Medulla
- \* Clitoral Gland
- \* Heart
- \* Intestine Small, Ileum
- \* Lymph Node, Bronchial
- \* Ovary
- \* Salivary Glands
- \* Stomach, Glandular
- \* Urinary Bladder
- \* Bone
- \* Esophagus
- \* Intestine Large, Cecum
- \* Intestine Small, Jejunum
- \* Lymph Node, Mandibular
- \* Pancreas
- Spinal Cord
- \* Thymus
- \* Uterus
- \* Bone Marrow
- \* Eye
- \* Intestine Large, Colon
- \* Islets, Pancreatic
- \* Lymph Node, Mediastinal
- \* Parathyroid Gland
- \* Spleen
- \* Thyroid Gland
- \* Brain
- \* Harderian Gland
- \* Intestine Small, Duodenum
- \* Kidney
- \* Lymph Node, Mesenteric
- Peripheral Nerve
- \* Stomach, Forestomach
- \* Trachea

INSUFFICIENT TISSUE

- \* Intestine Large, Rectum

OBSERVATIONS

- \* Adrenal Cortex
  - Degeneration
  - Hypertrophy
  - Metaplasia
  - Basophilic Focus
  - Cystic, Mild
  - Moderate
  - Squamous, Moderate
- \* Larynx
  - Degeneration
- \* Liver
  - Degeneration
  - Hyperplasia
  - Inflammation
  - Fibroadenoma
  - Cystic, Mild
  - Minimal
  - Granulomatous, Mild
- \* Lung
  - Bronchiole
  - Hyperplasia
  - Inflammation
  - Fibroadenoma
- \* Mammary Gland
  - [ Fibroadenoma TGLs = 3-15 ]
- \* Nose
  - Accumulation, Hyaline Droplet
  - Hyperplasia
  - Moderate
- \* Pituitary Gland
  - Glands, Olfactory Epi
  - Pars Distalis
  - Adenoma
  - Mild
- \* Skin
  - Subcut Tiss
  - Lipoma
  - [ Lipoma TGLs = 1-16 ]

PRIMARY CAUSE OF DEATH - Pituitary Gland Pars Distalis Adenoma

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 742

TRT#: 8

SEX: Female

DAY ON TEST: 731

DOSE: 100 mg/m3

DISP: Terminal Sacrifice

HISTO: 57011

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                             |                          |                            |                           |
|-----------------------------|--------------------------|----------------------------|---------------------------|
| * Adrenal Medulla           | * Bone                   | * Bone Marrow              | * Brain                   |
| * Clitoral Gland            | * Esophagus              | * Eye                      | * Harderian Gland         |
| * Heart                     | * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum |
| * Intestine Small, Duodenum | * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      |
| * Kidney                    | * Lymph Node, Mandibular | * Lymph Node, Mediastinal  | * Lymph Node, Mesenteric  |
| * Mammary Gland             | * Pancreas               | * Parathyroid Gland        | * Salivary Glands         |
| * Skin                      | * Spleen                 | * Stomach, Forestomach     | * Stomach, Glandular      |
| * Thymus                    | * Thyroid Gland          | * Trachea                  | * Urinary Bladder         |

MISSING

- \* Lymph Node, Bronchial

OBSERVATIONS

- |                   |                               |                               |                     |
|-------------------|-------------------------------|-------------------------------|---------------------|
| * Adrenal Cortex  |                               | Degeneration                  | Cystic, Mild        |
|                   |                               | Hyperplasia                   | Mild                |
| * Larynx          |                               | Metaplasia                    | Squamous, Mild      |
| * Liver           |                               | Basophilic Focus              |                     |
| * Lung            | Alveolar Epith<br>Bronchiole  | Hyperplasia                   | Mild                |
|                   |                               | Hyperplasia                   | Minimal             |
|                   | [ Inflammation TGLs = 2-4+5 ] | Inflammation                  | Granulomatous, Mild |
| * Nose            |                               | Accumulation, Hyaline Droplet | Moderate            |
|                   | Glands, Olfactory Epi         | Hyperplasia                   | Moderate            |
| * Ovary           |                               | Cyst                          | Moderate            |
|                   | [ Cyst TGLs = 1-9 ]           |                               |                     |
| * Pituitary Gland | Pars Distalis                 | Hyperplasia                   | Mild                |
| * Uterus          | Endometrium                   | Hyperplasia                   | Cystic, Moderate    |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 743

TRT#: 8

SEX: Female

DAY ON TEST: 731

DOSE: 100 mg/m3

DISP: Terminal Sacrifice

HISTO: 57012

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Medulla
- \* Clitoral Gland
- \* Heart
- \* Intestine Small, Duodenum
- \* Kidney
- \* Lymph Node, Mesenteric
- \* Salivary Glands
- \* Trachea
- \* Bone
- \* Esophagus
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Lymph Node, Bronchial
- \* Ovary
- \* Spleen
- \* Urinary Bladder
- \* Bone Marrow
- \* Eye
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Lymph Node, Mandibular
- \* Pancreas
- \* Stomach, Forestomach
- \* Brain
- \* Harderian Gland
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Lymph Node, Mediastinal
- \* Parathyroid Gland
- \* Stomach, Glandular

INSUFFICIENT TISSUE

- \* Thymus

OBSERVATIONS

- \* Adrenal Cortex
- \* Larynx
- \* Liver
- \* Lung
- \* Mammary Gland
- [ Inflammation TGLs = 1-9 ]
- Mesentery
- [ Necrosis TGLs = 4-14 ]
- \* Nose
- \* Pituitary Gland
- \* Skin
- [ Squamous Cell Carcinoma TGLs = 2-15 ]
- \* Thyroid Gland
- \* Uterus
- [ Hypertrophy TGLs = 3-14 ]
- Bronchiole
- Fat
- Glands, Olfactory Epi  
Pars Distalis
- C Cell
- Cervix
- Degeneration
- Metaplasia
- Basophilic Focus
- Hyperplasia
- Inflammation
- Inflammation
- Necrosis
- Accumulation, Hyaline Droplet
- Hyperplasia
- Hyperplasia
- Squamous Cell Carcinoma
- Hyperplasia
- Hypertrophy
- Cystic, Marked
- Squamous, Minimal
- Minimal
- Granulomatous, Mild
- Chronic Active, Mild
- Mild
- Marked
- Moderate
- Mild
- Minimal
- Mild

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 744

TRT#: 8

SEX: Female

DAY ON TEST: 732

DOSE: 100 mg/m3

DISP: Terminal Sacrifice

HISTO: 57013

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Medulla
- \* Clitoral Gland
- \* Heart
- \* Intestine Small, Duodenum
- \* Kidney
- \* Lymph Node, Mesenteric
- \* Salivary Glands
- \* Stomach, Glandular
- \* Urinary Bladder
- \* Bone
- \* Esophagus
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Lymph Node, Bronchial
- \* Mammary Gland
- \* Skin
- \* Thymus
- \* Bone Marrow
- \* Eye
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Lymph Node, Mandibular
- \* Ovary
- \* Spleen
- \* Thyroid Gland
- \* Brain
- \* Harderian Gland
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Lymph Node, Mediastinal
- \* Parathyroid Gland
- \* Stomach, Forestomach
- \* Trachea

OBSERVATIONS

- \* Adrenal Cortex
  - Hyperplasia
  - Hypertrophy
- \* Larynx
  - Metaplasia
- \* Liver
  - Basophilic Focus
- \* Lung
  - Bronchiole
    - Hyperplasia
    - Inflammation
  - [ Inflammation TGLs = 4-4+5 ]
- \* Nose
  - Accumulation, Hyaline Droplet
  - Glands, Olfactory Epi
    - Hyperplasia
    - Carcinoma
- \* Pancreas
  - [ Carcinoma TGLs = 5-14 ]
- \* Pituitary Gland
  - [ Adenoma TGLs = 1-10 ]
  - Pars Distalis
    - Adenoma
- \* Uterus
  - [ Carcinoma TGLs = 2-16 ]
  - Endometrium
    - Carcinoma

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 745

TRT#: 8

SEX: Female

DAY ON TEST: 731

DOSE: 100 mg/m3

DISP: Terminal Sacrifice

HISTO: 57014

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Medulla
- \* Clitoral Gland
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Lymph Node, Mesenteric
- \* Salivary Glands
- \* Stomach, Glandular
- \* Bone
- \* Esophagus
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Mammary Gland
- \* Skin
- \* Trachea
- \* Bone Marrow
- \* Harderian Gland
- \* Intestine Small, Duodenum
- \* Lymph Node, Mandibular
- \* Pancreas
- \* Spleen
- \* Urinary Bladder
- \* Brain
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Lymph Node, Mediastinal
- \* Parathyroid Gland
- \* Stomach, Forestomach
- \* Uterus

MISSING

- \* Lymph Node, Bronchial
- \* Thymus

OBSERVATIONS

- \* Adrenal Cortex
  - Degeneration
  - Hyperplasia
  - Hypertrophy
  - Cystic, Mild
  - Mild
  - Mild
- \* Eye
  - [ Degeneration TGLs = 2-7 ]
  - Retina
  - Atrophy
  - Mild
- \* Heart
  - Cardiomyopathy
  - Minimal
- \* Kidney
  - Mineralization
  - Mild
  - Nephropathy
  - Minimal
- \* Larynx
  - Metaplasia
  - Squamous, Moderate
- \* Liver
  - Basophilic Focus
- \* Lung
  - Bronchiole
  - Hyperplasia
  - Inflammation
  - Minimal
  - Granulomatous, Mild
- \* Nose
  - [ Inflammation TGLs = 3-4+5 ]
  - Accumulation, Hyaline Droplet
  - Moderate
  - Glands, Olfactory Epi
  - Hyperplasia
  - Mild
- \* Ovary
  - Cyst
  - Mild
- \* Pituitary Gland
  - Pars Intermed
  - Adenoma
- \* Thyroid Gland
  - [ Adenoma TGLs = 1-10 ]
  - C Cell
  - Hyperplasia
  - Minimal

\* PROTOCOL REQUIRED TISSUE



TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 747

TRT#: 8

SEX: Female

DAY ON TEST: 731

DOSE: 100 mg/m3

DISP: Terminal Sacrifice

HISTO: 57016

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                             |                          |                            |                           |
|-----------------------------|--------------------------|----------------------------|---------------------------|
| * Adrenal Medulla           | * Bone                   | * Bone Marrow              | * Brain                   |
| * Clitoral Gland            | * Esophagus              | * Eye                      | * Harderian Gland         |
| * Heart                     | * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum |
| * Intestine Small, Duodenum | * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      |
| * Kidney                    | * Lymph Node, Bronchial  | * Lymph Node, Mandibular   | * Lymph Node, Mediastinal |
| * Lymph Node, Mesenteric    | * Ovary                  | * Parathyroid Gland        | * Salivary Glands         |
| * Skin                      | * Spleen                 | * Stomach, Forestomach     | * Stomach, Glandular      |
| * Thymus                    | * Trachea                | * Urinary Bladder          | * Uterus                  |

OBSERVATIONS

- |                   |                               |                               |                      |
|-------------------|-------------------------------|-------------------------------|----------------------|
| * Adrenal Cortex  |                               | Hyperplasia                   | Mild                 |
| * Larynx          |                               | Metaplasia                    | Squamous, Mild       |
| * Liver           |                               | Cyst                          | Mild                 |
|                   | Bile Duct                     | Dilatation                    | Moderate             |
|                   | Bile Duct                     | Hyperplasia                   | Mild                 |
|                   | [ Cyst TGLs = 5-6 ]           |                               |                      |
|                   | [ Dilatation TGLs = 3-14 ]    |                               |                      |
| * Lung            | Bronchiole                    | Hyperplasia                   | Minimal              |
|                   |                               | Inflammation                  | Granulomatous, Mild  |
|                   | [ Inflammation TGLs = 4-4+5 ] |                               |                      |
| * Mammary Gland   |                               | Inflammation                  | Chronic Active, Mild |
|                   | [ Inflammation TGLs = 1-15 ]  |                               |                      |
| * Nose            |                               | Accumulation, Hyaline Droplet | Moderate             |
|                   | Glands, Olfactory Epi         | Hyperplasia                   | Moderate             |
| * Pancreas        |                               | Atrophy                       | Mild                 |
| * Pituitary Gland | Pars Distalis                 | Adenoma                       |                      |
|                   | [ Adenoma TGLs = 2-10 ]       |                               |                      |
| * Thyroid Gland   | C Cell                        | Hyperplasia                   | Mild                 |

\* PROTOCOL REQUIRED TISSUE



TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 748

TRT#: 8

SEX: Female

DAY ON TEST: 731

DOSE: 100 mg/m3

DISP: Terminal Sacrifice

HISTO: 57017

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                           |                            |                           |                             |
|---------------------------|----------------------------|---------------------------|-----------------------------|
| * Adrenal Medulla         | * Bone                     | * Bone Marrow             | * Brain                     |
| * Clitoral Gland          | * Esophagus                | * Eye                     | * Heart                     |
| * Intestine Large, Cecum  | * Intestine Large, Colon   | * Intestine Large, Rectum | * Intestine Small, Duodenum |
| * Intestine Small, Ileum  | * Intestine Small, Jejunum | * Islets, Pancreatic      | * Lymph Node, Bronchial     |
| * Lymph Node, Mediastinal | * Lymph Node, Mesenteric   | * Mammary Gland           | * Ovary                     |
| * Pancreas                | * Salivary Glands          | * Skin                    | * Spleen                    |
| * Stomach, Forestomach    | * Stomach, Glandular       | * Thymus                  | * Trachea                   |
| * Urinary Bladder         | * Uterus                   |                           |                             |

MISSING

- \* Lymph Node, Mandibular

INSUFFICIENT TISSUE

- \* Parathyroid Gland

OBSERVATIONS

- |                   |                               |                               |                     |
|-------------------|-------------------------------|-------------------------------|---------------------|
| * Adrenal Cortex  |                               | Degeneration                  | Cystic, Moderate    |
|                   |                               | Hyperplasia                   | Mild                |
|                   |                               | Hypertrophy                   | Mild                |
| * Harderian Gland |                               | Hyperplasia                   | Minimal             |
| * Kidney          |                               | Nephropathy                   | Minimal             |
| * Larynx          |                               | Metaplasia                    | Squamous, Moderate  |
| * Liver           |                               | Basophilic Focus              |                     |
| * Lung            | Bronchiole                    | Hyperplasia                   | Minimal             |
|                   |                               | Inflammation                  | Granulomatous, Mild |
|                   | [ Inflammation TGLs = 2-4+5 ] |                               |                     |
| * Nose            |                               | Accumulation, Hyaline Droplet | Marked              |
|                   | Glands, Olfactory Epi         | Hyperplasia                   | Moderate            |
| * Pituitary Gland | Pars Distalis                 | Adenoma                       |                     |
|                   | [ Adenoma TGLs = 1-10 ]       |                               |                     |
| * Thyroid Gland   | C Cell                        | Hyperplasia                   | Mild                |

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 749

TRT#: 8

SEX: Female

DAY ON TEST: 732

DOSE: 100 mg/m3

DISP: Terminal Sacrifice

HISTO: 57018

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

* Adrenal Medulla	* Bone	* Bone Marrow	* Brain
* Clitoral Gland	* Esophagus	* Eye	* Harderian Gland
* Intestine Large, Cecum	* Intestine Large, Colon	* Intestine Large, Rectum	* Intestine Small, Duodenum
* Intestine Small, Ileum	* Intestine Small, Jejunum	* Islets, Pancreatic	* Kidney
* Lymph Node, Bronchial	* Lymph Node, Mandibular	* Lymph Node, Mediastinal	* Lymph Node, Mesenteric
* Mammary Gland	* Pancreas	* Parathyroid Gland	* Salivary Glands
* Skin	* Spleen	* Stomach, Forestomach	* Stomach, Glandular
* Thymus	* Trachea	* Urinary Bladder	* Uterus

OBSERVATIONS

* Adrenal Cortex		Degeneration	Cystic, Moderate
		Hyperplasia	Mild
* Heart		Cardiomyopathy	Minimal
* Larynx		Metaplasia	Squamous, Moderate
* Liver		Basophilic Focus	
		Clear Cell Focus	
* Lung	Alveolar Epith	Hyperplasia	Marked
	Bronchiole	Hyperplasia	Minimal
		Inflammation	Granulomatous, Mild
	[ Hyperplasia TGLs = 3-4 ]		
	[ Inflammation TGLs = 2-4+5 ]		
* Nose		Accumulation, Hyaline Droplet	Marked
	Glands, Olfactory Epi	Hyperplasia	Moderate
* Ovary		Cyst	Mild
	[ Cyst TGLs = 1-9 ]		
* Pituitary Gland	Pars Distalis	Adenoma	
* Thyroid Gland	Follicular Cel	Hyperplasia	Mild
	C Cell	Hyperplasia	Moderate

\* PROTOCOL REQUIRED TISSUE

TDMS No. 20515 - 03

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/Wistar Han

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 01/21/2011

Time Report Requested: 07:49:51

First Dose M/F: 04/14/08 / 04/14/08

Lab: BNW

ANIMAL ID: 750

TRT#: 8

SEX: Female

DAY ON TEST: 722

DOSE: 100 mg/m3

DISP: Moribund Sacrifice

HISTO: 57019

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Medulla
- \* Clitoral Gland
- \* Heart
- \* Intestine Small, Duodenum
- \* Liver
- \* Lymph Node, Mesenteric
- \* Parathyroid Gland
- \* Stomach, Forestomach
- \* Urinary Bladder
- \* Bone
- \* Esophagus
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Lymph Node, Bronchial
- \* Mammary Gland
- \* Salivary Glands
- \* Stomach, Glandular
- \* Uterus
- \* Bone Marrow
- \* Eye
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Lymph Node, Mandibular
- \* Ovary
- \* Skin
- \* Thymus
- \* Brain
- \* Harderian Gland
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Lymph Node, Mediastinal
- \* Pancreas
- \* Spleen
- \* Trachea

OBSERVATIONS

- \* Adrenal Cortex
  - \* Kidney
  - \* Larynx
  - \* Lung
    - [ Inflammation TGLs = 4-4+5 ]
  - \* Nose
    - [ Inflammation TGLs = 4-4+5 ]
  - \* Pituitary Gland
    - [ Carcinoma TGLs = 3-10 ]
  - \* Thyroid Gland
- |                       |                               |                     |
|-----------------------|-------------------------------|---------------------|
|                       | Degeneration                  | Cystic, Moderate    |
|                       | Nephropathy                   | Minimal             |
|                       | Metaplasia                    | Squamous, Moderate  |
| Bronchiole            | Hyperplasia                   | Minimal             |
|                       | Inflammation                  | Granulomatous, Mild |
|                       | Accumulation, Hyaline Droplet | Marked              |
| Glands, Olfactory Epi | Hyperplasia                   | Minimal             |
| Pars Distalis         | Carcinoma                     |                     |
| C Cell                | Hyperplasia                   | Mild                |

PRIMARY CAUSE OF DEATH - Pituitary Gland Pars Distalis Carcinoma

\*\*\* END OF REPORT \*\*\*