

**Experiment Number:** 20515 - 04  
**Test Type:** CHRONIC  
**Route:** RESPIRATORY EXPOSURE WHOLE BODY  
**Species/Strain:** MICE/B6C3F1

**P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL**  
Metal working fluids (CIMSTAR 3800)  
**CAS Number:** CIMSTAR3800

**Date Report Requested:** 03/08/2013  
**Time Report Requested:** 14:13:47  
**First Dose M/F:** 05/05/08 / 05/05/08  
**Lab:** BNW

F1\_M3

**NTP Study 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:** 3.0.1.1\_001  
**PWG Approval Date:** NONE

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| DAY ON TEST             |                  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |   |
|-------------------------|------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| <b>B6C3F1 MICE MALE</b> | <b>Control</b>   | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 5 | 5 | 7 | 7 | 6 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 |   |
|                         |                  | 3 | 3 | 2 | 2 | 0 | 2 | 2 | 6 | 5 | 2 | 3 | 6 | 3 | 2 | 2 | 3 | 3 | 2 | 3 | 2 | 3 | 2 | 3 | 2 | 3 | 3 | 3 | 3 |   |
|                         |                  | 0 | 1 | 9 | 9 | 9 | 9 | 9 | 5 | 9 | 9 | 0 | 9 | 0 | 9 | 9 | 0 | 1 | 9 | 0 | 9 | 0 | 9 | 0 | 9 | 0 | 9 | 0 | 9 | 0 |
|                         |                  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
|                         |                  | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
|                         | <b>ANIMAL ID</b> | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 2 | 2 | 2 | 2 | 2 |   |   |

**males (cont...)**

**ALIMENTARY SYSTEM**

|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Esophagus   | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Gallbladder<br>Inflammation, Suppurative  | + | + | + | + | + | + | M | + | + | + | + | + | + | + | + | + | + | + | M | + | + | + | + | + | + | + | + | + |
| Intestine Large, Cecum  | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Intestine Large, Colon  | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Intestine Large, Rectum   | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Intestine Small, Duodenum<br>Artery, Infiltration Cellular, Lymphocyte  | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 2 | + | + | + | + | + |
| Intestine Small, Ileum<br>Epithelium, Hyperplasia<br>Lymphoid Follicle, Hyperplasia<br>Peyer's Patch, Hyperplasia, Lymphoid                               | + | + | + | + | 3 | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Intestine Small, Jejunum  | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Liver<br>Basophilic Focus<br>Clear Cell Focus<br>Eosinophilic Focus<br>Fatty Change<br>Hepatodiaphragmatic Nodule<br>Hyperplasia<br>Inflammation, Chronic | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
|   |   |   | X | X |   |   | X |   |   | X |   |   |   |   | X | X |   |   | X | X |   |   | X | X |   | X | X |   |
|   | X |   |   |   |   |   |   |   |   | X |   |   |   |   |   |   |   |   | X | X |   |   |   | X | X |   |   |   |
|   | 1 |   | 2 | 2 |   |   | 2 |   |   | 2 |   |   |   |   |   | 2 |   | 1 | 2 | 1 | 2 |   |   | 1 | 1 | 1 |   |   |

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

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

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**Species/Strain:** MICE/B6C3F1

**P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL**  
 Metal working fluids (CIMSTAR 3800)  
**CAS Number:** CIMSTAR3800

**Date Report Requested:** 03/08/2013  
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**First Dose M/F:** 05/05/08 / 05/05/08  
**Lab:** BNW

| B6C3F1 MICE MALE<br>Control  | DAY ON TEST | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |   |
|------------------------------|-------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|                              |             | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 5 | 5 | 7 | 7 | 6 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 |   |
| ANIMAL ID                    |             | 3 | 3 | 2 | 2 | 0 | 2 | 2 | 6 | 5 | 2 | 3 | 6 | 3 | 2 | 2 | 3 | 3 | 2 | 3 | 2 | 3 | 3 | 3 | 3 |   |
|                              |             | 0 | 1 | 9 | 9 | 9 | 9 | 9 | 5 | 9 | 9 | 0 | 9 | 0 | 9 | 9 | 0 | 1 | 9 | 0 | 9 | 0 | 5 | 0 | 0 |   |
|                              |             | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
|                              |             | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Mixed Cell Focus             |             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | X |   |   |   |   |   | X |   | X |
| Necrosis                     |             |   |   |   |   | 2 |   |   |   |   | 1 | 2 |   | 3 |   |   |   |   |   |   | 2 |   |   |   |   |   |
| Tension Lipidosis            |             |   |   |   | X |   |   |   |   |   | 1 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Mesentery                    |             | + |   |   |   | + |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Fat, Necrosis                |             |   |   |   |   | 2 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Pancreas                     |             | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |   |   |
| Fibrosis                     |             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Acinus, Hypertrophy          |             |   |   |   |   | 1 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Salivary Glands              |             | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |   |   |
| Stomach, Forestomach         |             | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |   |   |
| Hyperplasia, Squamous        |             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | 2 |
| Inflammation, Chronic Active |             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Stomach, Glandular           |             | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |   |   |
| Erosion                      |             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Inflammation, Chronic Active |             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Tooth                        |             | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |   |   |
| Dysplasia                    |             | 2 | 1 | 1 | 2 |   |   | 1 | 2 |   |   | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | 2 | 1 |   |   |   |
| Inflammation, Chronic Active |             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |

**CARDIOVASCULAR SYSTEM**

|                              |  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |  |
|------------------------------|--|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|--|--|
| Blood Vessel                 |  | + | + | + | + | + | + | + | + | + | + | + | + | + | + | M | + | + | M | + | M | + | M | + | + |  |  |
| Inflammation, Chronic Active |  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |  |
| Heart                        |  | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |   |  |  |

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 + .. Tissue examined microscopically  
 X .. Lesion present  
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 1-4 .. Lesion qualified as:  
 1) Minimal 3) Moderate  
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**P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL**  
Metal working fluids (CIMSTAR 3800)  
CAS Number: CIMSTAR3800

Date Report Requested: 03/08/2013  
Time Report Requested: 14:13:47  
First Dose M/F: 05/05/08 / 05/05/08  
Lab: BNW

| B6C3F1 MICE MALE<br>Control | DAY ON TEST | 0<br>7           | 0<br>7           | 0<br>7           | 0<br>7           | 0<br>7           | 0<br>7           | 0<br>7           | 0<br>5           | 0<br>5           | 0<br>7           | 0<br>7           | 0<br>6           | 0<br>7           | 0<br>7           | 0<br>7           | 0<br>7           | 0<br>7           | 0<br>7           | 0<br>7           | 0<br>7           | 0<br>7           | 0<br>7           | 0<br>7           | 0<br>7           |                  |
|-----------------------------|-------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
|                             | ANIMAL ID   | 0<br>0<br>0<br>0 | 0<br>0<br>0<br>0 | 0<br>0<br>0<br>0 | 0<br>0<br>0<br>0 | 0<br>0<br>0<br>0 | 0<br>0<br>0<br>0 | 0<br>0<br>0<br>0 | 0<br>0<br>0<br>0 | 0<br>0<br>0<br>0 | 0<br>0<br>0<br>0 | 0<br>0<br>0<br>0 | 0<br>0<br>0<br>0 | 0<br>0<br>0<br>0 | 0<br>0<br>0<br>0 | 0<br>0<br>0<br>0 | 0<br>0<br>0<br>0 | 0<br>0<br>0<br>0 | 0<br>0<br>0<br>0 | 0<br>0<br>0<br>0 | 0<br>0<br>0<br>0 | 0<br>0<br>0<br>0 | 0<br>0<br>0<br>0 | 0<br>0<br>0<br>0 | 0<br>0<br>0<br>0 | 0<br>0<br>0<br>0 |

Cardiomyopathy  
Thrombosis

4  
2

**ENDOCRINE SYSTEM**

|  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|--|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Adrenal Cortex<br>Hyperplasia<br>Capsule, Inflammation, Chronic Active | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
|  | 1 |   | 1 |   |   | 1 | 1 |   |   | 1 | 1 |   |   | 2 |   |   | 2 | 2 |   |   | 2 |   |   |   |   | 1 |
| Adrenal Medulla  | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | M | + | + | + |   |
| Islets, Pancreatic   | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Parathyroid Gland<br>Cyst  | + | + | + | + | M | M | + | + | + | + | + | M | + | M | + | M | + | + | M | M | M | M | + | + | + |   |
|  |   |   |   |   |   |   |   |   |   |   |   |   |   | 1 |   |   |   |   |   |   |   |   |   |   |   |   |
| Pituitary Gland<br>Pars Distalis, Cyst<br>Pars Distalis, Hyperplasia   | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
|  |   |   |   |   |   |   |   | 1 |   |   |   |   | 2 |   |   |   |   |   |   |   |   | 1 |   |   |   |   |
| Thyroid Gland  | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |

**GENERAL BODY SYSTEM**

NONE

**GENITAL SYSTEM**

|  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|--|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Epididymis<br>Inflammation, Chronic Active | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
|  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | 1 |

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 Species/Strain: MICE/B6C3F1

**P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL**  
 Metal working fluids (CIMSTAR 3800)  
 CAS Number: CIMSTAR3800

Date Report Requested: 03/08/2013  
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 First Dose M/F: 05/05/08 / 05/05/08  
 Lab: BNW

| B6C3F1 MICE MALE<br><br>Control  | DAY ON TEST | 0730 | 0731 | 0732 | 0739 | 0739 | 0739 | 0755 | 0755 | 0777 | 0777 | 0766 | 0777 | 0777 | 0777 | 0777 | 0777 | 0777 | 0777 | 0777 | 0777 | 0777 | 0777 | 0777 | 0777 | 0777 | ANIMAL ID | males<br>(cont...) |      |  |  |
|--|-------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-----------|--------------------|------|--|--|
|  | 0000        | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 |           |                    | 0000 |  |  |
| Preputial Gland<br>Ectasia<br>Inflammation, Chronic Active   |             | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +         |                    |      |  |  |
| Prostate   |             | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +         | +                  |      |  |  |
| Seminal Vesicle  |             | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +         | +                  |      |  |  |
| Testes<br>Germinal Epithelium, Atrophy   |             | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +         | +                  |      |  |  |
| <b>HEMATOPOIETIC SYSTEM</b>  |             |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |           |                    |      |  |  |
| Bone Marrow  |             | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +         | +                  |      |  |  |
| Lymph Node<br>Lumbar, Infiltration Cellular, Mixed Cell<br>Lumbar, Lymphoid Follicle, Hyperplasia<br>Lymphoid Follicle, Renal, Hyperplasia |             |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |           |                    |      |  |  |
| Lymph Node, Bronchial<br>Infiltration Cellular, Polymorphonuclear  |             | +    | +    | +    | M    | M    | +    | +    | +    | M    | +    | +    | +    | +    | M    | M    | M    | +    | M    | M    | M    | M    | M    | M    | M    | M    | M         | +                  |      |  |  |
| Lymph Node, Mandibular   |             | +    | M    | +    | +    | +    | +    | M    | +    | M    | M    | +    | M    | +    | +    | +    | +    | +    | +    | M    | +    | +    | +    | +    | +    | +    | +         | +                  |      |  |  |
| Lymph Node, Mediastinal<br>Lymphoid Follicle, Hyperplasia  |             | +    | M    | +    | +    | +    | M    | M    | +    | +    | +    | +    | M    | M    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +         | +                  |      |  |  |
| Lymph Node, Mesenteric<br>Fibrosis   |             | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +         | +                  | +    |  |  |

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Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: MICE/B6C3F1

**P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL**

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 03/08/2013

Time Report Requested: 14:13:47

First Dose M/F: 05/05/08 / 05/05/08

Lab: BNW

|                         |             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|-------------------------|-------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| <b>B6C3F1 MICE MALE</b> | DAY ON TEST | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
|                         |             | 7 | 7 | 7 | 7 | 7 | 7 | 5 | 5 | 7 | 7 | 6 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 |
| <b>Control</b>          | ANIMAL ID   | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
|                         |             | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
|                         |             | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2 |
|                         |             | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 |

males  
(cont...)

Lymphoid Follicle, Hyperplasia

Spleen  
Hematopoietic Cell Proliferation  
Lymphoid Follicle, Hyperplasia

Thymus

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

**INTEGUMENTARY SYSTEM**

Mammary Gland

Skin  
Inflammation, Chronic Active  
Ulcer

|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M |
| + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
|   |   |   |   |   |   |   |   |   |   |   |   |   |   | 2 |   |   |   |   |   | 3 |   |   |   |

**MUSCULOSKELETAL SYSTEM**

Bone  
Fibro-Osseous Lesion  
Cranium, Inflammation, Chronic Active

Skeletal Muscle

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

**NERVOUS SYSTEM**

Brain

Peripheral Nerve

Spinal Cord

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

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



Experiment Number: 20515 - 04

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: MICE/B6C3F1

**P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL**

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 03/08/2013

Time Report Requested: 14:13:47

First Dose M/F: 05/05/08 / 05/05/08

Lab: BNW

|                         |             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|-------------------------|-------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| <b>B6C3F1 MICE MALE</b> | DAY ON TEST | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |   |   |
|                         |             | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 5 | 5 | 7 | 7 | 6 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 |   |
|                         |             | 3 | 3 | 2 | 2 | 0 | 2 | 2 | 6 | 5 | 2 | 3 | 6 | 3 | 2 | 2 | 3 | 3 | 2 | 3 | 2 | 3 | 2 | 3 | 2 | 3 | 2 | 3 | 2 | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |   |
| <b>Control</b>          | ANIMAL ID   | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |   |
|                         |             | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
|                         |             | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
|                         |             | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |   |

males  
(cont...)

Atrophy  
Cornea, Vacuolization Cytoplasmic  
Lens, Degeneration

Harderian Gland  
Hyperplasia

+  
2

**URINARY SYSTEM**

Kidney  
Congestion  
Cyst  
Dilatation  
Infarct  
Inflammation, Chronic Active  
Metaplasia, Osseous  
Nephropathy  
Artery, Hemorrhage  
Artery, Inflammation, Chronic Active

+  
1  
X  
3  
2  
3  
2 2 2 2 3 2 2 3 1 2 2 2 2 3 2  
3

Urinary Bladder

+ +

\* .. Total animals with tissue examined microscopically; Total animals with lesion and mean severity grade  
+ .. Tissue examined microscopically  
X .. Lesion present  
I .. Insufficient tissue  
M .. Missing tissue  
A .. Autolysis precludes evaluation  
BLANK .. Not examined microscopically  
1-4 .. Lesion qualified as:  
1) Minimal 3) Moderate  
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Experiment Number: 20515 - 04

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: MICE/B6C3F1

**P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL**

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 03/08/2013

Time Report Requested: 14:13:47

First Dose M/F: 05/05/08 / 05/05/08

Lab: BNW

| B6C3F1 MICE MALE<br>Control | DAY ON TEST | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | * TOTALS |
|-----------------------------|-------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|----------|
|                             | ANIMAL ID   | 7 | 7 | 7 | 7 | 5 | 7 | 4 | 7 | 7 | 7 | 7 | 6 | 7 | 7 | 7 | 7 | 7 | 7 | 5 | 7 | 7 | 7 | 7 |          |
|                             |             | 3 | 3 | 2 | 2 | 9 | 3 | 9 | 2 | 3 | 3 | 3 | 9 | 3 | 2 | 2 | 3 | 2 | 3 | 2 | 4 | 3 | 2 | 3 |          |
|                             |             | 0 | 0 | 0 | 0 | 1 | 9 | 9 | 0 | 0 | 0 | 0 | 4 | 0 | 9 | 9 | 0 | 4 | 0 | 9 | 1 | 0 | 9 | 1 |          |
|                             |             | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |          |
|                             |             | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |          |
|                             |             | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 |          |
|                             |             | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |          |

**ALIMENTARY SYSTEM**

|  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |    |       |     |
|--|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|----|-------|-----|
| Esophagus  | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |       |     |
| Gallbladder<br>Inflammation, Suppurative                               | + | + | M | + | + | + | M | + | + | + | + | A | + | + | + | + | + | + | + | + | + | + | M | 44 | 1 1.0 |     |
| Intestine Large, Cecum   | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |       |     |
| Intestine Large, Colon   | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |       |     |
| Intestine Large, Rectum  | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |       |     |
| Intestine Small, Duodenum<br>Artery, Infiltration Cellular, Lymphocyte | + | + | + | + | + | + | A | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 49 | 1 2.0 |     |
| Intestine Small, Ileum<br>Epithelium, Hyperplasia                      | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | 1 3.0 |     |
| Lymphoid Follicle, Hyperplasia   |   |   |   |   |   |   |   |   |   |   |   |   | 4 |   |   |   |   |   |   |   |   |   |   | 1  | 4.0   |     |
| Peyer's Patch, Hyperplasia, Lymphoid                                   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | 1  | 3.0   |     |
| Intestine Small, Jejunum   | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |       |     |
| Liver  | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |       |     |
| Basophilic Focus   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |    | 1     |     |
| Clear Cell Focus   |   |   |   |   |   |   |   |   | X |   |   |   |   |   |   |   |   |   |   |   |   |   |   |    | 10    |     |
| Eosinophilic Focus   |   |   | X |   |   | X |   |   |   |   |   |   |   | X |   | X |   |   |   | X | X | X |   |    | 14    |     |
| Fatty Change   | 2 | 2 |   |   | 1 |   |   | 1 |   |   |   |   |   | 1 |   |   |   | 1 |   | 1 | 1 |   |   | 24 | 1.4   |     |
| Hepatodiaphragmatic Nodule   |   |   |   |   |   |   |   |   |   |   |   | X |   |   |   |   |   |   |   |   |   |   |   |    | 1     |     |
| Hyperplasia  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | 4 |   |   |   |    | 1     | 4.0 |
| Inflammation, Chronic  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | 4 |   |   |   |    | 1     | 4.0 |

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

+ .. Tissue examined microscopically

X .. Lesion present

I .. Insufficient tissue

M .. Missing tissue

A .. Autolysis precludes evaluation

BLANK .. Not examined microscopically

1-4 .. Lesion qualified as:

1) Minimal 3) Moderate

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Experiment Number: 20515 - 04

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: MICE/B6C3F1

P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 03/08/2013

Time Report Requested: 14:13:47

First Dose M/F: 05/05/08 / 05/05/08

Lab: BNW

| B6C3F1 MICE MALE<br>Control                   | DAY ON TEST |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | * TOTALS |     |     |
|---|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|----------|-----|-----|
|   | 0730        | 0730  | 0735  | 0735  | 0752  | 0752  | 0774  | 0774  | 0777  | 0777  | 0777  | 0777  | 0777  | 0777  | 0777  | 0777  | 0777  | 0777  | 0777  | 0777  | 0777  | 0777  |          |     |     |
| ANIMAL ID                                     | 00026       | 00027 | 00028 | 00029 | 00030 | 00031 | 00032 | 00033 | 00034 | 00035 | 00036 | 00037 | 00038 | 00039 | 00040 | 00041 | 00042 | 00043 | 00044 | 00045 | 00046 | 00047 |          |     |     |
| Mixed Cell Focus                              |             | X     |       |       |       |       |       |       |       |       | X     |       |       | X     |       |       |       |       |       |       |       |       | 6        |     |     |
| Necrosis                                      |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | 5        | 2.0 |     |
| Tension Lipidosis                             |             |       |       |       |       |       |       |       |       |       | X     |       |       |       |       |       |       |       |       |       |       |       | 3        | 1.0 |     |
| Mesentery<br>Fat, Necrosis                    |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | 4        | 1   | 2.0 |
| Pancreas<br>Fibrosis                          |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | 50       | 1   | 4.0 |
| Acinus, Hypertrophy                           |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | 4        | 1   | 1.0 |
| Salivary Glands                               |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | 50       |     |     |
| Stomach, Forestomach<br>Hyperplasia, Squamous |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | 50       | 2   | 3.0 |
| Inflammation, Chronic Active                  |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | 3        | 1   | 3.0 |
| Stomach, Glandular<br>Erosion                 |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | 50       | 1   | 2.0 |
| Inflammation, Chronic Active                  |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | 2        | 1   | 1.0 |
| Tooth<br>Dysplasia                            |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | 50       | 43  | 1.3 |
| Inflammation, Chronic Active                  |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | 3        | 3   | 3.0 |

CARDIOVASCULAR SYSTEM

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |    |   |     |
|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|----|---|-----|
| Blood Vessel<br>Inflammation, Chronic Active |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 45 | 1 | 2.0 |
| Heart  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 50 |   |     |

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

+ .. Tissue examined microscopically

X .. Lesion present

I .. Insufficient tissue

M .. Missing tissue

A .. Autolysis precludes evaluation

BLANK .. Not examined microscopically

1-4 .. Lesion qualified as:

1) Minimal 3) Moderate

2) Mild 4) Marked

**Experiment Number:** 20515 - 04  
**Test Type:** CHRONIC  
**Route:** RESPIRATORY EXPOSURE WHOLE BODY  
**Species/Strain:** MICE/B6C3F1

**P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL**  
Metal working fluids (CIMSTAR 3800)  
**CAS Number:** CIMSTAR3800

**Date Report Requested:** 03/08/2013  
**Time Report Requested:** 14:13:47  
**First Dose M/F:** 05/05/08 / 05/05/08  
**Lab:** BNW

|                                       | DAY ON TEST | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0               | 0   |     |  |  |
|---------------------------------------|-------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|-----------------|-----|-----|--|--|
| <b>B6C3F1 MICE MALE</b>               |             | 7 | 7 | 7 | 7 | 5 | 7 | 4 | 7 | 7 | 7 | 7 | 6 | 7 | 7 | 7 | 7 | 7 | 7 | 5 | 7 | 7 | 7 | 7 | 7 | 7 | 7               |     |     |  |  |
| <b>Control</b>                        |             | 3 | 3 | 2 | 2 | 9 | 3 | 9 | 2 | 3 | 3 | 9 | 3 | 2 | 2 | 3 | 2 | 3 | 2 | 4 | 3 | 2 | 3 | 3 | 3 | 2 | 2               |     |     |  |  |
|                                       | ANIMAL ID   | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0               |     |     |  |  |
|                                       |             | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0               |     |     |  |  |
|                                       |             | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 5               |     |     |  |  |
|                                       |             | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | <b>* TOTALS</b> |     |     |  |  |
| Cardiomyopathy                        |             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | 2 | 2               | 2.0 |     |  |  |
| Thrombosis                            |             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | 1               | 4.0 |     |  |  |
| <b>ENDOCRINE SYSTEM</b>               |             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |                 |     |     |  |  |
| Adrenal Cortex                        |             | + | + | + | + | + | + | + | + | + | + | I | + | + | + | + | + | + | + | + | + | + | + | + | + | + | +               | 49  |     |  |  |
| Hyperplasia                           |             | 1 | 1 |   |   | 1 |   |   | 1 |   | 1 |   | 1 | 1 | 1 |   |   |   | 2 |   | 2 | 1 | 1 |   |   |   |                 | 24  | 1.3 |  |  |
| Capsule, Inflammation, Chronic Active |             |   |   | 3 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |                 | 1   | 3.0 |  |  |
| Adrenal Medulla                       |             | + | + | + | + | + | + | + | + | + | + | M | + | + | + | + | + | + | + | + | + | + | + | + | + | + | +               | 48  |     |  |  |
| Islets, Pancreatic                    |             | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | +               | 50  |     |  |  |
| Parathyroid Gland                     |             | + | + | + | + | + | M | + | M | + | M | + | + | + | M | + | + | + | + | M | M | M | + | + | + | + | 34              | 1   | 1.0 |  |  |
| Cyst                                  |             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |                 |     |     |  |  |
| Pituitary Gland                       |             | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50              |     |     |  |  |
| Pars Distalis, Cyst                   |             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | 1 |   |   |                 | 1   | 1.0 |  |  |
| Pars Distalis, Hyperplasia            |             | 1 |   |   |   |   |   |   |   |   | 1 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |                 | 5   | 1.2 |  |  |
| Thyroid Gland                         |             | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | +               | 50  |     |  |  |
| <b>GENERAL BODY SYSTEM</b>            |             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |                 |     |     |  |  |
| NONE                                  |             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |                 |     |     |  |  |
| <b>GENITAL SYSTEM</b>                 |             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |                 |     |     |  |  |
| Epididymis                            |             | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | +               | 50  |     |  |  |
| Inflammation, Chronic Active          |             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |                 | 1   | 1.0 |  |  |

\* .. Total animals with tissue examined microscopically; Total animals with lesion and mean severity grade  
+ .. Tissue examined microscopically  
X .. Lesion present  
I .. Insufficient tissue  
M .. Missing tissue  
A .. Autolysis precludes evaluation  
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1) Minimal 3) Moderate  
2) Mild 4) Marked

Experiment Number: 20515 - 04  
 Test Type: CHRONIC  
 Route: RESPIRATORY EXPOSURE WHOLE BODY  
 Species/Strain: MICE/B6C3F1

**P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL**  
 Metal working fluids (CIMSTAR 3800)  
 CAS Number: CIMSTAR3800

Date Report Requested: 03/08/2013  
 Time Report Requested: 14:13:47  
 First Dose M/F: 05/05/08 / 05/05/08  
 Lab: BNW

| B6C3F1 MICE MALE<br>Control               | DAY ON TEST |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | * TOTALS |       |       |       |   |    |
|---|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|----------|-------|-------|-------|---|----|
|   | 0730        | 0730  | 0735  | 0739  | 0752  | 0771  | 0774  | 0777  | 0777  | 0777  | 0777  | 0777  | 0777  | 0777  | 0777  | 0777  | 0777  | 0777  | 0777  | 0777  |          | 0777  |       |       |   |    |
| ANIMAL ID                                 | 00026       | 00007 | 00008 | 00009 | 00000 | 00001 | 00002 | 00003 | 00004 | 00005 | 00006 | 00007 | 00008 | 00009 | 00000 | 00001 | 00002 | 00003 | 00004 | 00005 | 00006    | 00007 | 00008 | 00009 |   |    |
| Preputial Gland                           | +           | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +        | +     | +     | 50    |   |    |
| Ectasia                                   | 1           | 3     |       | 2     |       |       |       |       |       |       | 1     |       |       |       |       |       |       |       |       |       |          |       |       | 8     |   |    |
| Inflammation, Chronic Active              |             |       |       |       |       |       | 3     |       |       |       |       |       |       |       | 3     |       |       | 1     |       |       |          | 1     | 2     | 9     |   |    |
| Prostate                                  | +           | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +        | +     | +     | 50    |   |    |
| Seminal Vesicle                           | +           | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +        | +     | +     | 50    |   |    |
| Testes                                    | +           | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +        | +     | +     | 50    |   |    |
| Germinal Epithelium, Atrophy              |             |       |       |       |       |       |       |       |       |       | 2     |       |       |       |       |       |       |       |       |       |          |       |       | 1     |   |    |
| <b>HEMATOPOIETIC SYSTEM</b>               |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |          |       |       |       |   |    |
| Bone Marrow                               | +           | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +        | +     | +     | 50    |   |    |
| Lymph Node                                |             |       | +     |       |       |       |       |       |       |       |       |       |       |       |       |       |       | +     |       |       |          |       |       | 4     |   |    |
| Lumbar, Infiltration Cellular, Mixed Cell |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |          |       |       | 1     |   |    |
| Lumbar, Lymphoid Follicle, Hyperplasia    |             |       |       | 4     |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |          |       |       | 1     |   |    |
| Lymphoid Follicle, Renal, Hyperplasia     |             |       |       | 4     |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |          |       |       | 1     |   |    |
| Lymph Node, Bronchial                     | M           | M     | +     | +     | +     | M     | +     | +     | M     | M     | +     | M     | +     | M     | M     | M     | +     | M     | +     | +     | +        | +     | M     | +     | + | 26 |
| Infiltration Cellular, Polymorphonuclear  |             |       | 2     |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |          |       |       |       |   | 1  |
| Lymph Node, Mandibular                    | +           | M     | M     | M     | +     | +     | +     | +     | +     | M     | +     | +     | +     | +     | M     | +     | M     | M     | M     | M     | +        | M     | +     | M     | M | 31 |
| Lymph Node, Mediastinal                   | M           | +     | +     | +     | +     | +     | M     | +     | +     | M     | +     | M     | +     | +     | +     | +     | +     | +     | +     | M     | +        | +     | +     | +     | M | 39 |
| Lymphoid Follicle, Hyperplasia            |             |       |       | 4     |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |          |       |       |       |   | 1  |
| Lymph Node, Mesenteric                    | +           | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | M     | +     | +     | +        | +     | +     | +     | + | 49 |
| Fibrosis                                  |             |       |       | 4     |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |          |       |       |       |   | 1  |

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

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

Experiment Number: 20515 - 04

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: MICE/B6C3F1

**P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL**

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 03/08/2013

Time Report Requested: 14:13:47

First Dose M/F: 05/05/08 / 05/05/08

Lab: BNW

| B6C3F1 MICE MALE                      | DAY ON TEST |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | * TOTALS |    |       |       |
|---------------------------------------|-------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|----------|----|-------|-------|
|                                       | 0730        | 0730 | 0730 | 0730 | 0730 | 0730 | 0730 | 0730 | 0730 | 0730 | 0730 | 0730 | 0730 | 0730 | 0730 | 0730 | 0730 | 0730 | 0730 | 0730 | 0730 | 0730 | 0730 | 0730 |          |    |       |       |
| <b>Control</b>                        | ANIMAL ID   |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |          |    |       |       |
|                                       | 0026        | 0027 | 0028 | 0029 | 0030 | 0031 | 0032 | 0033 | 0034 | 0035 | 0036 | 0037 | 0038 | 0039 | 0040 | 0041 | 0042 | 0043 | 0044 | 0045 | 0046 | 0047 | 0048 | 0049 | 0050     |    |       |       |
| Lymphoid Follicle, Hyperplasia        |             |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |          | 4  | 1 4.0 |       |
| Spleen                                | +           | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +        | 50 |       |       |
| Hematopoietic Cell Proliferation      |             |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |          | 2  | 1 2.0 |       |
| Lymphoid Follicle, Hyperplasia        |             |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |          | 4  | 3 3.7 |       |
| Thymus                                | +           | +    | +    | +    | +    | +    | +    | M    | +    | +    | M    | +    | +    | +    | M    | +    | +    | +    | +    | M    | M    | +    | M    | +    | +        | 41 |       |       |
| <b>INTEGUMENTARY SYSTEM</b>           |             |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |          |    |       |       |
| Mammary Gland                         | M           | M    | M    | M    | M    | M    | M    | +    | M    | M    | M    | M    | M    | M    | M    | M    | M    | M    | M    | M    | M    | M    | M    | M    | M        | M  | 1     |       |
| Skin                                  | +           | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +        | +  | 50    |       |
| Inflammation, Chronic Active          |             |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |          |    |       | 2 2.5 |
| Ulcer                                 |             |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |          |    |       | 1 3.0 |
| <b>MUSCULOSKELETAL SYSTEM</b>         |             |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |          |    |       |       |
| Bone                                  | +           | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +        | +  | 50    |       |
| Fibro-Osseous Lesion                  | 1           |      |      | 1    |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |          |    |       | 7 1.3 |
| Cranium, Inflammation, Chronic Active |             |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |          |    |       | 3 2.7 |
| Skeletal Muscle                       |             |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |          |    |       | 1     |
| <b>NERVOUS SYSTEM</b>                 |             |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |          |    |       |       |
| Brain                                 | +           | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +        | +  | 50    |       |
| Peripheral Nerve                      |             |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |          |    |       | 1     |
| Spinal Cord                           |             |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |          |    |       | 1     |

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 + .. Tissue examined microscopically  
 X .. Lesion present  
 I .. Insufficient tissue  
 M .. Missing tissue  
 A .. Autolysis precludes evaluation  
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 Test Type: CHRONIC  
 Route: RESPIRATORY EXPOSURE WHOLE BODY  
 Species/Strain: MICE/B6C3F1

**P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL**  
 Metal working fluids (CIMSTAR 3800)  
 CAS Number: CIMSTAR3800

Date Report Requested: 03/08/2013  
 Time Report Requested: 14:13:47  
 First Dose M/F: 05/05/08 / 05/05/08  
 Lab: BNW

| B6C3F1 MICE MALE | DAY ON TEST |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |    | * TOTALS |
|------------------|-------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|----|----------|
|                  | 0730        | 0733 | 0735 | 0739 | 0742 | 0747 | 0749 | 0753 | 0759 | 0763 | 0767 | 0771 | 0773 | 0777 | 0779 | 0783 | 0787 | 0791 | 0793 | 0797 | 0799 | 0803 | 0807 |    |          |
| Control          | 0000        | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 50 |          |
|                  | 0002        | 0002 | 0002 | 0002 | 0003 | 0003 | 0003 | 0003 | 0003 | 0003 | 0003 | 0003 | 0003 | 0003 | 0004 | 0004 | 0004 | 0004 | 0004 | 0004 | 0004 | 0004 | 0005 | 50 |          |

**RESPIRATORY SYSTEM**

|   |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |    |        |
|---|---|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|----|--------|
| Larynx  | + |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 50 |        |
| Lung  | + |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 50 |        |
| Infiltration Cellular, Histiocyte                     | 2 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |    | 5 1.6  |
| Thrombosis  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |    | 1 1.0  |
| Alveolar Epithelium, Hyperplasia                      | 1 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |    | 4 1.3  |
| Bronchiole, Hyperplasia                               | 1 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |    | 11 1.0 |
| Interstitial, Inflammation, Chronic Active            | 2 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |    | 1 2.0  |
| Perivascular, Inflammation, Chronic Active            |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |    | 1 3.0  |
| Nose  | + |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 50 |        |
| Inflammation, Chronic Active                          | 1 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |    | 6 1.3  |
| Necrosis  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |    | 2 1.0  |
| Olfactory Epithelium, Accumulation, Hyaline Droplet   | 1 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |    | 4 1.3  |
| Olfactory Epithelium, Atrophy                         |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |    | 1 1.0  |
| Olfactory Epithelium, Metaplasia, Respiratory         | 1 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |    | 7 1.1  |
| Respiratory Epithelium, Accumulation, Hyaline Droplet | 1 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |    | 7 1.1  |
| Respiratory Epithelium, Hyperplasia                   | 2 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |    | 38 1.6 |
| Turbinate, Degeneration                               |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |    | 1 2.0  |
| Pleura  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |    | 1      |
| Trachea   | + |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 50 |        |

**SPECIAL SENSES SYSTEM**

|     |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |    |
|-----|---|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|----|
| Eye | + |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 50 |
|-----|---|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|----|

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

+ .. Tissue examined microscopically

X .. Lesion present

I .. Insufficient tissue

M .. Missing tissue

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1) Minimal 3) Moderate

2) Mild 4) Marked

**Experiment Number:** 20515 - 04  
**Test Type:** CHRONIC  
**Route:** RESPIRATORY EXPOSURE WHOLE BODY  
**Species/Strain:** MICE/B6C3F1

**P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL**  
 Metal working fluids (CIMSTAR 3800)  
**CAS Number:** CIMSTAR3800

**Date Report Requested:** 03/08/2013  
**Time Report Requested:** 14:13:47  
**First Dose M/F:** 05/05/08 / 05/05/08  
**Lab:** BNW

| <b>B6C3F1 MICE MALE</b>           |           | DAY ON TEST |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |                 |          |            |
|-----------------------------------|-----------|-------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|-----------------|----------|------------|
| <b>Control</b>                    | ANIMAL ID | 0           | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |   | 0               | 0        |            |
|                                   |           | 7           | 7 | 7 | 7 | 5 | 7 | 4 | 7 | 7 | 7 | 7 | 6 | 7 | 7 | 7 | 7 | 7 | 7 | 5 | 7 |   | 7               | 7        | 7          |
|                                   |           | 3           | 3 | 2 | 2 | 9 | 3 | 9 | 2 | 3 | 3 | 3 | 9 | 3 | 2 | 2 | 3 | 2 | 3 | 2 | 4 | 3 | 2               | 3        |            |
|                                   |           | 0           | 0 | 0 | 0 | 9 | 2 | 1 | 9 | 9 | 0 | 0 | 4 | 0 | 9 | 9 | 0 | 4 | 0 | 9 | 1 | 0 | 9               | 1        | 0          |
|                                   |           | 0           | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0               | 0        |            |
|                                   |           | 0           | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0               | 0        |            |
|                                   |           | 2           | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 4 | 4 | 4 | 4 | 4 | 4 | 4               | 4        |            |
|                                   |           | 6           | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7               | 8        |            |
|                                   |           |             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | <b>* TOTALS</b> |          |            |
| Atrophy                           |           |             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | 4               | <b>1</b> | <b>4.0</b> |
| Cornea, Vacuolization Cytoplasmic |           |             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |                 | 1        | <b>1</b>   |
| Lens, Degeneration                |           |             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | 2               |          | <b>2.0</b> |
| Harderian Gland                   |           |             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |                 |          |            |
| Hyperplasia                       |           |             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |                 | 4        | <b>2</b>   |
|                                   |           |             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | <b>50</b>       |          | <b>3.0</b> |

**URINARY SYSTEM**

|                                      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |           |   |           |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
|--------------------------------------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|-----------|---|-----------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|--|
| Kidney                               |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | <b>50</b> |   |           |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| Congestion                           |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |           |   | <b>1</b>  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| Cyst                                 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | X         | X | <b>4</b>  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| Dilatation                           |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |           |   | <b>1</b>  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| Infarct                              |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 2         | 2 | <b>3</b>  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| Inflammation, Chronic Active         |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |           |   | <b>1</b>  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| Metaplasia, Osseous                  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |           | 1 | <b>1</b>  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| Nephropathy                          |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 2         | 2 |           | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 2 | 2 | 2 | 2 |  |
| Artery, Hemorrhage                   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 3         |   | <b>1</b>  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| Artery, Inflammation, Chronic Active |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |           |   | <b>1</b>  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| Urinary Bladder                      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |           |   | <b>50</b> |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |

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

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

Experiment Number: 20515 - 04

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: MICE/B6C3F1

P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 03/08/2013

Time Report Requested: 14:13:47

First Dose M/F: 05/05/08 / 05/05/08

Lab: BNW

|                         |             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |                            |
|-------------------------|-------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|----------------------------|
| <b>B6C3F1 MICE MALE</b> | DAY ON TEST | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |                            |
|                         |             | 7 | 7 | 7 | 6 | 7 | 7 | 7 | 6 | 7 | 7 | 7 | 7 | 7 | 7 | 5 | 7 | 6 | 7 | 7 | 5 | 7 | 4 |                            |
| <b>10 mg/m3</b>         | ANIMAL ID   | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | <b>males<br/>(cont...)</b> |
|                         |             | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |                            |

**ALIMENTARY SYSTEM**

|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |        |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|--------|
| Esophagus                                   | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | +      |
| Gallbladder                                 | + | M | + | + | + | M | + | + | M | + | + | + | + | + | + | + | + | + | + | + | M | +      |
| Intestine Large, Cecum                      | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | +      |
| Intestine Large, Colon<br>Ulcer             | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 2      |
| Intestine Large, Rectum<br>Cyst<br>Fibrosis | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 1<br>1 |
| Intestine Small, Duodenum                   | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | +      |
| Intestine Small, Ileum                      | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | +      |
| Intestine Small, Jejunum                    | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | +      |
| Liver                                       | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | +      |
| Angiectasis                                 |   |   |   |   |   |   |   |   |   | 2 |   |   |   |   |   |   |   |   |   |   |   |        |
| Basophilic Focus                            |   |   |   |   |   | X |   |   |   |   |   |   |   |   |   |   | X |   |   |   |   |        |
| Clear Cell Focus                            |   | X |   |   |   |   |   |   |   | X | X | X |   |   | X | X |   |   |   |   |   |        |
| Congestion                                  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |        |
| Cyst  |   |   |   |   |   | 3 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |        |
| Eosinophilic Focus                          |   |   |   |   |   |   |   |   |   | X |   |   |   |   |   |   |   | X |   |   |   |        |
| Fatty Change                                |   | 2 |   | 1 |   |   |   | 1 | 2 | 2 |   | 2 | 1 | 2 |   | 2 | 1 |   |   | 1 |   | 2      |
| Hyperplasia                                 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |        |
| Mixed Cell Focus                            |   |   |   |   |   |   |   |   |   | X |   |   |   |   | X | X | X |   |   |   |   |        |

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

+ .. Tissue examined microscopically

X .. Lesion present

I .. Insufficient tissue

M .. Missing tissue

A .. Autolysis precludes evaluation

BLANK .. Not examined microscopically

1-4 .. Lesion qualified as:

1) Minimal 3) Moderate

2) Mild 4) Marked



Experiment Number: 20515 - 04  
 Test Type: CHRONIC  
 Route: RESPIRATORY EXPOSURE WHOLE BODY  
 Species/Strain: MICE/B6C3F1

**P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL**  
 Metal working fluids (CIMSTAR 3800)  
 CAS Number: CIMSTAR3800

Date Report Requested: 03/08/2013  
 Time Report Requested: 14:13:47  
 First Dose M/F: 05/05/08 / 05/05/08  
 Lab: BNW

| B6C3F1 MICE MALE<br>10 mg/m3                    | DAY ON TEST      |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  | ANIMAL ID | males<br>(cont...) |                  |                  |                  |  |
|---|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|-----------|--------------------|------------------|------------------|------------------|--|
|   | 0<br>7<br>1<br>3 | 0<br>7<br>2<br>9 | 0<br>7<br>3<br>1 | 0<br>6<br>4<br>7 | 0<br>7<br>2<br>9 | 0<br>7<br>3<br>1 | 0<br>7<br>3<br>0 | 0<br>6<br>6<br>2 | 0<br>7<br>3<br>0 | 0<br>7<br>6<br>6 | 0<br>7<br>3<br>9 | 0<br>7<br>3<br>0 | 0<br>7<br>2<br>9 | 0<br>7<br>2<br>9 | 0<br>5<br>9<br>0 | 0<br>7<br>2<br>9 | 0<br>6<br>3<br>2 | 0<br>7<br>3<br>9 | 0<br>7<br>2<br>3 | 0<br>5<br>9<br>1 |           |                    | 0<br>7<br>3<br>1 | 0<br>4<br>3<br>9 | 0<br>7<br>3<br>0 |  |
| Necrosis  |                  |                  |                  |                  |                  |                  |                  |                  |                  | 3                |                  |                  |                  |                  | 2                |                  |                  |                  |                  |                  |           |                    |                  |                  |                  |  |
| Tension Lipidosis                               |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |           |                    |                  |                  | 2                |  |
| Mesentery                                       |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |           |                    |                  |                  |                  |  |
| Inflammation, Chronic Active                    |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |           |                    |                  |                  | +                |  |
| Arteriole, Inflammation, Chronic Active         |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |           |                    |                  |                  | 3                |  |
| Fat, Necrosis                                   |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |           |                    |                  |                  |                  |  |
| Pancreas  | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +         | +                  | +                | +                | +                |  |
| Lipomatosis                                     |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |           |                    |                  | 2                |                  |  |
| Acinus, Hypertrophy                             |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |           |                    |                  |                  |                  |  |
| Artery, Inflammation, Chronic Active            |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  | 2                |                  |                  |                  |                  |                  |                  |                  |                  |                  |           |                    |                  |                  |                  |  |
| Salivary Glands                                 | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +         | +                  | +                | +                | +                |  |
| Infiltration Cellular, Lymphocyte               |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |           |                    |                  |                  | 1                |  |
| Stomach, Forestomach                            | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +         | +                  | +                | +                | +                |  |
| Cyst, Squamous                                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |           |                    |                  |                  |                  |  |
| Hyperplasia, Squamous                           |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |           |                    |                  |                  |                  |  |
| Inflammation, Chronic Active                    |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  | 2                |                  |                  |                  |                  |                  |           |                    |                  |                  | 3                |  |
| Stomach, Glandular                              | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +         | +                  | +                | +                | +                |  |
| Arteriole, Serosa, Inflammation, Chronic Active |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |           |                    |                  |                  |                  |  |
| Tooth   | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +         | +                  | +                | +                | +                |  |
| Dysplasia                                       |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |           |                    |                  |                  |                  |  |
| Inflammation, Chronic Active                    |                  |                  | 2                | 2                | 1                | 3                |                  |                  | 2                | 1                | 2                | 3                | 2                |                  |                  | 1                | 1                | 1                | 1                | 1                | 1         | 1                  | 1                | 1                | 1                |  |

**CARDIOVASCULAR SYSTEM**

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

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

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

Experiment Number: 20515 - 04  
 Test Type: CHRONIC  
 Route: RESPIRATORY EXPOSURE WHOLE BODY  
 Species/Strain: MICE/B6C3F1

**P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL**  
 Metal working fluids (CIMSTAR 3800)  
 CAS Number: CIMSTAR3800

Date Report Requested: 03/08/2013  
 Time Report Requested: 14:13:47  
 First Dose M/F: 05/05/08 / 05/05/08  
 Lab: BNW

|  |             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |                                  |
|--|-------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|----------------------------------|
| <b>B6C3F1 MICE MALE</b><br><br><b>10 mg/m3</b> | DAY ON TEST | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | <b>males</b><br><b>(cont...)</b> |
|  |             | 7 | 7 | 7 | 6 | 7 | 7 | 7 | 6 | 7 | 7 | 7 | 7 | 7 | 7 | 5 | 7 | 6 | 7 | 7 | 7 | 5 | 7 | 7 | 4 |   |                                  |
|  |             | 1 | 2 | 3 | 4 | 2 | 3 | 3 | 6 | 3 | 0 | 2 | 3 | 3 | 2 | 2 | 9 | 2 | 3 | 3 | 2 | 3 | 9 | 3 | 3 |   |                                  |
|  |             | 3 | 9 | 1 | 7 | 9 | 1 | 0 | 2 | 0 | 6 | 9 | 0 | 0 | 9 | 9 | 0 | 9 | 2 | 9 | 0 | 9 | 3 | 9 | 0 |   |                                  |
|  | ANIMAL ID   | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |   |                                  |
|  |             | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |   |                                  |
|  |             | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |   |                                  |
|  |             | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 2 |   |                                  |
|  |             | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 |                                  |

Aorta, Inflammation, Chronic Active

|                                      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|--------------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Heart                                | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Cardiomyopathy                       |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Artery, Inflammation, Chronic Active | 2 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |

**ENDOCRINE SYSTEM**

|                              |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Adrenal Cortex               | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Hyperplasia                  | 2 | 1 | 1 | 2 | 1 |   |   |   | 1 |   |   | 1 | 2 | 1 | 1 | 1 |   |   | 1 | 2 |   | 1 |   |   |   |
| Adrenal Medulla              | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Hyperplasia                  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Islets, Pancreatic           | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Parathyroid Gland            | M | + | + | + | M | + | M | + | + | + | M | + | M | + | + | + | + | + | + | M | + | M | + | M | M |
| Pituitary Gland              | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Pars Distalis, Hyperplasia   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Pars Intermedia, Hypertrophy |   |   |   |   |   |   | 1 |   |   |   |   |   | 1 |   |   |   |   |   |   | 3 |   |   |   |   | 1 |
| Thyroid Gland                | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |

**GENERAL BODY SYSTEM**

|            |  |  |  |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|------------|--|--|--|--|---|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| Tissue NOS |  |  |  |  | + |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|------------|--|--|--|--|---|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|

**GENITAL SYSTEM**

|            |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Epididymis | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
|------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

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

M .. Missing tissue  
 A .. Autolysis precludes evaluation  
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1-4 .. Lesion qualified as:  
 1) Minimal 3) Moderate  
 2) Mild 4) Marked

Experiment Number: 20515 - 04

P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL

Date Report Requested: 03/08/2013

Test Type: CHRONIC

Metal working fluids (CIMSTAR 3800)

Time Report Requested: 14:13:47

Route: RESPIRATORY EXPOSURE WHOLE BODY

CAS Number: CIMSTAR3800

First Dose M/F: 05/05/08 / 05/05/08

Species/Strain: MICE/B6C3F1

Lab: BNW

| B6C3F1 MICE MALE<br>10 mg/m3  |  | DAY ON TEST | 0<br>7<br>1<br>3      | 0<br>7<br>2<br>9      | 0<br>7<br>3<br>1      | 0<br>6<br>4<br>7      | 0<br>7<br>2<br>9      | 0<br>7<br>3<br>1      | 0<br>7<br>3<br>0      | 0<br>6<br>6<br>2      | 0<br>7<br>7<br>0      | 0<br>7<br>6<br>6      | 0<br>7<br>3<br>3      | 0<br>7<br>2<br>2      | 0<br>7<br>3<br>2      | 0<br>7<br>3<br>9      | 0<br>5<br>2<br>9      | 0<br>7<br>2<br>9      | 0<br>6<br>3<br>2      | 0<br>7<br>3<br>9      | 0<br>7<br>3<br>9      | 0<br>5<br>9<br>0      | 0<br>7<br>3<br>0      | 0<br>4<br>3<br>3      |                       |                       |                       |                    |   |  |
|---|--|-------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|--------------------|---|--|
|   |  | ANIMAL ID   | 0<br>0<br>2<br>0<br>1 | 0<br>0<br>2<br>0<br>2 | 0<br>0<br>2<br>0<br>3 | 0<br>0<br>2<br>0<br>4 | 0<br>0<br>2<br>0<br>5 | 0<br>0<br>2<br>0<br>6 | 0<br>0<br>2<br>0<br>7 | 0<br>0<br>2<br>0<br>8 | 0<br>0<br>2<br>0<br>9 | 0<br>0<br>2<br>0<br>0 | 0<br>0<br>2<br>0<br>1 | 0<br>0<br>2<br>0<br>2 | 0<br>0<br>2<br>0<br>3 | 0<br>0<br>2<br>0<br>4 | 0<br>0<br>2<br>0<br>5 | 0<br>0<br>2<br>0<br>6 | 0<br>0<br>2<br>0<br>7 | 0<br>0<br>2<br>0<br>8 | 0<br>0<br>2<br>0<br>9 | 0<br>0<br>2<br>0<br>0 | 0<br>0<br>2<br>0<br>1 | 0<br>0<br>2<br>0<br>2 | 0<br>0<br>2<br>0<br>3 | 0<br>0<br>2<br>0<br>4 | 0<br>0<br>2<br>0<br>5 | males<br>(cont...) |   |  |
| Inflammation, Chronic Active<br>Spermatocoele   |  |             |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       | 3                  | 2 |  |
| Preputial Gland<br>Ectasia<br>Inflammation, Chronic Active                            |  |             | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     |                       |                    |   |  |
| Prostate  |  | M           | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     |                       |                    |   |  |
| Seminal Vesicle   |  |             | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     |                       |                    |   |  |
| Testes<br>Nuclear Alteration, Focal<br>Germinal Epithelium, Atrophy                   |  |             | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     |                       | 2                  |   |  |
| <b>HEMATOPOIETIC SYSTEM</b>   |  |             |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                    |   |  |
| Bone Marrow   |  |             | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     |                       |                    |   |  |
| Lymph Node  |  |             |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       | +                     |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                    |   |  |
| Lymph Node, Bronchial   |  | M           | +                     | +                     | M                     | +                     | +                     | M                     | +                     | +                     | M                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | M                     | +                     | +                     | +                     | M                     | M                     | +                     | M                     |                       |                    |   |  |
| Lymph Node, Mandibular<br>Hyperplasia, Lymphoid<br>Infiltration Cellular, Plasma Cell |  |             | +                     | +                     | +                     | M                     | +                     | M                     | M                     | +                     | +                     | +                     | +                     | +                     | +                     | M                     | M                     | +                     | M                     | +                     | 2                     | M                     | +                     | +                     | +                     | +                     | +                     | +                  | 2 |  |
| Lymph Node, Mediastinal   |  | M           | M                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | M                     | +                     | +                     | +                     | +                     | +                     | M                     | +                     | +                     | +                     | +                     |                       |                    |   |  |
| Lymph Node, Mesenteric<br>Hemorrhage  |  |             | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     |                    | 2 |  |

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

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

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

Experiment Number: 20515 - 04  
 Test Type: CHRONIC  
 Route: RESPIRATORY EXPOSURE WHOLE BODY  
 Species/Strain: MICE/B6C3F1

**P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL**  
 Metal working fluids (CIMSTAR 3800)  
 CAS Number: CIMSTAR3800

Date Report Requested: 03/08/2013  
 Time Report Requested: 14:13:47  
 First Dose M/F: 05/05/08 / 05/05/08  
 Lab: BNW

| B6C3F1 MICE MALE<br>10 mg/m3 | DAY ON TEST      |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  | ANIMAL ID | males<br>(cont...) |                  |   |  |
|------------------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|-----------|--------------------|------------------|---|--|
|                              | 0<br>7<br>1<br>3 | 0<br>7<br>2<br>9 | 0<br>7<br>3<br>1 | 0<br>6<br>4<br>7 | 0<br>7<br>2<br>9 | 0<br>7<br>3<br>1 | 0<br>7<br>3<br>0 | 0<br>6<br>6<br>2 | 0<br>7<br>3<br>0 | 0<br>7<br>6<br>6 | 0<br>7<br>7<br>9 | 0<br>7<br>7<br>0 | 0<br>7<br>7<br>0 | 0<br>7<br>7<br>0 | 0<br>7<br>7<br>0 | 0<br>7<br>7<br>0 | 0<br>5<br>2<br>9 | 0<br>7<br>2<br>9 | 0<br>6<br>3<br>2 | 0<br>7<br>3<br>9 | 0<br>7<br>3<br>9 | 0<br>5<br>3<br>1 | 0<br>7<br>9<br>1 | 0<br>7<br>3<br>0 | 0<br>4<br>3<br>9 |           |                    | 0<br>4<br>3<br>9 |   |  |
|                              | 0                | 0                | 0                | 0                | 0                | 0                | 0                | 0                | 0                | 0                | 0                | 0                | 0                | 0                | 0                | 0                | 0                | 0                | 0                | 0                | 0                | 0                | 0                | 0                | 0                | 0         | 0                  | 0                | 0 |  |
|                              | 0                | 0                | 0                | 0                | 0                | 0                | 0                | 0                | 0                | 0                | 0                | 0                | 0                | 0                | 0                | 0                | 0                | 0                | 0                | 0                | 0                | 0                | 0                | 0                | 0                | 0         | 0                  | 0                | 0 |  |
|                              | 2                | 2                | 2                | 2                | 2                | 2                | 2                | 2                | 2                | 2                | 2                | 2                | 2                | 2                | 2                | 2                | 2                | 2                | 2                | 2                | 2                | 2                | 2                | 2                | 2                | 2         | 2                  | 2                | 2 |  |
|                              | 0                | 0                | 0                | 0                | 0                | 0                | 0                | 0                | 0                | 0                | 1                | 1                | 1                | 1                | 1                | 1                | 1                | 1                | 1                | 1                | 1                | 2                | 2                | 2                | 2                | 2         | 2                  | 2                | 2 |  |
|                              | 1                | 2                | 3                | 4                | 5                | 6                | 7                | 8                | 9                | 0                | 1                | 1                | 2                | 3                | 4                | 5                | 6                | 7                | 8                | 9                | 0                | 1                | 2                | 3                | 4                | 5         |                    |                  |   |  |

|                                  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
|----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|--|
| Spleen                           | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |  |
| Fibrosis                         |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| Hematopoietic Cell Proliferation |   |   |   |   |   |   |   |   |   |   |   |   | 2 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| Lymphoid Follicle, Hyperplasia   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | 3 |   |   |   |   |   |   |  |
| Thymus                           | + | M | + | + | + | M | M | M | + | + | + | + | + | + | + | + | + | + | + | M | + | + | + | + | + | + | M |   |  |

**INTEGUMENTARY SYSTEM**

|                              |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
|------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|--|
| Mammary Gland                | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M |  |
| Skin                         | + | + | + | + | + | + | + | + | M | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |  |
| Inflammation, Chronic Active |   |   |   |   |   |   |   |   | 3 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| Ulcer                        |   |   |   |   |   |   |   |   | 3 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| Sebaceous Gland, Hyperplasia |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |

**MUSCULOSKELETAL SYSTEM**

|                                       |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
|---------------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|--|
| Bone                                  | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |  |
| Fibro-Osseous Lesion                  | 1 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | 1 |   |   |   |   |   |   |   |   |   |  |
| Cranium, Fracture                     |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | 1 |   |   |   |   |   |   |  |
| Cranium, Inflammation, Chronic Active |   |   |   |   |   |   |   |   | 3 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | 3 |  |
| Joint, Vertebra, Fracture             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | 1 |   |   |   |   |   |   |   |   |   |   |   |   |  |
| Maxilla, Necrosis                     |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| Skeletal Muscle                       | + |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| Infiltration Cellular, Lymphocyte     | 1 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |

**NERVOUS SYSTEM**

|       |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|-------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Brain | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
|-------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

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

Experiment Number: 20515 - 04  
 Test Type: CHRONIC  
 Route: RESPIRATORY EXPOSURE WHOLE BODY  
 Species/Strain: MICE/B6C3F1

**P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL**  
 Metal working fluids (CIMSTAR 3800)  
 CAS Number: CIMSTAR3800

Date Report Requested: 03/08/2013  
 Time Report Requested: 14:13:47  
 First Dose M/F: 05/05/08 / 05/05/08  
 Lab: BNW

| B6C3F1 MICE MALE<br>10 mg/m3 | DAY ON TEST | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | ANIMAL ID | males<br>(cont...) |
|------------------------------|-------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|-----------|--------------------|
|                              | 7           | 7 | 7 | 6 | 7 | 7 | 7 | 6 | 7 | 7 | 7 | 7 | 7 | 7 | 5 | 7 | 6 | 7 | 7 | 5 | 7 | 7 | 5 | 7 | 4 |   |   |           |                    |
|                              |             | 1 | 2 | 3 | 4 | 2 | 3 | 3 | 6 | 3 | 0 | 2 | 3 | 3 | 2 | 2 | 3 | 3 | 2 | 3 | 3 | 9 | 3 | 3 | 3 | 0 |   |           |                    |
|                              |             | 3 | 9 | 1 | 7 | 9 | 1 | 0 | 2 | 0 | 6 | 9 | 0 | 0 | 9 | 9 | 0 | 9 | 2 | 9 | 0 | 9 | 1 | 1 | 0 | 0 |   |           |                    |
|                              |             | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |   |           |                    |
|                              |             | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |   |           |                    |
|                              |             | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 2 |   |           |                    |
|                              |             | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 |   |           |                    |

Arteriole, Inflammation, Chronic Active  
 Venule, Infiltration Cellular, Lymphoid

1

Peripheral Nerve

+

Spinal Cord

+

**RESPIRATORY SYSTEM**

|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Larynx  | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Inflammation, Suppurative                             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Inflammation, Chronic Active                          |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | 2 |   |   |   |   |   |   |   |   |
| Metaplasia, Squamous                                  | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Necrosis  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Lung  | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Erythrophagocytosis                                   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Infiltration Cellular, Histiocyte                     |   |   |   |   |   |   |   |   |   |   |   | 3 |   |   |   |   |   |   |   |   |   |   | 1 |   |   |
| Alveolar Epithelium, Hyperplasia                      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | 2 |   |   |
| Bronchiole, Hyperplasia                               |   |   |   | 1 |   |   |   |   |   |   | 1 |   |   | 1 | 1 | 1 | 1 |   |   |   |   |   | 1 |   |   |
| Perivascular, Inflammation, Chronic Active            |   |   |   |   |   |   |   |   |   |   | 2 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Nose  | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Inflammation, Chronic Active                          |   |   |   | 2 |   | 2 |   | 2 |   |   |   |   |   |   |   | 1 |   | 2 |   |   |   |   |   |   | 3 |
| Necrosis  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | 3 |
| Olfactory Epithelium, Accumulation, Hyaline Droplet   | 1 | 2 | 1 | 2 | 1 |   | 2 | 2 | 2 | 2 |   | 2 |   |   | 2 | 1 |   | 1 |   | 2 | 1 |   |   |   |   |
| Olfactory Epithelium, Metaplasia, Respiratory         |   |   |   |   |   | 1 | 1 |   | 1 |   |   |   | 1 |   | 1 |   | 1 |   |   | 1 |   | 2 |   |   |   |
| Olfactory Epithelium, Necrosis                        |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Respiratory Epithelium, Accumulation, Hyaline Droplet | 1 | 2 | 1 | 2 | 1 |   | 2 | 2 |   | 2 | 1 | 2 | 1 | 1 | 2 |   | 1 | 1 | 1 |   | 2 |   | 1 |   |   |

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

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

Experiment Number: 20515 - 04

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: MICE/B6C3F1

P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 03/08/2013

Time Report Requested: 14:13:47

First Dose M/F: 05/05/08 / 05/05/08

Lab: BNW

| B6C3F1 MICE MALE<br>10 mg/m3   | DAY ON TEST | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |   |   |   |
|--|-------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  | ANIMAL ID   | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |   |
| Respiratory Epithelium, Hyperplasia                                  |             | 1 | 1 | 2 | 2 | 1 | 2 | 2 | 1 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 2 | 2 | 1 | 2 | 1 | 2 | 2 | 2 | 2 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1 |   |   |   |   |
| Respiratory Epithelium, Metaplasia, Squamous Turbinate, Degeneration |             |   |   |   |   |   |   |   |   |   |   |   |   | 1 | 1 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | 2 |   |   |   |
| Trachea  |             | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |   |   |
| <b>SPECIAL SENSES SYSTEM</b>   |             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Eye  |             | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |   |
| Cornea, Inflammation, Chronic Active Lens, Degeneration              |             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | 2 |   |   |
| Harderian Gland  |             | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |   |
| Cyst Hyperplasia   |             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | 1 |   |
| <b>URINARY SYSTEM</b>  |             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Kidney   |             | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |   |
| Cyst   |             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | X |
| Infarct  |             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Metaplasia, Osseous  |             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Nephropathy  |             | 1 | 2 | 2 | 2 | 2 | 3 | 2 | 1 | 2 | 3 | 2 | 3 | 2 | 2 | 2 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |   |   |
| Artery, Inflammation, Chronic Active                                 |             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | 3 |   |
| Capsule, Fibrosis  |             |   |   |   |   |   |   |   | 1 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Capsule, Hemorrhage  |             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Papilla, Necrosis  |             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | 2 |   |
| Pelvis, Inflammation, Suppurative                                    |             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | 2 |   |
| Urinary Bladder  |             | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |   |

males (cont...)

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

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

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

Experiment Number: 20515 - 04

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: MICE/B6C3F1

**P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL**

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 03/08/2013

Time Report Requested: 14:13:47

First Dose M/F: 05/05/08 / 05/05/08

Lab: BNW

|                         |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |
|-------------------------|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-----------------|
| <b>B6C3F1 MICE MALE</b> | DAY ON TEST | 0729  | 0688  | 0709  | 0703  | 0556  | 0772  | 0591  | 0730  | 0535  | 0733  | 0731  | 0596  | 0779  | 0779  | 0574  | 0733  | 0722  | 0662  | 0773  | 0673  | 0733  | 0599  | 0729  | <b>* TOTALS</b> |
|                         | ANIMAL ID   | 00226 | 00227 | 00228 | 00229 | 00230 | 00231 | 00232 | 00233 | 00234 | 00235 | 00236 | 00237 | 00238 | 00239 | 00240 | 00241 | 00242 | 00243 | 00244 | 00245 | 00246 | 00247 | 00248 |                 |

**ALIMENTARY SYSTEM**

|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |           |           |                              |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|-----------|-----------|------------------------------|
| Esophagus                                   | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | +         | <b>50</b> |                              |
| Gallbladder                                 | + | + | + | + | + | + | + | M | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | M | <b>44</b> |           |                              |
| Intestine Large, Cecum                      | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | +         | <b>50</b> |                              |
| Intestine Large, Colon<br>Ulcer             | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | +         | <b>50</b> | <b>1 2.0</b>                 |
| Intestine Large, Rectum<br>Cyst<br>Fibrosis | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | +         | <b>50</b> | <b>1 1.0</b><br><b>1 1.0</b> |
| Intestine Small, Duodenum                   | + | + | + | + | A | + | A | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | +         | <b>48</b> |                              |
| Intestine Small, Ileum                      | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | +         | <b>50</b> |                              |
| Intestine Small, Jejunum                    | + | + | + | + | A | + | A | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | +         | <b>48</b> |                              |
| Liver                                       | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | +         | <b>50</b> |                              |
| Angiectasis                                 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |           |           | <b>1 2.0</b>                 |
| Basophilic Focus                            |   |   |   |   |   |   |   |   |   |   | X |   |   |   |   |   |   |   |   |   |   |   |   |   |           |           | <b>3</b>                     |
| Clear Cell Focus                            |   |   |   |   |   |   |   |   |   |   | X |   | X |   |   |   |   | X |   |   |   |   |   |   |           |           | <b>9</b>                     |
| Congestion                                  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | 1 |   |   |   |   |   |   |   |           |           | <b>1 1.0</b>                 |
| Cyst  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |           |           | <b>1 3.0</b>                 |
| Eosinophilic Focus                          |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | X |   |   |   |   |   |   |           |           | <b>3</b>                     |
| Fatty Change                                | 1 | 1 |   |   |   | 1 | 1 |   | 1 | 1 |   |   |   | 1 |   |   | 1 |   | 1 |   |   |   | 1 |   |           | <b>22</b> | <b>1.3</b>                   |
| Hyperplasia                                 |   |   |   |   |   |   | 2 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |           |           | <b>1 2.0</b>                 |
| Mixed Cell Focus                            |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |           |           | <b>4</b>                     |

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

+ .. Tissue examined microscopically

X .. Lesion present

I .. Insufficient tissue

M .. Missing tissue

A .. Autolysis precludes evaluation

BLANK .. Not examined microscopically

1-4 .. Lesion qualified as:

1) Minimal 3) Moderate

2) Mild 4) Marked

Experiment Number: 20515 - 04  
 Test Type: CHRONIC  
 Route: RESPIRATORY EXPOSURE WHOLE BODY  
 Species/Strain: MICE/B6C3F1

**P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL**  
 Metal working fluids (CIMSTAR 3800)  
 CAS Number: CIMSTAR3800

Date Report Requested: 03/08/2013  
 Time Report Requested: 14:13:47  
 First Dose M/F: 05/05/08 / 05/05/08  
 Lab: BNW

| B6C3F1 MICE MALE<br>10 mg/m3                    | DAY ON TEST |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | * TOTALS |
|---|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|----------|
|   | 0729        | 0628  | 0709  | 0703  | 0556  | 0771  | 0570  | 0773  | 0575  | 0771  | 0575  | 0773  | 0575  | 0771  | 0575  | 0773  | 0575  | 0771  | 0575  | 0773  | 0575  | 0771  | 0575  | 0773  |          |
| ANIMAL ID                                       | 002226      | 00087 | 00098 | 00090 | 00001 | 00002 | 00003 | 00003 | 00003 | 00003 | 00003 | 00003 | 00003 | 00003 | 00003 | 00003 | 00003 | 00003 | 00003 | 00003 | 00003 | 00003 | 00003 | 00003 |          |
| Necrosis  |             |       |       | 3     | 2     | 3     | 2     |       | 2     |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |          |
| Tension Lipidosis                               |             |       |       |       |       |       |       | 1     |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |          |
| Mesentery                                       |             | +     |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |          |
| Inflammation, Chronic Active                    |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |          |
| Arteriole, Inflammation, Chronic Active         |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | 3     |       |       |          |
| Fat, Necrosis                                   |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | 1     |       |       |          |
| Pancreas  | +           | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     |       |          |
| Lipomatosis                                     |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |          |
| Acinus, Hypertrophy                             |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |          |
| Artery, Inflammation, Chronic Active            |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | 2     |       |       |          |
| Salivary Glands                                 | +           | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     |       |          |
| Infiltration Cellular, Lymphocyte               |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |          |
| Stomach, Forestomach                            | +           | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     |       |          |
| Cyst, Squamous                                  |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |          |
| Hyperplasia, Squamous                           |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |          |
| Inflammation, Chronic Active                    |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |          |
| Stomach, Glandular                              | +           | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     |       |          |
| Arteriole, Serosa, Inflammation, Chronic Active |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |          |
| Tooth   | +           | +     | +     | +     |       | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     |       |          |
| Dysplasia                                       | 1           | 1     | 1     | 1     |       | 1     |       |       |       |       | 2     | 3     |       | 1     | 1     | 1     | 1     |       | 1     |       | 1     | 1     | 1     |       |          |
| Inflammation, Chronic Active                    |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |          |

**CARDIOVASCULAR SYSTEM**

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

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



Experiment Number: 20515 - 04  
 Test Type: CHRONIC  
 Route: RESPIRATORY EXPOSURE WHOLE BODY  
 Species/Strain: MICE/B6C3F1

**P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL**  
 Metal working fluids (CIMSTAR 3800)  
 CAS Number: CIMSTAR3800

Date Report Requested: 03/08/2013  
 Time Report Requested: 14:13:47  
 First Dose M/F: 05/05/08 / 05/05/08  
 Lab: BNW

| B6C3F1 MICE MALE | DAY ON TEST |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        | * TOTALS |        |
|------------------|-------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--------|
|                  | 0729        | 0628   | 0709   | 0703   | 0552   | 0771   | 0573   | 0750   | 0753   | 0771   | 0579   | 0773   | 0779   | 0779   | 0770   | 0770   | 0574   | 0733   | 0722   | 0660   | 0767   | 0667   | 0733   | 0579   |          | 0772   |
| 10 mg/m3         | ANIMAL ID   |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        | * TOTALS |        |
| 002226           | 000222      | 000222 | 000222 | 000331 | 000332 | 000333 | 000333 | 000333 | 000333 | 000333 | 000333 | 000333 | 000333 | 000333 | 000333 | 000440 | 000441 | 000442 | 000443 | 000444 | 000444 | 000444 | 000444 | 000444 |          | 000445 |

|                                      |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |    |   |     |
|--------------------------------------|---|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|----|---|-----|
| Aorta, Inflammation, Chronic Active  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 2  | 1 | 2.0 |
| Heart                                | + |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 50 |   |     |
| Cardiomyopathy                       |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 2  | 3 | 2.0 |
| Artery, Inflammation, Chronic Active |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 3  | 1 | 3.0 |

**ENDOCRINE SYSTEM**

|                              |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |    |    |     |
|------------------------------|---|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|----|----|-----|
| Adrenal Cortex               | +   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 50 |    |     |
| Hyperplasia                  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 1  | 23 | 1.3 |
| Adrenal Medulla              | +   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 50 |    |     |
| Hyperplasia                  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 1  | 1  | 1.0 |
| Islets, Pancreatic           | +   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 50 |    |     |
| Parathyroid Gland            | M + M M + M M M M M + M + + M + M + + M + + M + + |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 28 |    |     |
| Pituitary Gland              | +   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 50 |    |     |
| Pars Distalis, Hyperplasia   |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 1  | 8  | 1.3 |
| Pars Intermedia, Hypertrophy |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 2  | 1  | 2.0 |
| Thyroid Gland                | +   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 50 |    |     |

**GENERAL BODY SYSTEM**

|            |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |   |  |
|------------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|---|---|--|
| Tissue NOS |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | + | 2 |  |
|------------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|---|---|--|

**GENITAL SYSTEM**

|            |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |    |  |  |
|------------|---|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|----|--|--|
| Epididymis | + |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 50 |  |  |
|------------|---|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|----|--|--|

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

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

Experiment Number: 20515 - 04  
 Test Type: CHRONIC  
 Route: RESPIRATORY EXPOSURE WHOLE BODY  
 Species/Strain: MICE/B6C3F1

**P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL**  
 Metal working fluids (CIMSTAR 3800)  
 CAS Number: CIMSTAR3800

Date Report Requested: 03/08/2013  
 Time Report Requested: 14:13:47  
 First Dose M/F: 05/05/08 / 05/05/08  
 Lab: BNW

| B6C3F1 MICE MALE<br>10 mg/m3  | DAY ON TEST | 0729  | 0628  | 0709  | 0703  | 0526  | 0711  | 0503  | 0705  | 0703  | 0509  | 0702  | 0702  | 0703  | 0703  | 0504  | 0703  | 0702  | 0622  | 0703  | 0607  | 0703  | 0509  | 0702  | * TOTALS       |
|---|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|----------------|
|   | ANIMAL ID   | 00226 | 00227 | 00228 | 00229 | 00230 | 00231 | 00232 | 00233 | 00234 | 00235 | 00236 | 00237 | 00238 | 00239 | 00240 | 00241 | 00242 | 00243 | 00244 | 00245 | 00246 | 00247 | 00248 |                |
| Inflammation, Chronic Active Spermatocele                                       |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | 1 3.0<br>1 2.0 |
| Preputial Gland Ectasia   |             | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | M     | +     | +     | +     | +     | +     | +     | +     | +     | +     | 49             |
| Inflammation, Chronic Active  |             |       |       |       |       | 3     |       |       |       |       |       |       |       |       |       | 2     |       |       |       |       |       | 2     |       |       | 4 2.3<br>4 2.3 |
| Prostate  |             | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | 49             |
| Seminal Vesicle   |             | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | 50             |
| Testes Nuclear Alteration, Focal Germinal Epithelium, Atrophy                   |             | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | 50             |
|   |             |       |       |       |       | 2     |       |       |       |       |       |       |       |       | 2     |       |       |       |       |       |       |       |       |       | 1 2.0<br>4 1.5 |
| <b>HEMATOPOIETIC SYSTEM</b>   |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                |
| Bone Marrow   |             | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | 50             |
| Lymph Node  |             |       | +     |       |       |       |       |       |       |       |       |       |       |       |       |       | +     |       |       |       |       |       |       |       | 3              |
| Lymph Node, Bronchial   |             | +     | +     | +     | M     | +     | M     | M     | +     | +     | M     | +     | +     | +     | +     | M     | M     | +     | M     | M     | M     | M     | M     | +     | 31             |
| Lymph Node, Mandibular Hyperplasia, Lymphoid Infiltration Cellular, Plasma Cell |             | +     | M     | M     | +     | M     | +     | +     | +     | +     | +     | +     | +     | +     | M     | +     | +     | M     | M     | M     | +     | +     | +     | +     | 36             |
|   |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | 2     |       |       | 2 2.0<br>1 2.0 |
| Lymph Node, Mediastinal   |             | +     | +     | +     | +     | +     | +     | +     | +     | +     | M     | +     | +     | M     | M     | M     | +     | M     | +     | +     | +     | M     | M     | +     | 39             |
| Lymph Node, Mesenteric Hemorrhage   |             | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | 50             |
|   |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | 1 2.0          |

\* .. Total animals with tissue examined microscopically; Total animals with lesion and mean severity grade  
 + .. Tissue examined microscopically  
 X .. Lesion present  
 I .. Insufficient tissue  
 M .. Missing tissue  
 A .. Autolysis precludes evaluation  
 BLANK .. Not examined microscopically  
 1-4 .. Lesion qualified as:  
 1) Minimal 3) Moderate  
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Experiment Number: 20515 - 04  
 Test Type: CHRONIC  
 Route: RESPIRATORY EXPOSURE WHOLE BODY  
 Species/Strain: MICE/B6C3F1

**P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL**  
 Metal working fluids (CIMSTAR 3800)  
 CAS Number: CIMSTAR3800

Date Report Requested: 03/08/2013  
 Time Report Requested: 14:13:47  
 First Dose M/F: 05/05/08 / 05/05/08  
 Lab: BNW

| B6C3F1 MICE MALE<br>10 mg/m3 | DAY ON TEST | 0729   | 0628   | 0709   | 0703   | 0526   | 0721   | 0529   | 0730   | 0536   | 0733   | 0733   | 0529   | 0722   | 0722   | 0334   | 0334   | 0507   | 0707   | 0603   | 0703   | 0509   | 0702   | * TOTALS |
|------------------------------|-------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|
|                              | ANIMAL ID   | 002226 | 002227 | 002228 | 002229 | 002230 | 002231 | 002232 | 002233 | 002234 | 002235 | 002236 | 002237 | 002238 | 002239 | 002240 | 002241 | 002242 | 002243 | 002244 | 002245 | 002246 | 002247 |          |

|                                  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |       |
|----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|-------|
| Spleen                           | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50    |
| Fibrosis                         |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | 3 |   | 1 3.0 |
| Hematopoietic Cell Proliferation |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | 1 2.0 |
| Lymphoid Follicle, Hyperplasia   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | 2 |   |   |   |   |   |   |   |   | 2 2.5 |
| Thymus                           | + | + | + | + | M | M | + | + | + | M | M | M | + | + | + | + | M | + | + | + | + | + | + | 38    |

**INTEGUMENTARY SYSTEM**

|                              |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |       |
|------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|-------|
| Mammary Gland                | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | 0     |
| Skin                         | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 49    |
| Inflammation, Chronic Active |   |   |   | 3 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | 1 | 2 |   | 4 2.3 |
| Ulcer                        |   |   |   |   |   |   |   |   | 2 |   |   |   |   |   |   |   |   | 4 |   |   |   | 3 |   | 4 3.0 |
| Sebaceous Gland, Hyperplasia |   |   |   |   |   |   | 2 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | 1 2.0 |

**MUSCULOSKELETAL SYSTEM**

|                                       |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |       |
|---------------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|-------|
| Bone                                  | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50    |
| Fibro-Osseous Lesion                  | 2 |   |   |   |   |   |   |   |   |   | 2 |   | 1 | 1 |   |   |   |   |   |   |   |   |   | 7 1.3 |
| Cranium, Fracture                     |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | 1 3.0 |
| Cranium, Inflammation, Chronic Active |   |   |   |   |   |   | 4 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | 2 3.5 |
| Joint, Vertebra, Fracture             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | 1 1.0 |
| Maxilla, Necrosis                     |   |   |   |   |   |   | 3 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | 1 3.0 |
| Skeletal Muscle                       |   |   |   |   |   |   |   |   |   |   |   |   |   | + |   |   |   |   |   |   |   | + |   | 3     |
| Infiltration Cellular, Lymphocyte     |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | 1 1.0 |

**NERVOUS SYSTEM**

|       |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |    |
|-------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|----|
| Brain | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
|-------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|----|

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

Experiment Number: 20515 - 04

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: MICE/B6C3F1

### P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 03/08/2013

Time Report Requested: 14:13:47

First Dose M/F: 05/05/08 / 05/05/08

Lab: BNW

| B6C3F1 MICE MALE<br>10 mg/m3 | DAY ON TEST |   | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |                 |   |
|------------------------------|-------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|-----------------|---|
|                              | 7           | 6 | 7 | 7 | 5 | 7 | 5 | 7 | 5 | 7 | 7 | 5 | 7 | 7 | 7 | 7 | 7 | 5 | 7 | 7 | 6 | 7 | 6 | 7 |                 | 5 |
|                              | 2           | 2 | 0 | 3 | 5 | 2 | 9 | 3 | 6 | 3 | 3 | 9 | 2 | 2 | 3 | 3 | 4 | 3 | 2 | 2 | 3 | 7 | 3 | 9 | 2               |   |
|                              | 9           | 8 | 9 | 0 | 6 | 7 | 1 | 0 | 5 | 0 | 1 | 6 | 9 | 9 | 0 | 0 | 7 | 0 | 9 | 0 | 0 | 7 | 0 | 8 | 9               |   |
|                              | ANIMAL ID   |   | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0               |   |
|                              | 0           | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |                 |   |
|                              | 2           | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |                 |   |
|                              | 2           | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 |                 |   |
|                              | 6           | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | <b>* TOTALS</b> |   |

Arteriole, Inflammation, Chronic Active 2 1 2.0  
 Venule, Infiltration Cellular, Lymphoid 1 1.0

Peripheral Nerve + 2

Spinal Cord + 3

### RESPIRATORY SYSTEM

Larynx + 50  
 Inflammation, Suppurative 1 1 1.0  
 Inflammation, Chronic Active 1 1.5  
 Metaplasia, Squamous 1 1 1 1 1 2 1 1 1 1 1 1 1 1 1 1 1 2 1 1 1 1 1 50 1.0  
 Necrosis 2 1 2.0

Lung + 50  
 Erythrophagocytosis 2 1 2.0  
 Infiltration Cellular, Histiocyte 1 1 1.6  
 Alveolar Epithelium, Hyperplasia 1 1 1.3  
 Bronchiole, Hyperplasia 1 2 1.1  
 Perivascular, Inflammation, Chronic Active 1 1 2.0

Nose + 50  
 Inflammation, Chronic Active 3 2 8 2.1  
 Necrosis 3 2 3.0  
 Olfactory Epithelium, Accumulation, Hyaline Droplet 2 1 1 1 2 1 2 2 1 1 2 1 2 2 2 2 1 1 2 31 1.5  
 Olfactory Epithelium, Metaplasia, Respiratory 2 3 1 1 15 1.3  
 Olfactory Epithelium, Necrosis 1 1.0  
 Respiratory Epithelium, Accumulation, Hyaline Droplet 1 2 1 1 1 2 1 2 2 1 2 1 1 2 2 1 1 2 36 1.4

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

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 1) Minimal 3) Moderate  
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Experiment Number: 20515 - 04

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: MICE/B6C3F1

P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 03/08/2013

Time Report Requested: 14:13:47

First Dose M/F: 05/05/08 / 05/05/08

Lab: BNW

| B6C3F1 MICE MALE<br>10 mg/m3   | DAY ON TEST | 0729   | 0628   | 0709   | 0703   | 0526   | 0721   | 0529   | 0730   | 0536   | 0701   | 0705   | 0527   | 0707   | 0707   | 0524   | 0702   | 0702   | 0622   | 0623   | 0703   | 0529   | 0708   | 0527   | 0709   | * TOTALS       |  |
|--|-------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------------|--|
|  | ANIMAL ID   | 002226 | 002227 | 002228 | 002229 | 002230 | 002231 | 002232 | 002233 | 002234 | 002235 | 002236 | 002237 | 002238 | 002239 | 002240 | 002241 | 002242 | 002243 | 002244 | 002245 | 002246 | 002247 | 002248 | 002249 |                |  |
| Respiratory Epithelium, Hyperplasia                                  |             | 2      | 2      |        | 1      | 2      | 2      | 1      | 1      |        | 1      | 1      |        | 1      | 2      | 1      | 1      |        | 1      | 2      | 1      | 1      | 1      | 1      | 1      | 44 1.5         |  |
| Respiratory Epithelium, Metaplasia, Squamous Turbinate, Degeneration |             |        |        | 3      |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        | 3 1.3<br>1 3.0 |  |
| Trachea  |             | +      | +      | +      | +      | +      | +      | +      | +      | +      | +      | +      | +      | +      | +      | +      | +      | +      | +      | +      | +      | +      | +      | +      | +      | 50             |  |
| <b>SPECIAL SENSES SYSTEM</b>   |             |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |                |  |
| Eye  |             | +      | +      | +      | +      | +      | +      | +      | +      | +      | +      | +      | +      | +      | +      | +      | +      | +      | +      | +      | +      | +      | +      | +      | +      | 50             |  |
| Cornea, Inflammation, Chronic Active                                 |             |        |        | 4      |        |        |        |        |        |        |        |        |        |        |        |        | 2      |        |        |        | 3      |        |        |        |        | 4 2.8          |  |
| Lens, Degeneration   |             |        |        | 3      |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        | 1 3.0          |  |
| Harderian Gland  |             | +      | +      | +      | +      | +      | +      | +      | +      | +      | +      | +      | +      | +      | +      | +      | +      | +      | +      | +      | +      | +      | +      | +      | +      | 50             |  |
| Cyst   |             |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        | 1 1.0          |  |
| Hyperplasia  |             |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        | 2      |        |        |        |        | 1 2.0          |  |
| <b>URINARY SYSTEM</b>  |             |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |                |  |
| Kidney   |             | +      | +      | +      | +      | +      | +      | +      | +      | +      | +      | +      | +      | +      | +      | +      | +      | +      | +      | +      | +      | +      | +      | +      | +      | 50             |  |
| Cyst   |             |        |        |        |        |        |        |        |        |        |        |        |        | X      |        |        |        |        |        |        |        |        |        |        |        | 2              |  |
| Infarct  |             |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        | 2      |        |        |        | 1 2.0          |  |
| Metaplasia, Osseous  |             |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        | 1      |        |        |        |        |        |        |        | 1 1.0          |  |
| Nephropathy  |             | 2      | 1      | 2      | 2      | 1      | 3      | 1      | 2      | 3      | 2      | 2      | 1      | 2      | 2      | 2      | 2      | 2      | 2      | 1      | 2      | 2      | 2      | 2      | 2      | 48 1.9         |  |
| Artery, Inflammation, Chronic Active                                 |             |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        | 2      |        |        | 3 2.3          |  |
| Capsule, Fibrosis  |             |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        | 1 1.0          |  |
| Capsule, Hemorrhage  |             |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        | 3      |        |        |        |        |        | 1 3.0          |  |
| Papilla, Necrosis  |             |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        | 1 2.0          |  |
| Pelvis, Inflammation, Suppurative                                    |             |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        |        | 1 2.0          |  |
| Urinary Bladder  |             | +      | +      | +      | +      | +      | +      | +      | +      | +      | +      | +      | +      | +      | +      | +      | +      | +      | +      | +      | +      | +      | +      | +      | +      | 50             |  |

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

+ .. Tissue examined microscopically

X .. Lesion present

I .. Insufficient tissue

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Experiment Number: 20515 - 04

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: MICE/B6C3F1

P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 03/08/2013

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First Dose M/F: 05/05/08 / 05/05/08

Lab: BNW

|                         |             |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                            |   |   |  |
|-------------------------|-------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|----------------------------|---|---|--|
| <b>B6C3F1 MICE MALE</b> | DAY ON TEST | 0729 | 0640 | 0730 | 0762 | 0773 | 0773 | 0773 | 0473 | 0773 | 0773 | 0773 | 0773 | 0773 | 0773 | 0773 | 0773 | 0673 | 0773 | 0773 | 0773 | 0673 | 0773 | <b>males<br/>(cont...)</b> |   |   |  |
|                         | ANIMAL ID   | 0040 | 0044 | 0044 | 0044 | 0044 | 0044 | 0044 | 0044 | 0044 | 0044 | 0044 | 0044 | 0044 | 0044 | 0044 | 0044 | 0044 | 0044 | 0044 | 0044 | 0044 | 0044 |                            |   |   |  |
| <b>30 mg/m3</b>         |             | 1    | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 0    | 1    | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 0    | 1    | 2    | 3                          | 4 | 5 |  |

ALIMENTARY SYSTEM

|  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|--|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Esophagus  | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Gallbladder  | + | + | + | M | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | M |
| Intestine Large, Cecum<br>Hemorrhage                     | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Intestine Large, Colon                                   | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Intestine Large, Rectum                                  | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Intestine Small, Duodenum                                | + | + | + | + | + | + | + | A | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Intestine Small, Ileum<br>Inflammation, Chronic Active   | + | + | + | + | + | + | + | A | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Intestine Small, Jejunum<br>Inflammation, Chronic Active | + | + | + | + | + | + | + | A | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Liver  | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Clear Cell Focus   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | X |   |   |   |   |   |   |   |   |   |   |
| Congestion   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Cyst   |   |   |   |   |   |   |   |   |   |   |   |   | 2 |   |   |   |   |   |   |   |   |   |   |   |   |
| Eosinophilic Focus                                       | X | X | X |   |   | X | X | X |   | X |   |   |   | X | X | X | X |   |   | X |   |   | X |   |   |
| Fatty Change   | 1 |   |   | 1 |   | 1 |   |   |   | 1 |   |   |   |   | 1 |   |   | 3 | 1 |   | 1 |   | 1 |   | 2 |
| Hepatodiaphragmatic Nodule                               |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | X |   |   |   |   |   |   |
| Hyperplasia  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Infiltration Cellular, Lymphocyte                        |   |   |   |   |   |   |   |   |   |   |   | 2 |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Mixed Cell Focus   | X |   |   | X |   |   |   | X |   |   |   |   |   |   |   |   |   | X |   |   |   |   |   | X |   |

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

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



Experiment Number: 20515 - 04  
 Test Type: CHRONIC  
 Route: RESPIRATORY EXPOSURE WHOLE BODY  
 Species/Strain: MICE/B6C3F1

P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL  
 Metal working fluids (CIMSTAR 3800)  
 CAS Number: CIMSTAR3800

Date Report Requested: 03/08/2013  
 Time Report Requested: 14:13:47  
 First Dose M/F: 05/05/08 / 05/05/08  
 Lab: BNW

|                         |             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|-------------------------|-------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| <b>B6C3F1 MICE MALE</b> | DAY ON TEST | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
|                         | ANIMAL ID   | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| <b>30 mg/m3</b>         |             | 7 | 6 | 7 | 7 | 6 | 7 | 7 | 7 | 4 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 6 | 7 | 7 | 7 | 7 | 7 | 6 | 7 | 7 | 7 | 6 | 7 | 7 | 7 | 7 |
|                         |             | 2 | 4 | 3 | 2 | 6 | 2 | 3 | 3 | 3 | 3 | 3 | 2 | 3 | 2 | 2 | 2 | 3 | 3 | 8 | 3 | 8 | 3 | 3 | 2 | 3 | 3 | 3 | 2 | 2 | 2 | 4 | 3 | 3 | 3 | 3 |
|                         |             | 9 | 0 | 0 | 9 | 3 | 9 | 1 | 0 | 8 | 0 | 0 | 9 | 0 | 9 | 9 | 9 | 1 | 0 | 3 | 0 | 9 | 0 | 9 | 1 | 9 | 0 | 9 | 0 | 9 | 0 | 9 | 0 | 9 | 0 | 9 |
|                         |             | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
|                         |             | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 |
|                         |             | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
|                         |             | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 |

males  
(cont...)

**ENDOCRINE SYSTEM**

|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Adrenal Cortex<br>Hyperplasia   | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |   |   |   |   |
|   | 2 |   | 1 | 2 |   | 1 |   |   |   | 4 | 1 |   |   |   | 1 | 1 |   |   |   | 1 | 1 |   |   |   |   | 2 | 1 | 1 |   |   |   |   |   |   |   | 2 |   |   |   |   |   |
| Adrenal Medulla   | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |   |   |   |   |
| Islets, Pancreatic  | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |   |   |   |   |
| Parathyroid Gland   | M | + | M | + | M | + | + | + | + | M | + | + | M | + | M | + | + | M | + | + | M | M | M | M | M | + |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Pituitary Gland<br>Pars Distalis, Hyperplasia                                 | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |   |   |   |   |
|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | 1 | 1 |   |   |
| Thyroid Gland<br>Inflammation, Chronic Active<br>Follicular Cell, Hyperplasia | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | M | + | + | + |
|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | 2 |   |

**GENERAL BODY SYSTEM**

NONE

**GENITAL SYSTEM**

|  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|--|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Epididymis   | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |   |
| Preputial Gland<br>Ectasia<br>Inflammation, Chronic Active | + | + | + | + | + | + | + | + | + | + | + | M | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 2 |
|  |   |   | 1 |   |   | 3 |   |   |   |   | 3 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|  |   |   |   | 3 |   | 3 |   |   |   |   | 1 |   |   |   |   |   |   | 4 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Prostate   | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |   |

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

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



Experiment Number: 20515 - 04

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: MICE/B6C3F1

P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 03/08/2013

Time Report Requested: 14:13:47

First Dose M/F: 05/05/08 / 05/05/08

Lab: BNW

| B6C3F1 MICE MALE<br>30 mg/m3  | DAY ON TEST | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
|---|-------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|   | ANIMAL ID   | 7 | 6 | 7 | 7 | 6 | 7 | 7 | 7 | 4 | 7 | 7 | 7 | 7 | 7 | 2 | 2 | 2 | 3 | 3 | 8 | 3 | 0 | 0 |
| Seminal Vesicle Dilatation  |             | 9 | 4 | 3 | 2 | 6 | 2 | 3 | 3 | 3 | 3 | 2 | 3 | 2 | 2 | 2 | 3 | 3 | 8 | 3 | 0 | 0 | 0 | 0 |
| Testes  |             | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| <b>HEMATOPOIETIC SYSTEM</b>   |             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Bone Marrow Hyperplasia   |             | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lymph Node  |             | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 |
| Lymph Node, Bronchial   |             | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lymph Node, Mandibular Hyperplasia, Lymphoid  |             | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 |
| Lymph Node, Mediastinal Hematopoietic Cell Proliferation Hyperplasia, Plasma Cell Infiltration Cellular, Mixed Cell |             | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lymph Node, Mesenteric Hemorrhage Hyperplasia, Plasma Cell Infiltration Cellular, Histiocyte                        |             | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Spleen Congestion Hematopoietic Cell Proliferation  |             | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 |   |

males (cont...)

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

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

Experiment Number: 20515 - 04  
 Test Type: CHRONIC  
 Route: RESPIRATORY EXPOSURE WHOLE BODY  
 Species/Strain: MICE/B6C3F1

**P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL**  
 Metal working fluids (CIMSTAR 3800)  
**CAS Number: CIMSTAR3800**

Date Report Requested: 03/08/2013  
 Time Report Requested: 14:13:47  
 First Dose M/F: 05/05/08 / 05/05/08  
 Lab: BNW

| <b>B6C3F1 MICE MALE</b><br><br><b>30 mg/m3</b>                   | DAY ON TEST | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | ANIMAL ID |   |   |   |   |                        |   |
|--|-------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|-----------|---|---|---|---|------------------------|---|
|  |             | 7 | 6 | 7 | 7 | 6 | 7 | 7 | 7 | 4 | 7 | 7 | 7 | 7 | 7 | 7 | 2 | 2 | 2 | 3 | 3 | 8 | 3 | 2 |           |   | 3 | 7 | 7 | 6                      | 7 |
|  |             | 2 | 4 | 3 | 2 | 6 | 2 | 3 | 3 | 3 | 3 | 2 | 3 | 2 | 2 | 2 | 3 | 3 | 8 | 3 | 2 | 3 | 2 | 3 | 2         | 4 | 4 | 3 |   |                        |   |
|  |             | 9 | 0 | 0 | 9 | 3 | 9 | 1 | 0 | 0 | 0 | 9 | 0 | 9 | 9 | 9 | 1 | 0 | 3 | 0 | 9 | 1 | 9 | 1 | 9         | 0 | 0 | 0 | 1 |                        |   |
|  |             | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0         | 0 | 0 | 0 | 0 |                        |   |
|  |             | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4         | 4 | 4 | 4 | 4 |                        |   |
|  |             | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2         | 2 | 2 | 2 | 2 |                        |   |
|  |             | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4         | 5 |   |   |   | <b>males (cont...)</b> |   |
| Lymphoid Follicle, Hyperplasia                                   |             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |           |   |   |   |   | 3                      |   |
| Thymus Atrophy   |             | + | M | + | + | + | + | M | M | + | M | + | + | + | + | + | + | + | + | + | + | + | M | M | +         | + | + |   |   |                        |   |
| <b>INTEGUMENTARY SYSTEM</b>                                      |             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |           |   |   |   |   |                        |   |
| Mammary Gland  |             | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M         | M | M | M |   |                        |   |
| Skin Angiectasis Inflammation, Chronic Active Ulcer              |             | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | +         | + | + | + |   |                        |   |
|  |             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |           |   |   |   |   | 3                      |   |
|  |             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |           |   |   |   |   | 4                      |   |
| <b>MUSCULOSKELETAL SYSTEM</b>                                    |             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |           |   |   |   |   |                        |   |
| Bone Fibro-Osseous Lesion Cranium, Inflammation, Chronic Active  |             | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | +         | + | + | + |   |                        |   |
|  |             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |           |   |   |   |   |                        | 1 |
|  |             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |           |   |   |   |   |                        | 2 |
|  |             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |           |   |   |   |   |                        | 2 |
|  |             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |           |   |   |   |   |                        | 1 |
|  |             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |           |   |   |   |   |                        | 3 |
| Skeletal Muscle  |             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |           |   |   |   |   |                        |   |
|  |             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |           |   |   |   |   |                        |   |
| <b>NERVOUS SYSTEM</b>  |             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |           |   |   |   |   |                        |   |
| Brain Inflammation, Suppurative Thrombosis Ventricle, Dilatation |             | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | +         | + | + | + | + |                        |   |
|  |             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |           |   |   |   |   |                        |   |
|  |             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |           |   |   |   |   |                        |   |
|  |             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |           |   |   |   |   |                        |   |
| Peripheral Nerve   |             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |           |   |   |   |   |                        |   |

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

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

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

Experiment Number: 20515 - 04

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: MICE/B6C3F1

P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 03/08/2013

Time Report Requested: 14:13:47

First Dose M/F: 05/05/08 / 05/05/08

Lab: BNW

|                         |             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |                        |   |   |
|-------------------------|-------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|------------------------|---|---|
| <b>B6C3F1 MICE MALE</b> | DAY ON TEST | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0                      | 0 | 0 |
|                         |             | 7 | 6 | 7 | 7 | 6 | 7 | 7 | 7 | 4 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 6 | 7 | 7 | 7                      | 6 | 7 |
|                         |             | 2 | 4 | 3 | 2 | 6 | 2 | 3 | 3 | 3 | 3 | 2 | 3 | 2 | 2 | 2 | 3 | 3 | 8 | 3 | 2 | 3                      | 2 | 3 |
| <b>30 mg/m3</b>         | ANIMAL ID   | 9 | 0 | 0 | 9 | 3 | 9 | 1 | 0 | 8 | 0 | 0 | 9 | 0 | 9 | 9 | 1 | 0 | 3 | 0 | 9 | 1                      | 9 | 0 |
|                         |             | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0                      | 0 | 0 |
|                         |             | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0                      | 0 | 0 |
|                         |             | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4                      | 4 |   |
|                         |             | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2                      | 2 |   |
|                         |             | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1                      | 2 |   |
|                         |             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | <b>males (cont...)</b> |   |   |

Spinal Cord +

**RESPIRATORY SYSTEM**

|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Larynx  | + | + | + | + | + | + | + | I | + | + | + | + | + | + | + | + | + | + | + | + | + | + |   |   |   |
| Hyperplasia   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Inflammation, Chronic Active                          |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Metaplasia, Squamous                                  | 2 | 2 | 2 | 2 | 2 | 2 | 2 |   | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |   |   |   |
| Necrosis  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Lung  | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |   |   |   |
| Congestion  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Hemorrhage  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Infiltration Cellular, Histiocyte                     |   |   |   |   |   |   |   |   |   |   |   |   | 1 |   |   |   |   |   |   |   |   |   |   |   |   |
| Inflammation, Acute                                   |   | 3 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Alveolar Epithelium, Hyperplasia                      |   |   |   |   |   |   |   | 1 |   | 2 |   |   |   |   |   | 4 |   | 2 |   |   |   | 4 |   |   |   |
| Bronchiole, Hyperplasia                               |   |   | 1 | 1 |   | 1 | 1 | 1 |   | 1 | 1 | 1 | 2 | 1 | 1 |   | 1 | 1 | 1 |   | 1 | 1 |   |   |   |
| Interstitial, Inflammation, Chronic Active            |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Perivascular, Inflammation, Chronic Active            |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | 3 |   |   |   |
| Nose  | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |   |   |   |
| Inflammation, Chronic Active                          |   |   |   |   |   |   |   | 1 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Olfactory Epithelium, Accumulation, Hyaline Droplet   | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 2 | 2 | 2 |   | 2 | 1 |   | 2 | 2 |   | 1 | 2 | 1 | 1 | 3 |   |
| Olfactory Epithelium, Metaplasia, Respiratory         | 1 |   |   | 1 | 1 | 1 | 2 |   |   | 1 |   |   | 1 | 1 |   |   | 2 | 1 |   |   |   | 1 | 1 | 1 |   |
| Respiratory Epithelium, Accumulation, Hyaline Droplet | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 2 | 2 | 2 | 1 | 2 | 1 | 1 | 2 | 2 | 2 | 2 | 1 | 2 | 1 | 1 | 3 |
| Respiratory Epithelium, Hyperplasia                   |   |   | 1 | 1 | 1 | 2 | 1 | 2 | 2 |   | 2 |   |   | 2 | 2 | 1 | 2 |   |   | 2 | 2 | 2 | 2 | 1 |   |
| Trachea   | + | + | + | + | + | + | + | + | + | + | + | + | + | + | I | + | + | + | + | + | I | + | + | + |   |

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

+ .. Tissue examined microscopically

X .. Lesion present

I .. Insufficient tissue

M .. Missing tissue

A .. Autolysis precludes evaluation

BLANK .. Not examined microscopically

1-4 .. Lesion qualified as:

1) Minimal 3) Moderate

2) Mild 4) Marked

Experiment Number: 20515 - 04  
 Test Type: CHRONIC  
 Route: RESPIRATORY EXPOSURE WHOLE BODY  
 Species/Strain: MICE/B6C3F1

**P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL**  
 Metal working fluids (CIMSTAR 3800)  
 CAS Number: CIMSTAR3800

Date Report Requested: 03/08/2013  
 Time Report Requested: 14:13:47  
 First Dose M/F: 05/05/08 / 05/05/08  
 Lab: BNW

| B6C3F1 MICE MALE<br>30 mg/m3 | DAY ON TEST | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | ANIMAL ID | males<br>(cont...) |   |   |   |
|------------------------------|-------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|-----------|--------------------|---|---|---|
|                              | 7           | 6 | 7 | 7 | 6 | 7 | 7 | 7 | 4 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 6 | 7 | 7 | 7 | 6 | 7 | 7 | 6 |           |                    | 7 |   |   |
|                              | 2           | 4 | 3 | 2 | 6 | 2 | 3 | 3 | 3 | 3 | 2 | 3 | 2 | 2 | 2 | 3 | 3 | 8 | 3 | 2 | 3 | 2 | 4 | 3 | 4 | 3         | 0                  | 0 |   |   |
|                              | 9           | 0 | 0 | 9 | 3 | 9 | 1 | 0 | 8 | 0 | 9 | 0 | 9 | 9 | 9 | 1 | 0 | 3 | 0 | 9 | 9 | 1 | 9 | 2 | 0 | 1         | 0                  | 0 | 0 | 0 |
|                              | 4           | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4         | 4                  | 0 | 0 | 0 |
|                              | 0           | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2         | 2                  | 0 | 0 | 0 |
|                              | 1           | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | 6         | 7                  | 0 | 0 | 0 |

**SPECIAL SENSES SYSTEM**

|                                      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|--------------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Eye                                  | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Cornea, Inflammation, Chronic Active |   |   |   |   |   | 2 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Harderian Gland                      | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Hyperplasia                          |   |   |   |   | 2 |   |   |   |   |   |   |   |   |   |   |   |   | 2 |   |   |   |   |   |   |   |   |   |

**URINARY SYSTEM**

|                           |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|---------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Kidney                    | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Cyst                      |   |   | X | X |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Infarct                   |   |   |   |   |   |   |   |   |   |   |   | 2 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Inflammation, Suppurative |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | 4 |   |   |
| Nephropathy               | 2 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 2 | 2 | 2 | 3 | 2 | 2 | 2 | 2 | 1 | 3 | 2 | 2 | 3 | 2 | 2 | 2 | 2 |   |
| Urinary Bladder           | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |

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

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

|                         |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |       |       |       |
|-------------------------|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-----------------|-------|-------|-------|
| <b>B6C3F1 MICE MALE</b> | DAY ON TEST | 0730  | 0731  | 0731  | 0731  | 0731  | 0731  | 0731  | 0731  | 0731  | 0731  | 0731  | 0731  | 0731  | 0731  | 0731  | 0731  | 0731  | 0731  | 0731  | 0731  | 0731  | 0731  | <b>* TOTALS</b> |       |       |       |
| <b>30 mg/m3</b>         | ANIMAL ID   | 00426 | 00427 | 00428 | 00429 | 00430 | 00431 | 00432 | 00433 | 00434 | 00435 | 00436 | 00437 | 00438 | 00439 | 00440 | 00441 | 00442 | 00443 | 00444 | 00445 | 00446 | 00447 |                 | 00448 | 00449 | 00450 |
|                         |             | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     |                 | 0     | 0     | 0     |

**ALIMENTARY SYSTEM**

|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |               |              |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---------------|--------------|
| Esophagus   | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | <b>50</b>     |              |
| Gallbladder   | + | + | + | + | + | + | + | + | + | + | + | M | + | + | + | + | + | + | M | + | + | M | M | + | + | <b>44</b>     |              |
| Intestine Large, Cecum Hemorrhage                     | + | + | A | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | <b>49</b>     | <b>1 3.0</b> |
| Intestine Large, Colon                                | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | <b>50</b>     |              |
| Intestine Large, Rectum                               | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | <b>50</b>     |              |
| Intestine Small, Duodenum                             | + | + | A | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | <b>48</b>     |              |
| Intestine Small, Ileum Inflammation, Chronic Active   | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | <b>49</b>     | <b>2 3.0</b> |
| Intestine Small, Jejunum Inflammation, Chronic Active | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | <b>49</b>     | <b>1 3.0</b> |
| Liver   | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | <b>50</b>     |              |
| Clear Cell Focus                                      |   |   |   |   |   |   |   |   |   |   |   | X |   |   |   |   |   |   |   |   |   |   |   |   |   | <b>3</b>      |              |
| Congestion  |   |   |   |   |   |   |   |   |   |   | 1 |   |   |   |   |   |   |   |   |   |   |   |   |   |   | <b>1 1.0</b>  |              |
| Cyst  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | <b>1 2.0</b>  |              |
| Eosinophilic Focus                                    |   |   |   | X |   | X |   | X |   |   |   |   |   | X |   |   |   | X |   | X |   | X |   |   |   | <b>20</b>     |              |
| Fatty Change  | 2 |   | 2 |   |   | 2 |   | 1 | 1 | 2 | 1 |   | 2 |   | 2 |   | 1 | 2 |   | 2 | 2 |   | 1 |   |   | <b>24 1.5</b> |              |
| Hepatodiaphragmatic Nodule                            |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | <b>1</b>      |              |
| Hyperplasia   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | 2 |   |   |   |   | <b>1 2.0</b>  |              |
| Infiltration Cellular, Lymphocyte                     |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | <b>1 2.0</b>  |              |
| Mixed Cell Focus                                      |   |   | X |   |   | X | X |   | X |   |   |   |   |   |   |   |   | X |   |   |   |   |   | X |   | <b>11</b>     |              |

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

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

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

| B6C3F1 MICE MALE<br>30 mg/m3 | DAY ON TEST |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |          |
|------------------------------|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|----------|
|                              | 0730        | 0731  | 0732  | 0733  | 0734  | 0735  | 0736  | 0737  | 0738  | 0739  | 0740  | 0741  | 0742  | 0743  | 0744  | 0745  | 0746  | 0747  | 0748  | 0749  | 0750  |       |          |
| ANIMAL ID                    | 00426       | 00427 | 00428 | 00429 | 00430 | 00431 | 00432 | 00433 | 00434 | 00435 | 00436 | 00437 | 00438 | 00439 | 00440 | 00441 | 00442 | 00443 | 00444 | 00445 | 00446 | 00447 |          |
|                              | 6           | 7     | 8     | 9     | 0     | 1     | 2     | 3     | 4     | 5     | 6     | 7     | 8     | 9     | 0     | 1     | 2     | 3     | 4     | 5     | 6     | 7     | * TOTALS |

Necrosis 2 3 2 2 2 6 2.3  
Tension Lipidosis 2 5 1.3

Mesentery 3  
Inflammation, Chronic Active 1 3.0  
Fat, Necrosis 2 1.5

Pancreas + 50

Salivary Glands + 50

Stomach, Forestomach + 50  
Hyperplasia, Squamous 4 1 4.0  
Inflammation, Chronic Active 2 1 2.0  
Ulcer 1 2.0

Stomach, Glandular + 50  
Glands, Mineralization 1 2 1.0

Tooth + 49  
Dysplasia 2 2 2 1 2 2 1 1 1 1 3 3 1 1 1 2 1 1 2 1 41 1.6  
Inflammation, Chronic Active 2 2 6 2.2

**CARDIOVASCULAR SYSTEM**

Blood Vessel + + + + + M M + + + + + + + + + + + + + + + + 48

Heart + 50  
Cardiomyopathy  
Inflammation, Suppurative 3 1 3.0  
Valve, Fibrosis 1 1 1.0

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



Experiment Number: 20515 - 04

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: MICE/B6C3F1

P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 03/08/2013

Time Report Requested: 14:13:47

First Dose M/F: 05/05/08 / 05/05/08

Lab: BNW

| B6C3F1 MICE MALE<br>30 mg/m3 | DAY ON TEST | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | * TOTALS |
|------------------------------|-------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|----------|
|                              | ANIMAL ID   | 7 | 7 | 5 | 7 | 7 | 7 | 7 | 7 | 6 | 4 | 5 | 5 | 6 | 7 | 5 | 7 | 7 | 7 | 6 | 7 | 7 | 6 | 7 | 7 | 7 |          |
|                              |             | 3 | 3 | 7 | 3 | 3 | 3 | 1 | 3 | 2 | 4 | 4 | 3 | 3 | 9 | 3 | 8 | 3 | 3 | 3 | 3 | 2 | 2 | 3 | 3 | 2 |          |
|                              |             | 0 | 1 | 3 | 1 | 1 | 0 | 5 | 1 | 9 | 5 | 7 | 4 | 4 | 8 | 0 | 1 | 0 | 0 | 0 | 0 | 9 | 9 | 6 | 0 | 1 |          |
|                              |             | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |          |
|                              |             | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 |          |
|                              |             | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 5 |          |
|                              |             | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 |          |

|                            |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |    |   |     |
|----------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|----|---|-----|
| Seminal Vesicle Dilatation | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | 1 | 2.0 |
| Testes                     | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |   |     |

HEMATOPOIETIC SYSTEM

|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |    |    |     |     |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|----|----|-----|-----|
| Bone Marrow Hyperplasia   | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | 1  | 3.0 |     |
| Lymph Node  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | 1  |    |     |     |
| Lymph Node, Bronchial   | + | M | + | + | M | + | M | M | + | M | + | M | + | M | M | + | + | + | M | M | + | + | + | M | + | 26 |    |     |     |
| Lymph Node, Mandibular Hyperplasia, Lymphoid  | + | + | + | + | M | + | M | + | M | M | + | + | M | M | + | + | + | + | M | + | + | + | + | + | + | 34 | 1  | 2.0 |     |
| Lymph Node, Mediastinal Hematopoietic Cell Proliferation Hyperplasia, Plasma Cell Infiltration Cellular, Mixed Cell | + | + | M | + | + | + | + | + | M | + | M | M | + | M | + | M | M | + | + | + | + | + | + | + | M | +  | 32 | 1   | 2.0 |
|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |    | 1  | 2.0 |     |
|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |    | 1  | 2.0 |     |
| Lymph Node, Mesenteric Hemorrhage Hyperplasia, Plasma Cell Infiltration Cellular, Histiocyte                        | + | + | + | + | + | + | + | + | + | M | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 48 | 1  | 4.0 |     |
|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |    | 4  |     |     |
|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |    | 3  |     |     |
| Spleen Congestion Hematopoietic Cell Proliferation  | + | + | + | + | + | + | + | + | + | A | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 49 | 1  | 2.0 |     |
|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |    | 2  |     |     |
|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |    | 3  | 2.0 |     |

\* .. Total animals with tissue examined microscopically; Total animals with lesion and mean severity grade  
 + .. Tissue examined microscopically  
 X .. Lesion present  
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 M .. Missing tissue  
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Experiment Number: 20515 - 04

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: MICE/B6C3F1

P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 03/08/2013

Time Report Requested: 14:13:47

First Dose M/F: 05/05/08 / 05/05/08

Lab: BNW

| B6C3F1 MICE MALE<br>30 mg/m3 | DAY ON TEST | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | ANIMAL ID | * TOTALS |   |   |
|------------------------------|-------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|-----------|----------|---|---|
|                              | 7           | 7 | 5 | 7 | 7 | 7 | 7 | 7 | 7 | 6 | 4 | 5 | 5 | 6 | 7 | 5 | 7 | 7 | 7 | 3 | 3 | 2 | 2 | 6 | 7 |           |          | 7 | 7 |
|                              | 3           | 3 | 7 | 3 | 3 | 3 | 1 | 3 | 2 | 4 | 4 | 3 | 3 | 9 | 3 | 8 | 3 | 3 | 3 | 3 | 2 | 9 | 9 | 6 | 3 | 3         | 2        |   |   |
|                              | 0           | 1 | 3 | 1 | 1 | 0 | 5 | 1 | 9 | 5 | 7 | 4 | 4 | 8 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0         | 0        |   |   |

Lymphoid Follicle, Hyperplasia 1 3.0

Thymus Atrophy + + + + + M + + + + + M M M + + + + + M + + + 39 1 1.0

INTEGUMENTARY SYSTEM

Mammary Gland M M M M M M M M M M M M M + M M M M M M M M M M M M M 1

Skin Angiectasis Inflammation, Chronic Active Ulcer + 50 1 2.0 1 3.0 2 3.5

MUSCULOSKELETAL SYSTEM

Bone Fibro-Osseous Lesion Cranium, Inflammation, Chronic Active + 50 10 1.3 3 3.0

Skeletal Muscle + 2

NERVOUS SYSTEM

Brain Inflammation, Suppurative Thrombosis Ventricle, Dilatation + 50 1 2.0 1 2.0 1 3.0

Peripheral Nerve 1

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

Experiment Number: 20515 - 04

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: MICE/B6C3F1

P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 03/08/2013

Time Report Requested: 14:13:47

First Dose M/F: 05/05/08 / 05/05/08

Lab: BNW

Table with columns for B6C3F1 MICE MALE, 30 mg/m3, DAY ON TEST, ANIMAL ID, and \* TOTALS. It contains a grid of numerical data representing test results for 24 individual mice.

Spinal Cord 1

RESPIRATORY SYSTEM

Table showing respiratory system findings for 24 mice. Categories include Larynx, Lung, Nose, and Trachea, with sub-conditions like Hyperplasia, Inflammation, and Metaplasia. Includes counts and severity grades (e.g., 49 2.0).

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

+ .. Tissue examined microscopically

X .. Lesion present

I .. Insufficient tissue

M .. Missing tissue

A .. Autolysis precludes evaluation

BLANK .. Not examined microscopically

1-4 .. Lesion qualified as:

1) Minimal 3) Moderate

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Experiment Number: 20515 - 04

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P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL

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Lab: BNW

|                         |             |                 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|-------------------------|-------------|-----------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| <b>B6C3F1 MICE MALE</b> | DAY ON TEST | 0               | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |   |
|                         |             | 7               | 7 | 5 | 7 | 7 | 7 | 7 | 7 | 6 | 4 | 5 | 5 | 6 | 7 | 5 | 7 | 7 | 7 | 7 | 6 | 7 | 7 | 7 | 6 | 7 | 7 | 7 |
|                         |             | 3               | 3 | 7 | 3 | 3 | 3 | 1 | 3 | 2 | 4 | 4 | 3 | 3 | 9 | 3 | 8 | 3 | 3 | 3 | 2 | 2 | 3 | 3 | 3 | 3 | 3 | 2 |
| <b>30 mg/m3</b>         | ANIMAL ID   | 0               | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
|                         |             | 4               | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 |
|                         |             | 2               | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 5 | 2 |
|                         |             | 6               | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 0 | 0 |
|                         |             | <b>* TOTALS</b> |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |

**SPECIAL SENSES SYSTEM**

|                                      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |    |     |
|--------------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|----|-----|
| Eye                                  | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |     |
| Cornea, Inflammation, Chronic Active |   |   |   |   |   |   | 3 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | 2  | 2.5 |
| Harderian Gland                      | + | + | + | + | + | M | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 49 |     |
| Hyperplasia                          |   |   | 3 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | 3  | 2.3 |

**URINARY SYSTEM**

|                           |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |    |     |
|---------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|----|-----|
| Kidney                    | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |     |
| Cyst                      |   | X |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | 3  |     |
| Infarct                   |   |   |   | 2 |   |   |   |   |   |   | 3 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | 4  | 2.5 |
| Inflammation, Suppurative |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | 1  | 4.0 |
| Nephropathy               | 2 | 2 |   | 2 | 2 | 2 | 2 | 2 | 2 | 1 |   |   |   | 2 | 2 |   |   |   |   | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 45 | 2.0 |
| Urinary Bladder           | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |     |

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

Experiment Number: 20515 - 04

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: MICE/B6C3F1

**P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL**

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 03/08/2013

Time Report Requested: 14:13:47

First Dose M/F: 05/05/08 / 05/05/08

Lab: BNW

|                         |             |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                            |
|-------------------------|-------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|----------------------------|
| <b>B6C3F1 MICE MALE</b> | DAY ON TEST | 0729 | 0687 | 0729 | 0730 | 0731 | 0729 | 0730 | 0731 | 0732 | 0733 | 0734 | 0735 | 0736 | 0737 | 0738 | 0739 | 0740 | 0741 | 0742 | 0743 | 0744 | 0745 | 0746 | 0747 | 0748 | 0749 | <b>males<br/>(cont...)</b> |
|                         | ANIMAL ID   | 0060 | 0066 | 0066 | 0066 | 0066 | 0066 | 0066 | 0066 | 0066 | 0066 | 0066 | 0066 | 0066 | 0066 | 0066 | 0066 | 0066 | 0066 | 0066 | 0066 | 0066 | 0066 | 0066 | 0066 | 0066 | 0066 |                            |

**ALIMENTARY SYSTEM**

|                                     |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|-------------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Esophagus                           | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Gallbladder                         | M | + | + | + | + | + | + | + | + | + | + | + | + | M | + | + | + | + | + | M | + | + | + | + | + | + | + | + |
| Cytoplasmic Alteration              |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Inflammation, Suppurative           |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | 1 |   |   |   |   |   |
| Intestine Large, Cecum              | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Intestine Large, Colon              | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Intestine Large, Rectum             | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Intestine Small, Duodenum           | + | + | + | + | + | + | A | + | + | + | + | A | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |   |
| Intestine Small, Ileum              | + | + | + | + | + | + | A | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Hyperplasia, Lymphoid               |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Inflammation, Chronic Active        |   |   |   |   |   |   | 2 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Intestine Small, Jejunum            | + | + | + | + | + | + | + | + | + | + | + | A | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Serosa, Inflammation, Granulomatous |   |   |   |   |   |   | 1 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Liver                               | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Basophilic Focus                    |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Clear Cell Focus                    | X |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Eosinophilic Focus                  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Fatty Change                        | 1 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Inflammation, Chronic Active        |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Mixed Cell Focus                    |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Necrosis                            |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |

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

+ .. Tissue examined microscopically

X .. Lesion present

I .. Insufficient tissue

M .. Missing tissue

A .. Autolysis precludes evaluation

BLANK .. Not examined microscopically

1-4 .. Lesion qualified as:

1) Minimal 3) Moderate

2) Mild 4) Marked



Experiment Number: 20515 - 04  
 Test Type: CHRONIC  
 Route: RESPIRATORY EXPOSURE WHOLE BODY  
 Species/Strain: MICE/B6C3F1

**P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL**  
 Metal working fluids (CIMSTAR 3800)  
 CAS Number: CIMSTAR3800

Date Report Requested: 03/08/2013  
 Time Report Requested: 14:13:47  
 First Dose M/F: 05/05/08 / 05/05/08  
 Lab: BNW

|                         |             |                  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|-------------------------|-------------|------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| <b>B6C3F1 MICE MALE</b> | DAY ON TEST | 0                | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
|                         |             | 7                | 6 | 7 | 7 | 7 | 7 | 6 | 7 | 7 | 7 | 6 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 |
|                         |             | 2                | 8 | 2 | 3 | 3 | 2 | 2 | 2 | 3 | 3 | 2 | 0 | 3 | 3 | 2 | 3 | 2 | 3 | 2 | 2 | 2 | 3 | 3 | 3 | 2 | 2 | 3 | 2 | 2 | 3 | 1 |
| <b>100 mg/m3</b>        | ANIMAL ID   | 0                | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
|                         |             | 0                | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
|                         |             | 6                | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 |
|                         |             | 0                | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 5 |   |
|                         |             | <b>males</b>     |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|                         |             | <b>(cont...)</b> |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |

Artery, Inflammation, Chronic Active

1

**ENDOCRINE SYSTEM**

Adrenal Cortex  
Hyperplasia

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

Adrenal Medulla  
Hyperplasia

+ + + + + + + + 1 + + + + + + + + + + + + + + + + +

Islets, Pancreatic

+ +

Parathyroid Gland

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

Pituitary Gland

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

Angiectasis  
Pars Distalis, Cyst  
Pars Distalis, Hyperplasia

1 1 1

Thyroid Gland  
Follicular Cell, Hyperplasia

+ +

**GENERAL BODY SYSTEM**

Tissue NOS

+

**GENITAL SYSTEM**

Epididymis  
Inflammation, Chronic Active

+  
 2

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

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

| B6C3F1 MICE MALE | DAY ON TEST | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0                  |
|------------------|-------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|--------------------|
| 100 mg/m3        | ANIMAL ID   | 7 | 6 | 7 | 7 | 7 | 7 | 6 | 7 | 7 | 7 | 7 | 6 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7                  |
|                  |             | 2 | 8 | 2 | 3 | 3 | 2 | 2 | 2 | 3 | 3 | 2 | 0 | 3 | 3 | 2 | 3 | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 2 | 3                  |
|                  |             | 9 | 7 | 9 | 0 | 1 | 9 | 3 | 9 | 0 | 1 | 9 | 7 | 1 | 0 | 9 | 0 | 9 | 9 | 9 | 9 | 0 | 0 | 1 | 9 | 1                  |
|                  |             | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0                  |
|                  |             | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6                  |
|                  |             | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 2                  |
|                  |             | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5                  |
|                  |             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | males<br>(cont...) |

|                              |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Penis                        |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Congestion                   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Preputial Gland              | M | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |   |
| Ectasia                      |   |   | 2 | 2 | 3 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | 3 |
| Inflammation, Chronic Active |   |   |   |   |   |   |   |   |   |   |   | 1 |   |   |   |   | 3 |   |   |   |   |   |   |   |   |   |
| Prostate                     | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Seminal Vesicle              | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Dilatation                   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Testes                       | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Angiectasis                  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Germinal Epithelium, Atrophy |   |   |   |   |   |   |   |   |   |   |   | 1 |   |   |   |   |   |   |   |   |   |   |   |   |   | 3 |

HEMATOPOIETIC SYSTEM

|  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|--|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Bone Marrow                                | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Hyperplasia, Granulocytes                  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Lymph Node                                 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Lumbar, Inflammation, Pyogranulomatous     |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Pancreatic, Inflammation, Pyogranulomatous |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Renal, Inflammation, Pyogranulomatous      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Lymph Node, Bronchial                      | M | M | M | M | M | + | M | M | + | M | + | + | M | M | M | + | + | M | M | + | + | M | M | + | + |   |
| Lymph Node, Mandibular                     | + | M | + | + | + | + | M | + | + | + | + | + | M | + | M | + | + | M | + | + | + | M | M | + | + | M |
| Inflammation, Pyogranulomatous             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |

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

**Experiment Number:** 20515 - 04  
**Test Type:** CHRONIC  
**Route:** RESPIRATORY EXPOSURE WHOLE BODY  
**Species/Strain:** MICE/B6C3F1

**P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL**  
 Metal working fluids (CIMSTAR 3800)  
**CAS Number:** CIMSTAR3800

**Date Report Requested:** 03/08/2013  
**Time Report Requested:** 14:13:47  
**First Dose M/F:** 05/05/08 / 05/05/08  
**Lab:** BNW

| <b>B6C3F1 MICE MALE</b>  | DAY ON TEST |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |   |                    |
|--|-------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|---|--------------------|
|  | 0729        | 0687 | 0723 | 0733 | 0779 | 0673 | 0772 | 0773 | 0773 | 0773 | 0773 | 0677 | 0773 | 0773 | 0773 | 0773 | 0773 | 0773 | 0773 | 0773 | 0773 | 0773 | 0773 |   |                    |
| <b>100 mg/m3</b>   | ANIMAL ID   |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |   | males<br>(cont...) |
|  | 0060        | 0066 | 0066 | 0066 | 0066 | 0066 | 0066 | 0066 | 0066 | 0066 | 0066 | 0066 | 0066 | 0066 | 0066 | 0066 | 0066 | 0066 | 0066 | 0066 | 0066 | 0066 | 0066 |   |                    |
| Lymph Node, Mediastinal Inflammation, Pyogranulomatous                 | +           | +    | M    | +    | M    | +    | M    | +    | +    | +    | +    | M    | +    | +    | M    | +    | +    | +    | +    | M    | +    | M    | +    | + | M                  |
| Lymph Node, Mesenteric Inflammation, Pyogranulomatous                  | +           | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | + | +                  |
| Spleen Hematopoietic Cell Proliferation Lymphoid Follicle, Hyperplasia | +           | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | + | 4                  |
| Thymus Atrophy   | +           | M    | +    | +    | +    | +    | +    | M    | M    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | + |                    |
| <b>INTEGUMENTARY SYSTEM</b>  |             |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |   |                    |
| Mammary Gland  | M           | M    | M    | M    | M    | M    | M    | M    | M    | M    | M    | M    | M    | M    | M    | M    | M    | M    | M    | M    | M    | M    | M    | M |                    |
| Skin Abscess Inflammation, Chronic Active Epidermis, Hyperplasia       | +           | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | 3 |                    |
|  | 3           |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 3 |                    |
|  |             |      |      |      |      |      |      |      |      |      |      |      |      |      | 1    |      |      |      |      |      |      |      |      |   |                    |
| <b>MUSCULOSKELETAL SYSTEM</b>  |             |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |   |                    |
| Bone Fibro-Osseous Lesion Cranium, Inflammation, Chronic Active        | +           | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | + |                    |
|  |             |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |   |                    |
|  |             |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |   |                    |
|  | 2           |      | 3    |      |      | 3    |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 3 |                    |
| Skeletal Muscle Infiltration Cellular, Mixed Cell                      |             |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |   |                    |
|  |             |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |   |                    |
|  |             |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |   |                    |
|  |             |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |   |                    |

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



Experiment Number: 20515 - 04  
 Test Type: CHRONIC  
 Route: RESPIRATORY EXPOSURE WHOLE BODY  
 Species/Strain: MICE/B6C3F1

P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL  
 Metal working fluids (CIMSTAR 3800)  
 CAS Number: CIMSTAR3800

Date Report Requested: 03/08/2013  
 Time Report Requested: 14:13:47  
 First Dose M/F: 05/05/08 / 05/05/08  
 Lab: BNW

|                         |             |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                            |
|-------------------------|-------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|----------------------------|
| <b>B6C3F1 MICE MALE</b> | DAY ON TEST | 0<br>7<br>2<br>9      | 0<br>6<br>8<br>7      | 0<br>7<br>2<br>9      | 0<br>7<br>3<br>0      | 0<br>7<br>3<br>1      | 0<br>7<br>2<br>9      | 0<br>6<br>2<br>3      | 0<br>7<br>2<br>9      | 0<br>7<br>2<br>3      | 0<br>7<br>3<br>0      | 0<br>7<br>3<br>1      | 0<br>7<br>2<br>9      | 0<br>6<br>7<br>0      | 0<br>7<br>3<br>3      | 0<br>7<br>2<br>9      | 0<br>7<br>2<br>9      | 0<br>7<br>3<br>0      | 0<br>7<br>2<br>9      | 0<br>7<br>3<br>0      | 0<br>7<br>3<br>1      | 0<br>7<br>2<br>9      | 0<br>7<br>3<br>1      | <b>males<br/>(cont...)</b> |
|                         | ANIMAL ID   | 0<br>0<br>6<br>0<br>1 | 0<br>0<br>6<br>0<br>2 | 0<br>0<br>6<br>0<br>3 | 0<br>0<br>6<br>0<br>4 | 0<br>0<br>6<br>0<br>5 | 0<br>0<br>6<br>0<br>6 | 0<br>0<br>6<br>0<br>7 | 0<br>0<br>6<br>0<br>8 | 0<br>0<br>6<br>0<br>9 | 0<br>0<br>6<br>0<br>0 | 0<br>0<br>6<br>0<br>1 | 0<br>0<br>6<br>0<br>1 | 0<br>0<br>6<br>0<br>2 | 0<br>0<br>6<br>0<br>3 | 0<br>0<br>6<br>0<br>4 | 0<br>0<br>6<br>0<br>5 | 0<br>0<br>6<br>0<br>6 | 0<br>0<br>6<br>0<br>7 | 0<br>0<br>6<br>0<br>8 | 0<br>0<br>6<br>0<br>9 | 0<br>0<br>6<br>0<br>0 | 0<br>0<br>6<br>0<br>1 |                            |

Inflammation, Chronic Active 3

**NERVOUS SYSTEM**

|                  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Brain            | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Peripheral Nerve |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | + |
| Spinal Cord      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | + |

**RESPIRATORY SYSTEM**

|  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|--|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Larynx                                     | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Inflammation, Suppurative                  |   |   |   |   |   |   |   |   |   |   |   |   |   |   | 1 |   |   |   |   |   |   |   |   |
| Inflammation, Chronic Active               |   |   |   |   |   |   |   |   |   | 1 |   |   |   |   | 1 |   |   |   |   |   | 1 |   |   |
| Metaplasia, Squamous Necrosis              | 3 | 4 | 3 | 3 | 3 | 3 | 4 | 3 | 3 | 4 | 4 | 4 | 3 | 3 | 3 | 3 | 4 | 3 | 3 | 3 | 3 | 4 | 4 |
| Lung                                       | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Hemorrhage                                 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Infiltration Cellular, Histiocyte          |   |   |   | 1 |   |   |   |   |   | 2 |   |   |   |   |   |   | 1 | 3 |   | 2 |   | 3 |   |
| Alveolar Epithelium, Hyperplasia           |   | 3 |   |   |   |   |   | 1 |   |   |   |   |   |   |   |   |   |   | 2 |   |   |   | 3 |
| Bronchiole, Hyperplasia                    |   | 1 | 1 |   | 1 |   |   | 2 |   | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 |   | 2 | 1 | 1 | 1 |
| Interstitial, Inflammation, Chronic Active |   |   |   |   | 1 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Perivascular, Inflammation, Chronic Active |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | 3 |
| Nose                                       | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Inflammation, Chronic Active               |   |   |   | 1 |   | 1 | 3 |   |   |   | 2 |   |   |   |   | 1 |   |   |   |   |   |   | 1 |
| Necrosis                                   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Nasopharyngeal Duct, Necrosis              |   |   |   |   |   |   |   |   |   |   | 1 |   |   |   |   |   |   |   |   |   |   |   |   |

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

Experiment Number: 20515 - 04  
 Test Type: CHRONIC  
 Route: RESPIRATORY EXPOSURE WHOLE BODY  
 Species/Strain: MICE/B6C3F1

**P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL**  
 Metal working fluids (CIMSTAR 3800)  
 CAS Number: CIMSTAR3800

Date Report Requested: 03/08/2013  
 Time Report Requested: 14:13:47  
 First Dose M/F: 05/05/08 / 05/05/08  
 Lab: BNW

| B6C3F1 MICE MALE<br>100 mg/m3 | DAY ON TEST | 0729 | 0687 | 0772 | 0773 | 0772 | 0672 | 0772 | 0773 | 0773 | 0773 | 0677 | 0777 | 0777 | 0777 | 0777 | 0777 | 0777 | 0777 | 0777 | 0777 | 0777 | 0777 | 0777 |      |   |                    |
|-------------------------------|-------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|---|--------------------|
|                               | ANIMAL ID   | 0060 | 0066 | 0066 | 0066 | 0066 | 0066 | 0066 | 0066 | 0066 | 0066 | 0066 | 0066 | 0066 | 0066 | 0066 | 0066 | 0066 | 0066 | 0066 | 0066 | 0066 | 0066 | 0066 | 0066 |   |                    |
|                               |             | 1    | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 0    | 1    | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 0    | 1    | 2    | 3    | 4    | 5 | males<br>(cont...) |

|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Olfactory Epithelium, Accumulation, Hyaline Droplet             | 2 | 3 | 1 | 3 | 3 | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 3 | 3 | 2 |
| Olfactory Epithelium, Atrophy                                   |   |   | 1 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | 1 |   |   |   |
| Olfactory Epithelium, Metaplasia, Respiratory                   | 1 | 2 | 1 |   | 2 | 2 |   | 2 | 2 | 1 | 2 | 2 |   | 2 | 2 | 2 | 1 | 1 | 2 | 1 | 2 | 1 | 1 | 2 |   |
| Respiratory Epithelium, Accumulation, Hyaline Droplet           | 1 | 3 | 3 | 3 | 3 | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 2 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 3 | 3 | 2 |   |
| Respiratory Epithelium, Hyperplasia                             | 2 | 2 | 1 | 2 | 1 |   | 2 |   | 1 | 1 | 1 | 2 |   | 2 | 1 | 2 |   | 2 | 2 | 2 | 2 | 2 | 2 | 2 |   |
| Respiratory Epithelium, Metaplasia, Squamous Turbinate, Atrophy |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Trachea Ulcer   | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |   |

**SPECIAL SENSES SYSTEM**

|                                      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|--------------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Eye                                  | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Cornea, Hyperplasia, Squamous        |   |   |   |   |   |   |   |   |   |   | 1 |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Cornea, Inflammation, Chronic Active |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | 1 |   |   | 2 |   |   |   |   |
| Lens, Degeneration                   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | 1 |   |   |   |   |   |   |   |
| Harderian Gland Hyperplasia          | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |

**URINARY SYSTEM**

|             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|-------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Kidney      | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Cyst        |   |   |   |   |   |   |   |   |   | X | X |   |   |   |   |   |   |   |   | X |   |   |   |   |
| Infarct     |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | 2 |   | 2 |   |   |   |   |
| Nephropathy | 1 | 2 | 2 | 3 | 2 | 2 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 2 | 2 | 2 | 3 | 2 | 2 |
| Ureter      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |

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

Experiment Number: 20515 - 04  
 Test Type: CHRONIC  
 Route: RESPIRATORY EXPOSURE WHOLE BODY  
 Species/Strain: MICE/B6C3F1

**P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL**  
 Metal working fluids (CIMSTAR 3800)  
 CAS Number: CIMSTAR3800

Date Report Requested: 03/08/2013  
 Time Report Requested: 14:13:47  
 First Dose M/F: 05/05/08 / 05/05/08  
 Lab: BNW

|   |             |   |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                            |
|---|-------------|---|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|----------------------------|
| <b>B6C3F1 MICE MALE</b><br><b>100 mg/m3</b> | DAY ON TEST | 0729  | 0677 | 0777 | 0777 | 0677 | 0777 | 0777 | 0777 | 0777 | 0677 | 0777 | 0777 | 0777 | 0777 | 0777 | 0777 | 0777 | 0777 | 0777 | 0777 | 0777 | 0777 | 0777 | <b>males<br/>(cont...)</b> |
|   | ANIMAL ID   | 0060  | 0060 | 0060 | 0060 | 0060 | 0060 | 0060 | 0060 | 0060 | 0060 | 0060 | 0060 | 0060 | 0060 | 0060 | 0060 | 0060 | 0060 | 0060 | 0060 | 0060 | 0060 | 0060 |                            |
|   |             | 1234567890123456789012345678901234567890123456789012345 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                            |

Inflammation, Chronic Active

Urinary Bladder

+ M + +

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

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



Experiment Number: 20515 - 04  
 Test Type: CHRONIC  
 Route: RESPIRATORY EXPOSURE WHOLE BODY  
 Species/Strain: MICE/B6C3F1

**P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL**  
 Metal working fluids (CIMSTAR 3800)  
 CAS Number: CIMSTAR3800

Date Report Requested: 03/08/2013  
 Time Report Requested: 14:13:47  
 First Dose M/F: 05/05/08 / 05/05/08  
 Lab: BNW

| B6C3F1 MICE MALE<br>100 mg/m3        | DAY ON TEST |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | * TOTALS |        |
|--------------------------------------|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|----------|--------|
|                                      | 0730        | 0730  | 0730  | 0730  | 0730  | 0730  | 0730  | 0730  | 0730  | 0730  | 0730  | 0730  | 0730  | 0730  | 0730  | 0730  | 0730  | 0730  | 0730  | 0730  |          | 0730   |
| ANIMAL ID                            | 00626       | 00626 | 00626 | 00626 | 00626 | 00626 | 00626 | 00626 | 00626 | 00626 | 00626 | 00626 | 00626 | 00626 | 00626 | 00626 | 00626 | 00626 | 00626 | 00626 | 00626    |        |
| Tension Lipidosis                    |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |          | 7 1.4  |
| Mesentery                            |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |          | 4      |
| Artery, Inflammation, Chronic Active |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |          | 1 3.0  |
| Fat, Necrosis                        |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |          | 3 1.3  |
| Pancreas                             |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |          | 50     |
| Necrosis                             |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |          | 1 2.0  |
| Salivary Glands                      |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |          | 50     |
| Stomach, Forestomach                 |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |          | 50     |
| Hyperplasia, Squamous                |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |          | 3 3.0  |
| Stomach, Glandular                   |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |          | 50     |
| Inflammation, Chronic Active         |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |          | 2 2.0  |
| Ulcer                                |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |          | 1 3.0  |
| Glands, Mineralization               |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |          | 1 1.0  |
| Tooth                                |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |          | 50     |
| Dysplasia                            |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |          | 40 1.8 |
| Inflammation, Chronic Active         |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |          | 5 2.6  |

**CARDIOVASCULAR SYSTEM**

|                              |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |       |
|------------------------------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|-------|
| Blood Vessel                 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 48    |
| Heart                        |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 50    |
| Cardiomyopathy               |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 2 2.0 |
| Inflammation, Chronic Active |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 1 3.0 |
| Thrombosis                   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 2 2.5 |

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

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

Experiment Number: 20515 - 04  
 Test Type: CHRONIC  
 Route: RESPIRATORY EXPOSURE WHOLE BODY  
 Species/Strain: MICE/B6C3F1

**P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL**  
 Metal working fluids (CIMSTAR 3800)  
 CAS Number: CIMSTAR3800

Date Report Requested: 03/08/2013  
 Time Report Requested: 14:13:47  
 First Dose M/F: 05/05/08 / 05/05/08  
 Lab: BNW

|   |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                 |  |
|---|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-----------------|--|
| <b>B6C3F1 MICE MALE</b><br><br><b>100 mg/m3</b> | DAY ON TEST | 0730  | 0730  | 0730  | 0730  | 0730  | 0730  | 0730  | 0730  | 0730  | 0730  | 0730  | 0730  | 0730  | 0730  | 0730  | 0730  | 0730  | 0730  | 0730  | 0730  | 0730  | 0730  | 0730  | 0730  | 0730  | 0730  | 0730  | 0730            |  |
|   | ANIMAL ID   | 00626 | 00666 | 00666 | 00666 | 00666 | 00666 | 00666 | 00666 | 00666 | 00666 | 00666 | 00666 | 00666 | 00666 | 00666 | 00666 | 00666 | 00666 | 00666 | 00666 | 00666 | 00666 | 00666 | 00666 | 00666 | 00666 | 00666 | 00666           |  |
|   |             | 6     | 7     | 8     | 9     | 0     | 1     | 2     | 3     | 4     | 5     | 6     | 7     | 8     | 9     | 0     | 1     | 2     | 3     | 4     | 5     | 6     | 7     | 8     | 9     | 0     | 0     | 0     | <b>* TOTALS</b> |  |

Artery, Inflammation, Chronic Active **1 1.0**

**ENDOCRINE SYSTEM**

|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |           |           |           |              |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|-----------|-----------|-----------|--------------|
| Adrenal Cortex<br>Hyperplasia                 | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | +         | <b>50</b> | <b>24</b> | <b>1.5</b>   |
| Adrenal Medulla<br>Hyperplasia                | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | +         | <b>50</b> | <b>2</b>  | <b>1.5</b>   |
| Islets, Pancreatic                            | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | +         | <b>50</b> |           |              |
| Parathyroid Gland                             | M | + | + | M | M | M | M | + | M | + | M | M | + | M | M | M | + | M | + | + | M | M | M | + | M |   |   |   | <b>21</b> |           |           |              |
| Pituitary Gland<br>Angiectasis                | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | +         | <b>48</b> |           | <b>1 1.0</b> |
| Pars Distalis, Cyst                           |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |           |           |           | <b>1 1.0</b> |
| Pars Distalis, Hyperplasia                    |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | 1 |   |   |   |   |   |   |   |   |   |   |   |           |           |           | <b>2 1.0</b> |
| Thyroid Gland<br>Follicular Cell, Hyperplasia | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | +         | <b>50</b> |           | <b>1 2.0</b> |

**GENERAL BODY SYSTEM**

Tissue NOS **1**

**GENITAL SYSTEM**

Epididymis  
Inflammation, Chronic Active **50**  
3 **2 2.5**

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

Experiment Number: 20515 - 04

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: MICE/B6C3F1

P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 03/08/2013

Time Report Requested: 14:13:47

First Dose M/F: 05/05/08 / 05/05/08

Lab: BNW

| B6C3F1 MICE MALE<br>100 mg/m3 | DAY ON TEST | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | * TOTALS |
|-------------------------------|-------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|----------|
|                               | ANIMAL ID   | 7 | 7 | 5 | 6 | 7 | 3 | 7 | 7 | 6 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 5 | 7 | 7 |          |
|                               |             | 3 | 0 | 7 | 6 | 3 | 4 | 2 | 3 | 6 | 3 | 3 | 3 | 3 | 2 | 3 | 2 | 2 | 2 | 3 | 2 | 0 | 9 |          |
|                               |             | 0 | 6 | 2 | 2 | 0 | 4 | 9 | 1 | 0 | 0 | 1 | 1 | 0 | 9 | 1 | 9 | 9 | 0 | 9 | 9 | 0 | 1 |          |
|                               |             | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |          |
|                               |             | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 |          |
|                               |             | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 5 |          |
|                               |             | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |          |

Penis Congestion + 2 1 2.0

Preputial Gland Ectasia Inflammation, Chronic Active + + + + + + + + 3 1 4 49 7 2.7 4 2.3

Prostate + 50

Seminal Vesicle Dilatation + 50 1 2.0

Testes Angiectasis Germinal Epithelium, Atrophy + + + + + + + + 3 2 50 1 3.0 3 2.0

HEMATOPOIETIC SYSTEM

Bone Marrow Hyperplasia, Granulocytes + 50 1 4.0

Lymph Node Lumbar, Inflammation, Pyogranulomatous Pancreatic, Inflammation, Pyogranulomatous Renal, Inflammation, Pyogranulomatous + + + 1 1 4.0 1 4.0 1 4.0

Lymph Node, Bronchial M M + M + + M M + M M M + M + M + + M M + M M M M 18

Lymph Node, Mandibular Inflammation, Pyogranulomatous M + M + M + + M M M + + + M M + + + + + + + M + + 33 1 4.0

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

Experiment Number: 20515 - 04

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: MICE/B6C3F1

P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 03/08/2013

Time Report Requested: 14:13:47

First Dose M/F: 05/05/08 / 05/05/08

Lab: BNW

| B6C3F1 MICE MALE<br>100 mg/m3  | DAY ON TEST |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | * TOTALS |      |   |   |    |       |       |       |       |
|--|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|----------|------|---|---|----|-------|-------|-------|-------|
|  | 0730        | 0730  | 0730  | 0730  | 0730  | 0730  | 0730  | 0730  | 0730  | 0730  | 0730  | 0730  | 0730  | 0730  | 0730  | 0730  | 0730  | 0730  | 0730  | 0730  | 0730  |          | 0730 |   |   |    |       |       |       |       |
| ANIMAL ID  | 00626       | 00626 | 00626 | 00626 | 00626 | 00626 | 00626 | 00626 | 00626 | 00626 | 00626 | 00626 | 00626 | 00626 | 00626 | 00626 | 00626 | 00626 | 00626 | 00626 | 00626 | 00626    |      |   |   |    |       |       |       |       |
| Lymph Node, Mediastinal Inflammation, Pyogranulomatous                 | +           | +     | +     | M     | +     | M     | +     | +     | +     | +     | +     | M     | +     | +     | M     | +     | +     | +     | M     | +     | +     | +        | +    | M | M | 35 |       |       |       |       |
|  |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |          |      |   |   | 4  | 1 4.0 |       |       |       |
| Lymph Node, Mesenteric Inflammation, Pyogranulomatous                  | +           | +     | +     | +     | +     | M     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +        | +    | + | + | 49 |       |       |       |       |
|  |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |          |      |   |   | 4  | 1 4.0 |       |       |       |
| Spleen Hematopoietic Cell Proliferation Lymphoid Follicle, Hyperplasia | +           | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +        | +    | + | A | +  | +     | 49    |       |       |
|  |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |          |      |   |   | 3  | 1 3.0 |       |       |       |
|  |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |          |      |   |   |    | 1 4.0 |       |       |       |
| Thymus Atrophy   | +           | M     | +     | +     | +     | +     | +     | M     | +     | +     | +     | +     | +     | +     | +     | +     | +     | M     | +     | M     | +     | +        | M    | M | + | +  | 41    |       |       |       |
|  |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |          |      |   |   |    |       | 1 2.0 |       |       |
| <b>INTEGUMENTARY SYSTEM</b>  |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |          |      |   |   |    |       |       |       |       |
| Mammary Gland  | M           | M     | M     | M     | M     | M     | M     | M     | M     | M     | M     | M     | M     | M     | M     | M     | M     | M     | M     | M     | M     | M        | M    | M | M | M  | M     | 0     |       |       |
| Skin Abscess Inflammation, Chronic Active Epidermis, Hyperplasia       | +           | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +        | +    | + | + | +  | +     | 50    |       |       |
|  |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |          |      |   |   |    |       |       | 1 3.0 |       |
|  |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |          |      |   |   |    |       |       | 3 2.7 |       |
|  |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |          |      |   |   |    |       |       | 1 1.0 |       |
| <b>MUSCULOSKELETAL SYSTEM</b>  |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |          |      |   |   |    |       |       |       |       |
| Bone Fibro-Osseous Lesion Cranium, Inflammation, Chronic Active        | +           | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +        | +    | + | + | +  | +     | 50    |       |       |
|  |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |          |      |   |   |    |       |       |       | 7 1.1 |
|  |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |          |      |   |   |    |       |       |       | 5 3.0 |
| Skeletal Muscle Infiltration Cellular, Mixed Cell                      |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |          |      |   |   |    |       |       | 3     |       |
|  |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |          |      |   |   |    |       |       |       | 1 1.0 |

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

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



Experiment Number: 20515 - 04  
 Test Type: CHRONIC  
 Route: RESPIRATORY EXPOSURE WHOLE BODY  
 Species/Strain: MICE/B6C3F1

**P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL**  
 Metal working fluids (CIMSTAR 3800)  
 CAS Number: CIMSTAR3800

Date Report Requested: 03/08/2013  
 Time Report Requested: 14:13:47  
 First Dose M/F: 05/05/08 / 05/05/08  
 Lab: BNW

| B6C3F1 MICE MALE<br>100 mg/m3              | DAY ON TEST                                   |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       | * TOTALS              |                       |                       |                       |                       |
|--|---|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
|  | 0<br>7<br>3<br>0                              | 0<br>7<br>0<br>6      | 0<br>5<br>7<br>2      | 0<br>6<br>7<br>2      | 0<br>7<br>3<br>4      | 0<br>7<br>4<br>2      | 0<br>7<br>3<br>1      | 0<br>7<br>6<br>1      | 0<br>7<br>3<br>0      | 0<br>7<br>6<br>1      | 0<br>7<br>3<br>3      | 0<br>7<br>3<br>3      | 0<br>7<br>3<br>3      | 0<br>7<br>3<br>3      | 0<br>7<br>2<br>9      | 0<br>7<br>3<br>9      | 0<br>7<br>2<br>9      | 0<br>7<br>2<br>9      | 0<br>7<br>3<br>0      | 0<br>7<br>2<br>9      |                       | 0<br>5<br>9<br>0      | 0<br>7<br>3<br>1      | 0<br>7<br>3<br>3      |                       |
| ANIMAL ID                                  | 0<br>0<br>6<br>2<br>6                         | 0<br>0<br>6<br>2<br>7 | 0<br>0<br>6<br>2<br>8 | 0<br>0<br>6<br>2<br>9 | 0<br>0<br>6<br>3<br>0 | 0<br>0<br>6<br>3<br>1 | 0<br>0<br>6<br>3<br>2 | 0<br>0<br>6<br>3<br>3 | 0<br>0<br>6<br>3<br>4 | 0<br>0<br>6<br>3<br>5 | 0<br>0<br>6<br>3<br>6 | 0<br>0<br>6<br>3<br>7 | 0<br>0<br>6<br>3<br>8 | 0<br>0<br>6<br>3<br>9 | 0<br>0<br>6<br>4<br>0 | 0<br>0<br>6<br>4<br>1 | 0<br>0<br>6<br>4<br>2 | 0<br>0<br>6<br>4<br>3 | 0<br>0<br>6<br>4<br>4 | 0<br>0<br>6<br>4<br>5 | 0<br>0<br>6<br>4<br>6 | 0<br>0<br>6<br>4<br>7 | 0<br>0<br>6<br>4<br>8 | 0<br>0<br>6<br>4<br>9 | 0<br>0<br>6<br>5<br>0 |
| Inflammation, Chronic Active               |   |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       | 1 3.0                 |                       |
| <b>NERVOUS SYSTEM</b>                      |   |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |
| Brain                                      | +   |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       | 50                    |                       |
| Peripheral Nerve                           |   |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       | 2                     |                       |
| Spinal Cord                                |   |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       | 2                     |                       |
| <b>RESPIRATORY SYSTEM</b>                  |   |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |
| Larynx                                     | +   |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       | 50                    |                       |
| Inflammation, Suppurative                  |   |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       | 1 1.0                 |                       |
| Inflammation, Chronic Active               | 1 1 1   |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       | 8 1.0                 |                       |
| Metaplasia, Squamous                       | 3 4 4 4 4 4 3 4 4 3 4 3 3 4 3 3 3 4 4 3 2 4 3 |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       | 50 3.4                |                       |
| Necrosis                                   | 1   |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       | 1 1.0                 |                       |
| Lung                                       | +   |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       | 50                    |                       |
| Hemorrhage                                 | 3   |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       | 1 3.0                 |                       |
| Infiltration Cellular, Histiocyte          | 2 2   |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       | 9 2.0                 |                       |
| Alveolar Epithelium, Hyperplasia           | 3 3   |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       | 7 2.6                 |                       |
| Bronchiole, Hyperplasia                    | 1 1 1 1 1 1 1 1 1 1 1 1 1 2 1 1 1 1 1 1 1 1 1 |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       | 44 1.1                |                       |
| Interstitial, Inflammation, Chronic Active |   |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       | 1 1.0                 |                       |
| Perivascular, Inflammation, Chronic Active |   |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       | 1 3.0                 |                       |
| Nose                                       | +   |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       | 50                    |                       |
| Inflammation, Chronic Active               | 3 1 1 1                                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       | 12 1.7                |                       |
| Necrosis                                   | 1   |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       | 1 1.0                 |                       |
| Nasopharyngeal Duct, Necrosis              |   |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       | 1 1.0                 |                       |

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

Experiment Number: 20515 - 04

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: MICE/B6C3F1

**P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL**

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 03/08/2013

Time Report Requested: 14:13:47

First Dose M/F: 05/05/08 / 05/05/08

Lab: BNW

| B6C3F1 MICE MALE<br>100 mg/m3                                   | DAY ON TEST           |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       | * TOTALS              |                       |                       |                       |                       |            |            |
|---|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|------------|------------|
|   | 0<br>7<br>3<br>0      | 0<br>7<br>0<br>6      | 0<br>5<br>7<br>2      | 0<br>6<br>6<br>9      | 0<br>7<br>3<br>4      | 0<br>3<br>2<br>4      | 0<br>7<br>3<br>1      | 0<br>7<br>6<br>1      | 0<br>7<br>3<br>0      | 0<br>6<br>3<br>1      | 0<br>7<br>3<br>0      | 0<br>7<br>3<br>1      | 0<br>7<br>3<br>0      | 0<br>7<br>3<br>1      | 0<br>7<br>2<br>0      | 0<br>7<br>2<br>9      | 0<br>7<br>2<br>9      | 0<br>7<br>2<br>0      | 0<br>5<br>9<br>0      | 0<br>7<br>3<br>1      |                       |                       | 0<br>7<br>3<br>1      |                       |                       |            |            |
| ANIMAL ID   | 0<br>0<br>6<br>2<br>6 | 0<br>0<br>6<br>2<br>7 | 0<br>0<br>6<br>2<br>8 | 0<br>0<br>6<br>2<br>9 | 0<br>0<br>6<br>3<br>0 | 0<br>0<br>6<br>3<br>1 | 0<br>0<br>6<br>3<br>2 | 0<br>0<br>6<br>3<br>3 | 0<br>0<br>6<br>3<br>4 | 0<br>0<br>6<br>3<br>5 | 0<br>0<br>6<br>3<br>6 | 0<br>0<br>6<br>3<br>7 | 0<br>0<br>6<br>3<br>8 | 0<br>0<br>6<br>3<br>9 | 0<br>0<br>6<br>4<br>0 | 0<br>0<br>6<br>4<br>1 | 0<br>0<br>6<br>4<br>2 | 0<br>0<br>6<br>4<br>3 | 0<br>0<br>6<br>4<br>4 | 0<br>0<br>6<br>4<br>5 | 0<br>0<br>6<br>4<br>6 | 0<br>0<br>6<br>4<br>7 | 0<br>0<br>6<br>4<br>8 | 0<br>0<br>6<br>4<br>9 | 0<br>0<br>6<br>5<br>0 |            |            |
| Olfactory Epithelium, Accumulation, Hyaline Droplet             | 3                     | 2                     | 3                     | 3                     | 3                     | 3                     | 3                     | 3                     | 2                     | 3                     | 2                     | 2                     | 2                     | 2                     | 2                     | 3                     | 2                     | 2                     | 3                     |                       | 3                     | 3                     | 2                     | 3                     | <b>49</b>             | <b>2.6</b> |            |
| Olfactory Epithelium, Atrophy                                   |                       | 1                     |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       | 1                     |                       |                       |                       | <b>4</b>              | <b>1.0</b> |            |
| Olfactory Epithelium, Metaplasia, Respiratory                   | 2                     | 1                     | 1                     | 1                     |                       | 1                     |                       |                       | 2                     | 2                     | 2                     | 1                     |                       |                       |                       | 1                     | 2                     |                       |                       | 1                     | 1                     | 1                     |                       | 2                     | <b>37</b>             | <b>1.5</b> |            |
| Respiratory Epithelium, Accumulation, Hyaline Droplet           | 3                     | 2                     | 3                     | 3                     | 3                     | 3                     | 3                     | 3                     | 2                     | 3                     | 2                     | 2                     | 2                     | 2                     | 2                     | 3                     | 2                     | 2                     | 3                     | 1                     | 3                     | 3                     | 2                     | 3                     | <b>50</b>             | <b>2.6</b> |            |
| Respiratory Epithelium, Hyperplasia                             | 1                     | 2                     | 1                     | 1                     | 2                     | 1                     | 1                     |                       | 2                     | 1                     |                       | 2                     | 1                     |                       | 2                     | 2                     | 1                     | 1                     | 1                     | 2                     | 1                     |                       | 1                     | 2                     | 2                     | <b>41</b>  | <b>1.6</b> |
| Respiratory Epithelium, Metaplasia, Squamous Turbinate, Atrophy |                       | 1                     | 2                     |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       | <b>1</b>              | <b>1.0</b> |            |
|   |                       | 2                     |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       | <b>1</b>              | <b>2.0</b> |            |
| Trachea   | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | <b>50</b>             |            |            |
| Ulcer   |                       |                       |                       |                       |                       |                       |                       | X                     |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       | <b>1</b>   |            |
| <b>SPECIAL SENSES SYSTEM</b>                                    |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |            |            |
| Eye   | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | <b>50</b>             |            |            |
| Cornea, Hyperplasia, Squamous                                   |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       | <b>1</b>   | <b>1.0</b> |
| Cornea, Inflammation, Chronic Active                            |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       | <b>2</b>   | <b>1.5</b> |
| Lens, Degeneration  |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       | <b>1</b>   | <b>1.0</b> |
| Harderian Gland   | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | <b>50</b>             |            |            |
| Hyperplasia   |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       | 3                     |                       |                       |                       |                       |                       |                       |                       |                       |                       | <b>2</b>   | <b>3.0</b> |
| <b>URINARY SYSTEM</b>   |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |            |            |
| Kidney  | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | <b>50</b>             |            |            |
| Cyst  |                       |                       |                       |                       |                       |                       |                       | X                     |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       | X                     |                       |                       |                       |                       |                       | <b>5</b>   |            |
| Infarct   |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       | <b>2</b>   | <b>2.0</b> |
| Nephropathy   | 3                     | 2                     |                       | 1                     | 3                     |                       | 2                     | 2                     | 1                     | 2                     | 3                     | 2                     | 2                     | 2                     | 2                     | 4                     | 2                     | 2                     | 3                     | 2                     | 2                     | 1                     | 2                     | 2                     | <b>48</b>             | <b>2.1</b> |            |
| Ureter  |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       | +                     |                       |                       |                       | <b>1</b>   |            |

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

+ .. Tissue examined microscopically

X .. Lesion present

I .. Insufficient tissue

M .. Missing tissue

A .. Autolysis precludes evaluation

BLANK .. Not examined microscopically

1-4 .. Lesion qualified as:

1) Minimal 3) Moderate

2) Mild 4) Marked

**Experiment Number:** 20515 - 04  
**Test Type:** CHRONIC  
**Route:** RESPIRATORY EXPOSURE WHOLE BODY  
**Species/Strain:** MICE/B6C3F1

**P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL**  
 Metal working fluids (CIMSTAR 3800)  
**CAS Number:** CIMSTAR3800

**Date Report Requested:** 03/08/2013  
**Time Report Requested:** 14:13:47  
**First Dose M/F:** 05/05/08 / 05/05/08  
**Lab:** BNW

|                              |             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |    |       |   |   |                 |  |
|------------------------------|-------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|----|-------|---|---|-----------------|--|
| <b>B6C3F1 MICE MALE</b>      | DAY ON TEST | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0  | 0     | 0 | 0 | 0               |  |
|                              |             | 7 | 7 | 5 | 6 | 7 | 3 | 7 | 7 | 6 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7  | 7     | 5 | 7 | 7               |  |
|                              |             | 3 | 0 | 7 | 6 | 3 | 4 | 2 | 3 | 6 | 3 | 3 | 3 | 3 | 3 | 2 | 3 | 2 | 2 | 2 | 3 | 2  | 0     | 9 | 3 | 3               |  |
| <b>100 mg/m3</b>             | ANIMAL ID   | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0  | 0     | 0 | 0 | <b>* TOTALS</b> |  |
| 6                            |             | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6  | 6     | 6 |   |                 |  |
| 2                            |             | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4  | 4     | 4 | 5 |                 |  |
| 6                            | 7           | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8  | 9     | 0 |   |                 |  |
| Inflammation, Chronic Active |             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | 4  | 1 4.0 |   |   |                 |  |
| Urinary Bladder              |             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | 49 |       |   |   |                 |  |

\*\*\* END OF MALE DATA \*\*\*

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

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

Experiment Number: 20515 - 04

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: MICE/B6C3F1

**P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL**

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 03/08/2013

Time Report Requested: 14:13:47

First Dose M/F: 05/05/08 / 05/05/08

Lab: BNW

|                           |             |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                |           |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                              |
|---------------------------|-------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|----------------|-----------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------------------------------|
| <b>B6C3F1 MICE FEMALE</b> | DAY ON TEST | 0732 | 0733 | 0733 | 0733 | 0732 | 0732 | 0667 | 0667 | 0732 | 0734 | 0733 | 0735 | 0549 | 0733 | 0732 | 0673 | 0714 | 0773 | 0773 | 0773 | 0572 | 0732 | <b>Control</b> | ANIMAL ID | 0010 | 0011 | 0010 | 0011 | 0010 | 0010 | 0010 | 0010 | 0010 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | <b>females<br/>(cont...)</b> |
|                           | 0012        | 0013 | 0014 | 0015 | 0016 | 0017 | 0018 | 0019 | 0020 | 0021 | 0022 | 0023 | 0024 | 0025 | 0026 | 0027 | 0028 | 0029 | 0030 | 0031 | 0032 | 0033 | 0034 |                |           | 0035 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                              |

**ALIMENTARY SYSTEM**

|                           |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|---------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Esophagus                 | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Gallbladder               | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | M | + | + | M | + | + | + | + |
| Intestine Large, Cecum    | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Intestine Large, Colon    | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | A | + | + | + | + | + | + | + |
| Intestine Large, Rectum   | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Intestine Small, Duodenum | + | + | + | + | + | + | + | + | + | + | + | + | A | + | + | + | + | A | + | + | + | + | + | + |
| Intestine Small, Ileum    | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | A | + | + | + | + | + | + |
| Intestine Small, Jejunum  | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | A | + | + | + | + | + | + |
| Liver                     | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Basophilic Focus          |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Clear Cell Focus          |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Eosinophilic Focus        |   | X |   |   |   |   |   |   |   |   |   |   |   | X |   |   |   |   | X | X | X |   |   |   |
| Fatty Change              |   |   |   |   |   |   |   |   |   |   |   |   | 2 |   |   |   |   |   | 2 |   |   |   |   |   |
| Mixed Cell Focus          |   |   |   | X |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Necrosis                  |   |   |   |   |   | 3 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Tension Lipidosis         |   |   |   |   |   |   |   |   |   |   |   |   | 1 |   |   |   |   |   | 2 |   |   | 1 | X |   |
| Vacuolization Cytoplasmic |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | 1 |   |   |
| Mesentery                 |   |   |   |   |   | + |   |   |   |   |   |   |   | + | + |   |   |   |   | + | + | + |   |   |
| Angiectasis               |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Cyst                      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | 3 |   |

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+ .. Tissue examined microscopically  
X .. Lesion present  
I .. Insufficient tissue  
M .. Missing tissue  
A .. Autolysis precludes evaluation  
BLANK .. Not examined microscopically  
1-4 .. Lesion qualified as:  
1) Minimal 3) Moderate  
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Experiment Number: 20515 - 04

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: MICE/B6C3F1

P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 03/08/2013

Time Report Requested: 14:13:47

First Dose M/F: 05/05/08 / 05/05/08

Lab: BNW

|                           |             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|---------------------------|-------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| <b>B6C3F1 MICE FEMALE</b> | DAY ON TEST | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |   |   |
|                           | ANIMAL ID   | 7 | 7 | 7 | 7 | 7 | 7 | 6 | 6 | 7 | 3 | 7 | 7 | 6 | 5 | 7 | 7 | 6 | 7 | 1 | 7 | 7 | 7 | 7 | 5 | 7 | 3 | 3 | 3 | 3 | 2 | 7 | 2 | 3 | 3 | 3 | 3 | 2 | 7 | 2 |
| <b>Control</b>            |             | 3 | 3 | 3 | 3 | 3 | 1 | 7 | 3 | 4 | 3 | 0 | 0 | 4 | 3 | 3 | 8 | 3 | 9 | 3 | 3 | 3 | 3 | 2 | 3 | 2 | 3 | 3 | 3 | 2 | 3 | 7 | 2 | 3 | 3 | 2 | 3 | 2 |   |   |
|                           |             | 2 | 1 | 3 | 3 | 2 | 2 | 3 | 7 | 2 | 5 | 3 | 5 | 9 | 3 | 2 | 3 | 1 | 4 | 2 | 3 | 2 | 3 | 2 | 3 | 2 | 3 | 2 | 3 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 |   |   |
|                           |             | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
|                           |             | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |

females (cont...)

|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Inflammation, Chronic Active<br>Fat, Necrosis                               |   |   |   |   |   |   |   | 2 |   |   |   |   |   |   |   |   | 2 | 1 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Pancreas<br>Fibrosis<br>Inflammation, Chronic Active<br>Acinus, Atrophy     | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Salivary Glands   | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Stomach, Forestomach<br>Fibrosis<br>Hyperplasia, Squamous                   | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Stomach, Glandular<br>Degeneration, Hyaline<br>Inflammation, Chronic Active | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Tooth<br>Dysplasia  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |

CARDIOVASCULAR SYSTEM

|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Blood Vessel<br>Aorta, Embolus Bacterial                                    | M | M | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | M |
| Heart<br>Cardiomyopathy<br>Necrosis<br>Artery, Inflammation, Chronic Active | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |

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

Experiment Number: 20515 - 04

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: MICE/B6C3F1

### P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 03/08/2013

Time Report Requested: 14:13:47

First Dose M/F: 05/05/08 / 05/05/08

Lab: BNW

|                           |             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |                          |   |  |
|---------------------------|-------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|--------------------------|---|--|
| <b>B6C3F1 MICE FEMALE</b> | DAY ON TEST |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |                          |   |  |
| <b>Control</b>            | 0           | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0                        |   |  |
|                           | 7           | 7 | 7 | 7 | 7 | 7 | 6 | 6 | 7 | 3 | 7 | 7 | 6 | 5 | 7 | 7 | 6 | 7 | 1 | 7 | 7                        | 7 |  |
|                           | 3           | 3 | 3 | 3 | 3 | 3 | 1 | 7 | 3 | 4 | 3 | 0 | 0 | 4 | 3 | 3 | 8 | 3 | 9 | 3 | 3                        | 3 |  |
|                           | 2           | 1 | 3 | 3 | 2 | 2 | 3 | 7 | 2 | 5 | 3 | 5 | 5 | 9 | 3 | 2 | 3 | 1 | 4 | 2 | 3                        | 2 |  |
|                           | ANIMAL ID   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | <b>females (cont...)</b> |   |  |
| 0                         | 0           | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |                          | 0 |  |
| 0                         | 0           | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |                          | 0 |  |
| 1                         | 1           | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |                          | 1 |  |
| 0                         | 0           | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2                        |   |  |
| 1                         | 2           | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2                        |   |  |

Capillary, Hyperplasia

1

## ENDOCRINE SYSTEM

|                              |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Adrenal Cortex               | + | + | + | + | + | + | + | + | + | + | + | + | M | + | + | + | + | + | + | + | + | + | + |
| Angiectasis                  | 2 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Hyperplasia                  |   |   |   |   | 2 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | 1 | 1 |   |
| Vacuolization Cytoplasmic    |   |   |   |   |   |   |   |   |   |   |   |   |   | 2 |   |   |   |   | 3 |   |   |   |   |
| Adrenal Medulla              | + | + | + | + | + | + | + | + | + | + | + | + | M | + | + | + | + | + | + | + | + | + | + |
| Hyperplasia                  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | 1 |   |   |   |   |   |   |   |
| Islets, Pancreatic           | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Parathyroid Gland            | + | + | + | + | + | + | M | + | M | + | + | M | M | + | M | M | M | M | M | + | + | M | M |
| Hyperplasia                  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | 4 |   |   |   |
| Pituitary Gland              | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Angiectasis                  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | 4 |   |   |   |   |   | 1 |   |
| Pars Distalis, Hyperplasia   |   | 1 | 2 | 1 |   | 2 | 1 |   | 2 |   | 4 |   |   |   |   | 2 |   | 2 |   |   | 2 | 2 |   |
| Thyroid Gland                | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| C-cell, Hyperplasia          |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Follicular Cell, Hyperplasia |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | 2 |   |   |   |   |   |   |   |

## GENERAL BODY SYSTEM

|  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |
|--|---|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|---|
| Tissue NOS                                     | + |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |
| Mediastinum, Infiltration Cellular, Lymphocyte |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | + |
| Mediastinum, Thrombosis                        |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 1 |

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

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

Experiment Number: 20515 - 04  
Test Type: CHRONIC  
Route: RESPIRATORY EXPOSURE WHOLE BODY  
Species/Strain: MICE/B6C3F1

P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL  
Metal working fluids (CIMSTAR 3800)  
CAS Number: CIMSTAR3800

Date Report Requested: 03/08/2013  
Time Report Requested: 14:13:47  
First Dose M/F: 05/05/08 / 05/05/08  
Lab: BNW

|   |             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
|---|-------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|--|
| <b>B6C3F1 MICE FEMALE</b><br><b>Control</b> | DAY ON TEST | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |   |  |
|   |             | 7 | 7 | 7 | 7 | 7 | 7 | 6 | 6 | 7 | 3 | 7 | 7 | 6 | 5 | 7 | 7 | 6 | 7 | 1 | 7 | 7 | 7 | 7 | 7 | 5 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 |  |
|   | 3           | 3 | 3 | 3 | 3 | 3 | 1 | 7 | 3 | 4 | 3 | 0 | 0 | 4 | 3 | 3 | 8 | 3 | 9 | 3 | 3 | 3 | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 3 | 3 | 3 |   |  |
|   | ANIMAL ID   | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  |
|   |             | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |  |
|   |             | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |  |
|   |             | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 |   |   |   |   |   |   |   |   |   |   |   |   |  |

females  
(cont...)

**GENITAL SYSTEM**

|  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|--|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Clitoral Gland<br>Inflammation, Chronic Active | + | + | + | + | M | + | + | + | + | + | + | M | + | + | + | + | M | + | M | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |   |   |
| Ovary<br>Angiectasis                           | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |   |
| Cyst   |   |   |   |   |   | 2 |   |   |   |   |   |   |   |   | 3 |   |   | 3 |   |   |   | 1 |   |   | 2 |   | 2 |   |   |   |   |   |   |   |   |   |   |   |
| Hemorrhage                                     | 1 |   |   |   |   |   |   |   |   | 1 |   | 1 |   |   |   | 1 |   |   |   |   | 1 | 1 |   | 1 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Inflammation, Chronic Active                   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Mineralization                                 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Necrosis                                       |   |   |   |   |   |   |   |   |   |   |   | 1 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Corpus Luteum, Hyperplasia                     |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | 2 |
| Uterus<br>Angiectasis                          | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |   |
| Atrophy  |   | 4 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Decidual Reaction                              |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Dilatation                                     |   |   |   |   |   |   |   |   |   |   |   |   |   | 3 |   |   |   | 3 | 3 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | 3 |   |   |
| Inflammation, Suppurative                      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Inflammation, Chronic Active                   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Thrombosis                                     |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | 3 |
| Endometrium, Hyperplasia, Cystic               | 2 | 1 |   |   | 1 | 1 |   |   |   |   | 2 | 1 | 4 |   |   | 2 |   | 3 | 3 |   |   |   |   |   |   | 3 | 3 | 3 | 3 |   |   |   |   |   |   |   | 2 |   |

**HEMATOPOIETIC SYSTEM**

|                          |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|--------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Bone Marrow              | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |   |
| Lymph Node<br>Hemorrhage | + |   | + |   |   |   |   |   |   |   |   |   | + |   |   |   |   |   |   |   |   | + |   | + |   |   |   |   |   |   |   |   |   |   |   |   |   | 3 |

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

Experiment Number: 20515 - 04

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: MICE/B6C3F1

P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 03/08/2013

Time Report Requested: 14:13:47

First Dose M/F: 05/05/08 / 05/05/08

Lab: BNW

| B6C3F1 MICE FEMALE | DAY ON TEST |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | females (cont...) |
|--------------------|-------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-------------------|
|                    | 0732        | 0731 | 0733 | 0733 | 0732 | 0722 | 0663 | 0667 | 0772 | 0734 | 0730 | 0654 | 0773 | 0773 | 0668 | 0773 | 0717 | 0773 | 0773 | 0773 | 0557 | 0773 |                   |
| Control            | 0010        | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 |                   |
|                    | 0011        | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 |                   |
|                    | 0011        | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 |                   |
|                    | 0011        | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 |                   |
|                    | 0011        | 0012 | 0013 | 0014 | 0015 | 0016 | 0017 | 0018 | 0019 | 0020 | 0021 | 0022 | 0023 | 0024 | 0025 | 0026 | 0027 | 0028 | 0029 | 0030 | 0031 | 0032 | 0033              |

Iliac, Ectasia 4  
Iliac, Hyperplasia, Lymphoid  
Lumbar, Ectasia 1  
Pancreatic, Inflammation, Chronic Active  
Renal, Ectasia 4

|  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|--|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lymph Node, Bronchial                                    | M | + | + | + | M | M | M | M | M | + | M | M | + | + | + | M | + | + | + | + | M | + | M | + | M |
| Lymph Node, Mandibular                                   | + | + | + | + | + | + | + | M | + | M | + | + | + | M | M | + | + | + | + | + | + | + | + | + | + |
| Lymph Node, Mediastinal                                  | + | M | + | + | + | + | + | + | M | + | + | M | M | + | + | M | + | M | + | + | + | + | + | + |   |
| Lymph Node, Mesenteric Infiltration Cellular, Histiocyte | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |   |
| Spleen Hematopoietic Cell Proliferation                  | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 2 | 2 |
| Thymus Atrophy Hyperplasia, Lymphoid                     | + | + | + | + | + | + | M | + | + | + | + | + | + | M | + | + | + | M | + | M | + | + | + | + |   |

INTEGUMENTARY SYSTEM

|                                   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mammary Gland Hyperplasia         | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Skin Ulcer Epidermis, Hyperplasia | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |

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



Experiment Number: 20515 - 04  
 Test Type: CHRONIC  
 Route: RESPIRATORY EXPOSURE WHOLE BODY  
 Species/Strain: MICE/B6C3F1

**P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL**  
 Metal working fluids (CIMSTAR 3800)  
 CAS Number: CIMSTAR3800

Date Report Requested: 03/08/2013  
 Time Report Requested: 14:13:47  
 First Dose M/F: 05/05/08 / 05/05/08  
 Lab: BNW

| B6C3F1 MICE FEMALE | DAY ON TEST           |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       | females<br>(cont...)  |
|--------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
|                    | 0<br>7<br>3<br>2      | 0<br>7<br>3<br>1      | 0<br>7<br>3<br>3      | 0<br>7<br>3<br>3      | 0<br>7<br>3<br>2      | 0<br>7<br>3<br>2      | 0<br>6<br>1<br>3      | 0<br>6<br>7<br>7      | 0<br>6<br>3<br>2      | 0<br>7<br>4<br>5      | 0<br>7<br>3<br>3      | 0<br>7<br>0<br>5      | 0<br>6<br>0<br>5      | 0<br>5<br>4<br>9      | 0<br>7<br>3<br>3      | 0<br>7<br>8<br>2      | 0<br>6<br>3<br>3      | 0<br>7<br>9<br>1      | 0<br>1<br>3<br>2      | 0<br>7<br>3<br>3      | 0<br>7<br>3<br>2      | 0<br>7<br>3<br>3      | 0<br>5<br>2<br>7      | 0<br>7<br>3<br>2      |                       |
| Control            | ANIMAL ID             |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |
|                    | 0<br>0<br>1<br>0<br>1 | 0<br>0<br>1<br>0<br>2 | 0<br>0<br>1<br>0<br>3 | 0<br>0<br>1<br>0<br>4 | 0<br>0<br>1<br>0<br>5 | 0<br>0<br>1<br>0<br>6 | 0<br>0<br>1<br>0<br>7 | 0<br>0<br>1<br>0<br>8 | 0<br>0<br>1<br>0<br>9 | 0<br>0<br>1<br>1<br>0 | 0<br>0<br>1<br>1<br>1 | 0<br>0<br>1<br>1<br>2 | 0<br>0<br>1<br>1<br>3 | 0<br>0<br>1<br>1<br>4 | 0<br>0<br>1<br>1<br>5 | 0<br>0<br>1<br>1<br>6 | 0<br>0<br>1<br>1<br>7 | 0<br>0<br>1<br>1<br>8 | 0<br>0<br>1<br>1<br>9 | 0<br>0<br>1<br>2<br>0 | 0<br>0<br>1<br>2<br>1 | 0<br>0<br>1<br>2<br>2 | 0<br>0<br>1<br>2<br>3 | 0<br>0<br>1<br>2<br>4 | 0<br>0<br>1<br>2<br>5 |

**MUSCULOSKELETAL SYSTEM**

|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Bone                                      | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Fibro-Osseous Lesion                      |   | 1 | 1 |   | 2 |   | 1 |   | 2 |   | 1 | 2 |   | 2 |   | 2 |   |   |   |   | 1 |   |   |   |
| Cartilage, Femur, Metaphysis, Hyperplasia |   |   | 4 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Cranium, Inflammation, Chronic Active     |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Femur, Fracture                           |   |   | X |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Skeletal Muscle                           |   |   |   |   |   |   |   |   |   |   |   |   |   | + | + |   |   |   |   |   |   |   |   |   |
| Infiltration Cellular, Lymphocyte         |   |   |   |   |   |   |   |   |   |   |   |   |   | 1 | 2 |   |   |   |   |   |   |   |   |   |

**NERVOUS SYSTEM**

|                                   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Brain                             | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Compression                       |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | 2 |   |   |   |   |   |   |   |
| Peripheral Nerve                  |   |   |   |   |   |   |   |   |   |   |   |   |   |   | + |   |   |   |   |   |   |   | + |
| Infiltration Cellular, Mixed Cell |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | 1 |
| Spinal Cord                       |   |   |   |   |   |   |   |   |   |   |   |   |   |   | + | + |   |   |   |   |   |   | + |

**RESPIRATORY SYSTEM**

|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Larynx                                      | + | I | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Metaplasia, Squamous                        |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Lung  | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Hemorrhage                                  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | 2 |
| Infiltration Cellular, Histiocyte           |   |   |   |   |   |   |   | 1 |   |   |   | 1 |   |   |   |   |   |   |   |   |   |   |   |
| Alveolar Epithelium, Hyperplasia            |   |   | 1 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | 1 |
| Alveolus, Infiltration Cellular, Histiocyte |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | 1 |

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

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

Experiment Number: 20515 - 04  
 Test Type: CHRONIC  
 Route: RESPIRATORY EXPOSURE WHOLE BODY  
 Species/Strain: MICE/B6C3F1

**P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL**  
 Metal working fluids (CIMSTAR 3800)  
 CAS Number: CIMSTAR3800

Date Report Requested: 03/08/2013  
 Time Report Requested: 14:13:47  
 First Dose M/F: 05/05/08 / 05/05/08  
 Lab: BNW

| B6C3F1 MICE FEMALE<br>Control                         | DAY ON TEST      |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  | ANIMAL ID | females<br>(cont...) |                  |                  |                  |                  |   |   |
|---|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|-----------|----------------------|------------------|------------------|------------------|------------------|---|---|
|   | 0<br>7<br>3<br>2 | 0<br>7<br>3<br>1 | 0<br>7<br>3<br>3 | 0<br>7<br>3<br>3 | 0<br>7<br>3<br>2 | 0<br>7<br>3<br>2 | 0<br>6<br>1<br>3 | 0<br>6<br>7<br>7 | 0<br>6<br>3<br>2 | 0<br>7<br>4<br>5 | 0<br>3<br>3<br>3 | 0<br>7<br>4<br>5 | 0<br>7<br>3<br>5 | 0<br>6<br>0<br>5 | 0<br>5<br>4<br>9 | 0<br>7<br>3<br>3 | 0<br>7<br>8<br>2 | 0<br>6<br>3<br>1 | 0<br>7<br>9<br>4 | 0<br>7<br>3<br>2 |           |                      | 0<br>7<br>3<br>3 | 0<br>7<br>3<br>2 | 0<br>5<br>2<br>7 | 0<br>7<br>3<br>2 |   |   |
| Bronchiole, Hyperplasia                               | 1                |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  | 1                |                  |                  |                  | 1                |                  |           |                      |                  |                  |                  |                  |   |   |
| Interstitial, Inflammation, Chronic Active            | 2                |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |           |                      |                  |                  |                  |                  |   |   |
| Perivascular, Inflammation, Chronic Active            |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  | 3                |                  |                  |                  |                  |                  |                  |                  |                  |                  |           |                      |                  |                  |                  |                  |   |   |
| Nose  | +                |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |           |                      |                  |                  |                  |                  |   |   |
| Inflammation, Chronic Active                          |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  | 2                |                  |                  |                  |                  |                  |                  |                  |                  |                  |           |                      | 1                |                  |                  |                  |   |   |
| Necrosis  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  | 1                |                  |                  |                  |                  |                  |                  |                  |                  |                  |           |                      |                  |                  |                  |                  |   |   |
| Olfactory Epithelium, Accumulation, Hyaline Droplet   | 1                | 1                |                  | 2                | 2                |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  | 1                | 1                | 2                | 1                | 2         | 2                    |                  | 2                | 2                | 2                | 2 |   |
| Olfactory Epithelium, Atrophy                         |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  | 1                |                  |                  |                  |                  |                  |                  |                  |                  |                  |           |                      |                  |                  |                  |                  |   |   |
| Olfactory Epithelium, Metaplasia, Respiratory         |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  | 1                |                  | 1                |                  | 1                |                  | 1                |                  | 1                |                  | 1         |                      | 1                |                  | 1                |                  | 1 |   |
| Respiratory Epithelium, Accumulation, Hyaline Droplet | 1                | 1                |                  | 2                | 1                | 2                | 1                | 2                |                  | 1                | 1                | 1                |                  | 2                | 1                | 1                | 2                |                  | 2                | 2                | 2         | 2                    |                  |                  |                  |                  |   |   |
| Respiratory Epithelium, Hyperplasia                   | 1                | 2                | 1                |                  | 2                | 2                | 2                |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  | 1                | 1                | 2         | 1                    |                  | 1                | 1                | 2                | 1 | 2 |
| Trachea   | +                |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |           |                      |                  |                  |                  |                  |   |   |
| <b>SPECIAL SENSES SYSTEM</b>                          |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |           |                      |                  |                  |                  |                  |   |   |
| Eye   | +                |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |           |                      |                  |                  |                  |                  |   |   |
| Lens, Degeneration                                    |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  | 1                |                  | 1                |                  |                  |                  |                  |                  |                  |                  |           |                      |                  |                  |                  |                  |   |   |
| Harderian Gland                                       | +                |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |           |                      |                  |                  |                  |                  |   |   |
| Atrophy   |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |           |                      | 1                |                  |                  |                  |   |   |
| Hyperplasia   |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  | 4                |                  |                  |                  |                  |                  |                  |                  |                  |                  |           |                      | 2                |                  |                  |                  |   |   |
| <b>URINARY SYSTEM</b>                                 |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |           |                      |                  |                  |                  |                  |   |   |
| Kidney  | +                |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |           |                      |                  |                  |                  |                  |   |   |
| Accumulation, Hyaline Droplet                         |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  | 2                |                  |                  |                  |                  |                  |                  |                  |                  |                  |           |                      |                  |                  |                  |                  |   |   |
| Infarct   |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |           |                      |                  |                  |                  |                  |   |   |

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 + .. Tissue examined microscopically  
 X .. Lesion present  
 I .. Insufficient tissue  
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 A .. Autolysis precludes evaluation  
 BLANK .. Not examined microscopically

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





Experiment Number: 20515 - 04  
 Test Type: CHRONIC  
 Route: RESPIRATORY EXPOSURE WHOLE BODY  
 Species/Strain: MICE/B6C3F1

**P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL**  
 Metal working fluids (CIMSTAR 3800)  
 CAS Number: CIMSTAR3800

Date Report Requested: 03/08/2013  
 Time Report Requested: 14:13:47  
 First Dose M/F: 05/05/08 / 05/05/08  
 Lab: BNW

| B6C3F1 MICE FEMALE                   | DAY ON TEST |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | * TOTALS |     |     |
|--------------------------------------|-------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|----------|-----|-----|
|                                      | 0731        | 0736 | 0738 | 0739 | 0741 | 0742 | 0743 | 0744 | 0745 | 0746 | 0747 | 0748 | 0749 | 0750 | 0751 | 0752 | 0753 | 0754 | 0755 | 0756 | 0757 | 0758 | 0759 | 0760 |          |     |     |
| Control                              | ANIMAL ID   |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |          |     |     |
|                                      | 001         | 002  | 003  | 004  | 005  | 006  | 007  | 008  | 009  | 010  | 011  | 012  | 013  | 014  | 015  | 016  | 017  | 018  | 019  | 020  | 021  | 022  | 023  | 024  |          |     |     |
| Inflammation, Chronic Active         |             |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 2        | 1   | 2.0 |
| Fat, Necrosis                        |             |      |      | 2    |      | 2    |      |      |      | 2    |      | 1    |      |      |      |      | 1    |      | 1    | 1    |      |      |      |      |          | 11  | 1.5 |
| Pancreas                             | +           | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | 50   |          |     |     |
| Fibrosis                             |             |      |      |      |      |      |      |      |      |      |      | 4    |      |      |      |      |      |      |      |      |      |      |      |      | 1        | 4.0 |     |
| Inflammation, Chronic Active         |             |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 1        | 2.0 |     |
| Acinus, Atrophy                      |             |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 1        | 3.0 |     |
| Salivary Glands                      | +           | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | 50   |          |     |     |
| Stomach, Forestomach                 | +           | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | 50   |          |     |     |
| Fibrosis                             |             |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 1        | 1.0 |     |
| Hyperplasia, Squamous                |             |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 1        | 4.0 |     |
| Stomach, Glandular                   | +           | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | 50   |          |     |     |
| Degeneration, Hyaline                |             |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 1        | 1.0 |     |
| Inflammation, Chronic Active         |             |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 1        | 1.0 |     |
| Tooth                                |             |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 1        |     |     |
| Dysplasia                            |             |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 3        | 3.0 |     |
| <b>CARDIOVASCULAR SYSTEM</b>         |             |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |          |     |     |
| Blood Vessel                         | +           | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | M    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | 46   |          |     |     |
| Aorta, Embolus Bacterial             |             |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 1        | 3.0 |     |
| Heart                                | +           | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | 50   |          |     |     |
| Cardiomyopathy                       |             |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 1        | 2.0 |     |
| Necrosis                             |             |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 1        | 2.0 |     |
| Artery, Inflammation, Chronic Active |             |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 3        | 3.0 |     |

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Experiment Number: 20515 - 04  
 Test Type: CHRONIC  
 Route: RESPIRATORY EXPOSURE WHOLE BODY  
 Species/Strain: MICE/B6C3F1

**P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL**  
 Metal working fluids (CIMSTAR 3800)  
 CAS Number: CIMSTAR3800

Date Report Requested: 03/08/2013  
 Time Report Requested: 14:13:47  
 First Dose M/F: 05/05/08 / 05/05/08  
 Lab: BNW

| B6C3F1 MICE FEMALE | DAY ON TEST           |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       | * TOTALS              |
|--------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
|                    | 0<br>7<br>3<br>1      | 0<br>6<br>8<br>6      | 0<br>7<br>3<br>3      | 0<br>7<br>3<br>1      | 0<br>7<br>3<br>2      | 0<br>7<br>3<br>2      | 0<br>7<br>3<br>3      | 0<br>7<br>3<br>3      | 0<br>7<br>3<br>2      | 0<br>7<br>3<br>1      | 0<br>7<br>3<br>3      | 0<br>7<br>3<br>2      | 0<br>7<br>3<br>2      | 0<br>7<br>3<br>2      | 0<br>7<br>3<br>1      | 0<br>7<br>3<br>1      | 0<br>7<br>3<br>2      | 0<br>7<br>3<br>2      | 0<br>7<br>3<br>3      | 0<br>7<br>3<br>3      | 0<br>7<br>3<br>1      | 0<br>7<br>3<br>1      | 0<br>7<br>3<br>2      | 0<br>7<br>3<br>2      |                       |
| Control            | ANIMAL ID             |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |
|                    | 0<br>0<br>1<br>2<br>6 | 0<br>0<br>1<br>2<br>7 | 0<br>0<br>1<br>2<br>8 | 0<br>0<br>1<br>2<br>9 | 0<br>0<br>1<br>3<br>0 | 0<br>0<br>1<br>3<br>1 | 0<br>0<br>1<br>3<br>2 | 0<br>0<br>1<br>3<br>3 | 0<br>0<br>1<br>3<br>4 | 0<br>0<br>1<br>3<br>5 | 0<br>0<br>1<br>3<br>6 | 0<br>0<br>1<br>3<br>7 | 0<br>0<br>1<br>3<br>8 | 0<br>0<br>1<br>3<br>9 | 0<br>0<br>1<br>4<br>0 | 0<br>0<br>1<br>4<br>1 | 0<br>0<br>1<br>4<br>2 | 0<br>0<br>1<br>4<br>3 | 0<br>0<br>1<br>4<br>4 | 0<br>0<br>1<br>4<br>5 | 0<br>0<br>1<br>4<br>6 | 0<br>0<br>1<br>4<br>7 | 0<br>0<br>1<br>4<br>8 | 0<br>0<br>1<br>4<br>9 | 0<br>0<br>1<br>5<br>0 |

**GENITAL SYSTEM**

|  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |    |    |     |     |     |     |
|--|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|----|----|-----|-----|-----|-----|
| Clitoral Gland<br>Inflammation, Chronic Active | M | + | M | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 44 | 1  | 1.0 |     |     |     |
| Ovary  | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | 3  | 2.3 |     |     |     |
| Angiectasis                                    |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |    | 4  | 2   |     |     |     |
| Cyst   |   |   |   | 1 |   |   | 2 |   |   | 1 | 1 | 3 |   |   |   |   |   |   |   |   |   |   |   |   |    | 14 | 2.0 |     |     |     |
| Hemorrhage                                     |   |   |   |   |   |   |   |   |   | 1 |   | 1 | 1 |   |   |   |   |   |   |   |   |   |   |   |    |    | 12  | 1.0 |     |     |
| Inflammation, Chronic Active                   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |    |    | 3   | 1   | 3.0 |     |
| Mineralization                                 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |    |    |     | 2   | 1   | 2.0 |
| Necrosis                                       |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |    |    |     |     | 1   | 1.0 |
| Corpus Luteum, Hyperplasia                     | 1 |   |   |   |   | 1 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |    |    |     | 3   | 1.3 |     |
| Uterus   | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | 5  | 2.2 |     |     |     |
| Angiectasis                                    |   |   |   |   | 1 |   |   |   |   |   |   |   |   |   |   | 2 |   |   |   |   |   |   |   |   |    |    |     | 2   | 2   |     |
| Atrophy  |   |   |   |   | 3 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |    |    |     |     | 1   | 3.0 |
| Decidual Reaction                              |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |    |    |     | 3   | 1   | 3.0 |
| Dilatation                                     |   |   |   |   |   | 2 | 3 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |    |    |     |     | 6   | 2.8 |
| Inflammation, Suppurative                      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |    |    |     | 2   | 1   | 2.0 |
| Inflammation, Chronic Active                   |   |   |   |   |   |   |   |   | 2 | 1 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |    |    |     |     | 2   | 1.5 |
| Thrombosis                                     |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |    |    |     |     | 1   | 3.0 |
| Endometrium, Hyperplasia, Cystic               |   |   |   |   |   |   |   |   |   | 3 | 1 |   |   |   | 2 | 2 | 2 | 2 | 2 | 2 |   |   |   |   |    |    |     |     | 28  | 2.1 |

**HEMATOPOIETIC SYSTEM**

|                          |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |    |    |   |     |
|--------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|----|----|---|-----|
| Bone Marrow              | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |    |   |     |
| Lymph Node<br>Hemorrhage |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |    | 11 | 1 | 3.0 |

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

Experiment Number: 20515 - 04  
 Test Type: CHRONIC  
 Route: RESPIRATORY EXPOSURE WHOLE BODY  
 Species/Strain: MICE/B6C3F1

**P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL**  
 Metal working fluids (CIMSTAR 3800)  
 CAS Number: CIMSTAR3800

Date Report Requested: 03/08/2013  
 Time Report Requested: 14:13:47  
 First Dose M/F: 05/05/08 / 05/05/08  
 Lab: BNW

| B6C3F1 MICE FEMALE<br>Control                               | DAY ON TEST           |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       | * TOTALS              |                |     |
|---|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|----------------|-----|
|   | 0<br>7<br>3<br>1      | 0<br>6<br>8<br>6      | 0<br>7<br>3<br>3      | 0<br>7<br>3<br>1      | 0<br>7<br>3<br>2      | 0<br>7<br>3<br>2      | 0<br>7<br>3<br>3      | 0<br>7<br>3<br>2      | 0<br>7<br>3<br>1      | 0<br>7<br>3<br>2      | 0<br>7<br>3<br>3      | 0<br>7<br>3<br>2      | 0<br>7<br>3<br>2      | 0<br>7<br>3<br>1      | 0<br>7<br>3<br>1      | 0<br>7<br>3<br>2      | 0<br>7<br>3<br>2      | 0<br>7<br>3<br>3      | 0<br>7<br>3<br>3      | 0<br>7<br>3<br>1      | 0<br>7<br>3<br>1      | 0<br>7<br>3<br>2      | 0<br>7<br>3<br>2      |                       |                       |                |     |
| ANIMAL ID   | 0<br>0<br>1<br>2<br>6 | 0<br>0<br>1<br>2<br>7 | 0<br>0<br>1<br>2<br>8 | 0<br>0<br>1<br>2<br>9 | 0<br>0<br>1<br>3<br>0 | 0<br>0<br>1<br>3<br>1 | 0<br>0<br>1<br>3<br>2 | 0<br>0<br>1<br>3<br>3 | 0<br>0<br>1<br>3<br>4 | 0<br>0<br>1<br>3<br>5 | 0<br>0<br>1<br>3<br>6 | 0<br>0<br>1<br>3<br>7 | 0<br>0<br>1<br>3<br>8 | 0<br>0<br>1<br>3<br>9 | 0<br>0<br>1<br>4<br>0 | 0<br>0<br>1<br>4<br>1 | 0<br>0<br>1<br>4<br>2 | 0<br>0<br>1<br>4<br>3 | 0<br>0<br>1<br>4<br>4 | 0<br>0<br>1<br>4<br>5 | 0<br>0<br>1<br>4<br>6 | 0<br>0<br>1<br>4<br>7 | 0<br>0<br>1<br>4<br>8 | 0<br>0<br>1<br>4<br>9 | 0<br>0<br>1<br>5<br>0 |                |     |
| Iliac, Ectasia  |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       | 1                     | 4.0            |     |
| Iliac, Hyperplasia, Lymphoid                                |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       | 1                     |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       | 1              | 1.0 |
| Lumbar, Ectasia   |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       | 1              | 1.0 |
| Pancreatic, Inflammation, Chronic Active                    |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       | 4                     |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       | 1              | 4.0 |
| Renal, Ectasia  |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       | 1              | 4.0 |
| Lymph Node, Bronchial                                       | +                     | +                     | M                     | +                     | M                     | +                     | +                     | M                     | +                     | +                     | +                     | M                     | M                     | M                     | M                     | +                     | M                     | M                     | +                     | M                     | M                     | +                     | +                     | +                     | 26                    |                |     |
| Lymph Node, Mandibular                                      | +                     | +                     | +                     | +                     | M                     | +                     | +                     | M                     | M                     | M                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | M                     | +                     | +                     | +                     | +                     | +                     | +                     | 41                    |                |     |
| Lymph Node, Mediastinal                                     | M                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | 43                    |                |     |
| Lymph Node, Mesenteric<br>Infiltration Cellular, Histiocyte | +                     | +                     | +                     | +                     | +                     | M                     | +                     | +                     | +                     | +                     | M                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | 48                    | 1 2.0          |     |
| Spleen<br>Hematopoietic Cell Proliferation                  | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | 50                    | 4 2.3                 |                |     |
| Thymus<br>Atrophy<br>Hyperplasia, Lymphoid                  | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | M                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | M                     | +                     | 44                    | 2 1.5<br>1 3.0 |     |
| <b>INTEGUMENTARY SYSTEM</b>                                 |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                |     |
| Mammary Gland<br>Hyperplasia                                | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | 50                    | 2 1.0          |     |
| Skin<br>Ulcer<br>Epidermis, Hyperplasia                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | 50                    | 1 3.0<br>1 2.0 |     |

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

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



Experiment Number: 20515 - 04  
 Test Type: CHRONIC  
 Route: RESPIRATORY EXPOSURE WHOLE BODY  
 Species/Strain: MICE/B6C3F1

**P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL**  
 Metal working fluids (CIMSTAR 3800)  
 CAS Number: CIMSTAR3800

Date Report Requested: 03/08/2013  
 Time Report Requested: 14:13:47  
 First Dose M/F: 05/05/08 / 05/05/08  
 Lab: BNW

| B6C3F1 MICE FEMALE<br>Control | DAY ON TEST | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | * TOTALS |
|-------------------------------|-------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|----------|
|                               | ANIMAL ID   | 7 | 6 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 |          |
|                               |             | 3 | 8 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 0 |          |
|                               |             | 1 | 6 | 3 | 1 | 2 | 2 | 3 | 2 | 2 | 1 | 3 | 2 | 2 | 2 | 1 | 1 | 2 | 2 | 3 | 2 | 3 | 1 | 1 | 2 |          |
|                               |             | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |          |
|                               |             | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |          |
|                               |             | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 5 |          |
|                               |             | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |          |

**MUSCULOSKELETAL SYSTEM**

|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |           |           |            |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|-----------|-----------|------------|
| Bone                                      | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | <b>50</b> |           |            |
| Fibro-Osseous Lesion                      | 1 | 1 | 1 | 1 |   |   | 2 | 1 | 1 |   |   |   |   | 1 |   |   |   | 2 | 2 | 2 |   | 2 |   | 1 |           | <b>23</b> | <b>1.4</b> |
| Cartilage, Femur, Metaphysis, Hyperplasia |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |           | <b>1</b>  | <b>4.0</b> |
| Cranium, Inflammation, Chronic Active     |   |   |   |   |   |   |   |   |   |   |   |   |   | 3 |   |   |   |   |   |   |   |   |   |   |           | <b>1</b>  | <b>3.0</b> |
| Femur, Fracture                           |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |           | <b>1</b>  |            |
| Skeletal Muscle                           |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | <b>3</b>  |           |            |
| Infiltration Cellular, Lymphocyte         |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |           | <b>3</b>  | <b>1.3</b> |

**NERVOUS SYSTEM**

|                                   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |           |          |            |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|-----------|----------|------------|
| Brain                             | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | <b>50</b> |          |            |
| Compression                       |   |   | 3 |   |   | 3 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |           | <b>3</b> | <b>2.7</b> |
| Peripheral Nerve                  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | <b>2</b>  |          |            |
| Infiltration Cellular, Mixed Cell |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |           | <b>1</b> | <b>1.0</b> |
| Spinal Cord                       |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | <b>3</b>  |          |            |

**RESPIRATORY SYSTEM**

|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |           |          |            |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|-----------|----------|------------|
| Larynx                                      | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | <b>49</b> |          |            |
| Metaplasia, Squamous                        |   |   |   |   |   |   |   |   |   |   |   |   |   | 1 |   |   |   |   |   |   |   |   |   |   |           | <b>1</b> | <b>1.0</b> |
| Lung  | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | <b>50</b> |          |            |
| Hemorrhage                                  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |           | <b>1</b> | <b>2.0</b> |
| Infiltration Cellular, Histiocyte           |   |   |   |   |   |   |   |   |   |   |   |   | 1 |   |   |   |   |   |   |   |   | 1 |   |   |           | <b>4</b> | <b>1.0</b> |
| Alveolar Epithelium, Hyperplasia            |   |   |   |   |   |   |   |   |   |   |   | 2 |   |   | 2 |   |   |   |   |   |   |   |   |   |           | <b>4</b> | <b>1.5</b> |
| Alveolus, Infiltration Cellular, Histiocyte |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |           | <b>1</b> | <b>1.0</b> |

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

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

Experiment Number: 20515 - 04  
 Test Type: CHRONIC  
 Route: RESPIRATORY EXPOSURE WHOLE BODY  
 Species/Strain: MICE/B6C3F1

**P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL**  
 Metal working fluids (CIMSTAR 3800)  
 CAS Number: CIMSTAR3800

Date Report Requested: 03/08/2013  
 Time Report Requested: 14:13:47  
 First Dose M/F: 05/05/08 / 05/05/08  
 Lab: BNW

| B6C3F1 MICE FEMALE                                    | DAY ON TEST |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | * TOTALS |  |  |
|---|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|----------|--|--|
|   | 0731        | 0731  | 0731  | 0731  | 0731  | 0731  | 0731  | 0731  | 0731  | 0731  | 0731  | 0731  | 0731  | 0731  | 0731  | 0731  | 0731  | 0731  | 0731  | 0731  | 0731  | 0731  | 0731  | 0731  |          |  |  |
| Control   | ANIMAL ID   |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |          |  |  |
|   | 00126       | 00127 | 00128 | 00129 | 00130 | 00131 | 00132 | 00133 | 00134 | 00135 | 00136 | 00137 | 00138 | 00139 | 00140 | 00141 | 00142 | 00143 | 00144 | 00145 | 00146 | 00147 | 00148 | 00149 | 00150    |  |  |
| Bronchiole, Hyperplasia                               |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |          |  |  |
| Interstitium, Inflammation, Chronic Active            |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |          |  |  |
| Perivascular, Inflammation, Chronic Active            |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |          |  |  |
| Nose  |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |          |  |  |
| Inflammation, Chronic Active                          |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |          |  |  |
| Necrosis  |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |          |  |  |
| Olfactory Epithelium, Accumulation, Hyaline Droplet   |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |          |  |  |
| Olfactory Epithelium, Atrophy                         |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |          |  |  |
| Olfactory Epithelium, Metaplasia, Respiratory         |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |          |  |  |
| Respiratory Epithelium, Accumulation, Hyaline Droplet |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |          |  |  |
| Respiratory Epithelium, Hyperplasia                   |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |          |  |  |
| Trachea   |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |          |  |  |
| <b>SPECIAL SENSES SYSTEM</b>                          |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |          |  |  |
| Eye   |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |          |  |  |
| Lens, Degeneration                                    |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |          |  |  |
| Harderian Gland                                       |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |          |  |  |
| Atrophy   |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |          |  |  |
| Hyperplasia   |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |          |  |  |
| <b>URINARY SYSTEM</b>                                 |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |          |  |  |
| Kidney  |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |          |  |  |
| Accumulation, Hyaline Droplet                         |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |          |  |  |
| Infarct   |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |          |  |  |

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

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

Experiment Number: 20515 - 04  
 Test Type: CHRONIC  
 Route: RESPIRATORY EXPOSURE WHOLE BODY  
 Species/Strain: MICE/B6C3F1

**P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL**  
 Metal working fluids (CIMSTAR 3800)  
 CAS Number: CIMSTAR3800

Date Report Requested: 03/08/2013  
 Time Report Requested: 14:13:47  
 First Dose M/F: 05/05/08 / 05/05/08  
 Lab: BNW

| B6C3F1 MICE FEMALE             | DAY ON TEST |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | * TOTALS |        |
|--------------------------------|-------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|----------|--------|
|                                | 0731        | 0736 | 0738 | 0731 | 0733 | 0735 | 0737 | 0739 | 0741 | 0743 | 0745 | 0747 | 0749 | 0751 | 0753 | 0755 | 0757 | 0759 | 0761 | 0763 | 0765 | 0767 | 0769 | 0771 |          |        |
| Control                        | 001         | 002  | 003  | 004  | 005  | 006  | 007  | 008  | 009  | 010  | 011  | 012  | 013  | 014  | 015  | 016  | 017  | 018  | 019  | 020  | 021  | 022  | 023  | 024  |          |        |
|                                | 0           | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |          |        |
|                                | 1           | 1    | 1    | 1    | 1    | 1    | 1    | 1    | 1    | 1    | 1    | 1    | 1    | 1    | 1    | 1    | 1    | 1    | 1    | 1    | 1    | 1    | 1    | 1    |          |        |
|                                | 2           | 2    | 2    | 2    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 4    | 4    | 4    | 4    | 4    | 4    | 4    | 4    | 4    |          |        |
|                                | 6           | 7    | 8    | 9    | 0    | 1    | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 0    | 1    | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    |          |        |
| Necrosis                       |             |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 1 1.0    |        |
| Nephropathy                    | 1           |      | 1    | 1    | 2    | 2    | 1    | 1    | 1    | 1    | 1    | 1    | 1    | 2    | 2    | 1    | 2    | 1    | 2    | 1    | 1    | 2    | 1    | 2    | 1        | 47 1.5 |
| Glomerulus, Amyloid Deposition |             |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |          | 1 4.0  |
| Urinary Bladder Angiectasis    | +           | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | 50       |        |
|                                |             |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 3    |      |      |      |      |      |      |      |      | 1 3.0    |        |

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Experiment Number: 20515 - 04  
 Test Type: CHRONIC  
 Route: RESPIRATORY EXPOSURE WHOLE BODY  
 Species/Strain: MICE/B6C3F1

P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL  
 Metal working fluids (CIMSTAR 3800)  
 CAS Number: CIMSTAR3800

Date Report Requested: 03/08/2013  
 Time Report Requested: 14:13:47  
 First Dose M/F: 05/05/08 / 05/05/08  
 Lab: BNW

|                           |           | DAY ON TEST |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | females<br>(cont...) |   |
|---------------------------|-----------|-------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|----------------------|---|
|                           |           | 0           | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |                      | 0 |
|                           |           | 6           | 7 | 7 | 7 | 7 | 5 | 6 | 7 | 7 | 7 | 6 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 |                      | 7 |
| <b>B6C3F1 MICE FEMALE</b> |           | 7           | 3 | 3 | 3 | 3 | 9 | 7 | 3 | 3 | 3 | 3 | 1 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3                    |   |
|                           |           | 7           | 2 | 3 | 3 | 3 | 9 | 7 | 3 | 3 | 3 | 2 | 5 | 7 | 3 | 2 | 3 | 3 | 1 | 3 | 3 | 2                    |   |
| <b>10 mg/m3</b>           |           | 0           | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0                    |   |
|                           |           | 0           | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0                    |   |
|                           | ANIMAL ID | 3           | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3                    |   |
|                           |           | 0           | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2                    |   |
|                           |           | 1           | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1                    |   |

**GENITAL SYSTEM**

|                                   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|-----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Clitoral Gland                    | M | + | + | + | M | M | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Inflammation, Chronic Active      |   |   |   |   |   |   |   |   |   |   |   |   | 1 |   |   |   |   |   |   |   |   |   |   |
| Ovary                             | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Angiectasis                       |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Cyst                              |   |   |   | 2 | 2 |   |   |   |   |   |   |   | 3 | 2 | 2 |   |   |   |   |   |   |   |   |
| Hemorrhage                        |   |   |   | 1 | 1 | 1 |   |   |   | 1 |   |   | 1 |   |   | 1 | 1 |   |   | 1 |   |   |   |
| Infiltration Cellular, Lymphocyte |   |   |   |   |   |   |   |   | 2 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Inflammation, Chronic Active      | 4 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Corpus Luteum, Hyperplasia        |   |   |   |   |   |   |   |   |   |   |   |   | 2 |   |   |   |   |   |   |   |   |   |   |
| Uterus                            | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Angiectasis                       |   |   |   |   |   |   |   | 2 |   |   |   |   |   |   |   | 4 |   |   |   |   |   |   |   |
| Dilatation                        |   |   |   |   |   | 2 |   |   |   | 3 |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Inflammation, Chronic Active      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Endometrium, Hyperplasia, Cystic  |   |   |   | 3 | 2 | 2 |   |   |   | 1 | 3 |   | 2 |   | 2 | 1 |   | 2 | 1 | 2 | 2 |   | 1 |

**HEMATOPOIETIC SYSTEM**

|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Bone Marrow                               | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Lymph Node                                | + |   |   | + |   |   |   |   | + |   |   |   |   |   | + | + |   | + |   |   |   |   | + |
| Iliac, Angiectasis                        |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | 3 |
| Iliac, Hyperplasia, Lymphoid              |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | 1 |   |   |   |   |   |   |
| Lumbar, Ectasia                           |   |   |   |   |   |   |   |   |   |   |   |   |   |   | 2 |   |   |   |   |   |   |   |   |
| Lumbar, Hyperplasia, Lymphoid             | 3 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Lumbar, Infiltration Cellular, Histiocyte |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Renal, Angiectasis                        |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | 3 |

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 1) Minimal 3) Moderate  
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Experiment Number: 20515 - 04  
 Test Type: CHRONIC  
 Route: RESPIRATORY EXPOSURE WHOLE BODY  
 Species/Strain: MICE/B6C3F1

**P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL**  
 Metal working fluids (CIMSTAR 3800)  
 CAS Number: CIMSTAR3800

Date Report Requested: 03/08/2013  
 Time Report Requested: 14:13:47  
 First Dose M/F: 05/05/08 / 05/05/08  
 Lab: BNW

| B6C3F1 MICE FEMALE<br>10 mg/m3  | DAY ON TEST |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | * TOTALS |       |       |       |                               |  |
|---|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|----------|-------|-------|-------|-------------------------------|--|
|   | 0733        | 0583  | 0732  | 0655  | 0730  | 0770  | 0579  | 0753  | 0753  | 0778  | 0633  | 0733  | 0773  | 0773  | 0771  | 0663  | 0753  | 0773  | 0773  | 0773  |          | 0773  | 0772  |       |                               |  |
| ANIMAL ID   | 00326       | 00337 | 00338 | 00339 | 00340 | 00341 | 00342 | 00343 | 00344 | 00345 | 00346 | 00347 | 00348 | 00349 | 00350 | 00351 | 00352 | 00353 | 00354 | 00355 | 00356    | 00357 | 00358 | 00359 | 00360                         |  |
| Renal, Hyperplasia, Lymphoid  |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |          |       |       |       | 2 2.5                         |  |
| Lymph Node, Bronchial   | M           | M     | +     | +     | M     | +     | +     | +     | M     | M     | +     | M     | +     | +     | +     | M     | +     | +     | M     | +     | M        | +     | +     | M     | 27                            |  |
| Lymph Node, Mandibular  | +           | +     | M     | +     | +     | +     | M     | M     | M     | M     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +        | +     | +     | +     | 42                            |  |
| Lymph Node, Mediastinal<br>Hematopoietic Cell Proliferation<br>Hyperplasia, Lymphoid    | +           | +     | +     | +     | +     | M     | +     | +     | +     | +     | M     | +     | +     | +     | M     | +     | +     | +     | +     | +     | +        | +     | +     | +     | 46<br>1 1.0<br>1 3.0          |  |
| Lymph Node, Mesenteric<br>Angiectasis<br>Hematopoietic Cell Proliferation<br>Hemorrhage | +           | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +        | +     | +     | +     | 50<br>1 3.0<br>1 1.0<br>2 2.0 |  |
| Spleen<br>Hematopoietic Cell Proliferation<br>Hyperplasia, Lymphoid                     | +           | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +        | +     | +     | +     | 50<br>3 1.3<br>1 3.0          |  |
| Thymus  | +           | +     | +     | +     | +     | +     | M     | +     | M     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +        | +     | +     | +     | 46                            |  |
| <b>INTEGUMENTARY SYSTEM</b>   |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |          |       |       |       |                               |  |
| Mammary Gland   | +           | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +        | +     | +     | +     | 50                            |  |
| Skin  | +           | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +        | +     | +     | +     | 50                            |  |
| <b>MUSCULOSKELETAL SYSTEM</b>   |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |          |       |       |       |                               |  |
| Bone<br>Fibro-Osseous Lesion  | +           | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +        | +     | +     | +     | 50<br>1 25 1.5                |  |

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Experiment Number: 20515 - 04  
 Test Type: CHRONIC  
 Route: RESPIRATORY EXPOSURE WHOLE BODY  
 Species/Strain: MICE/B6C3F1

**P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL**  
 Metal working fluids (CIMSTAR 3800)  
 CAS Number: CIMSTAR3800

Date Report Requested: 03/08/2013  
 Time Report Requested: 14:13:47  
 First Dose M/F: 05/05/08 / 05/05/08  
 Lab: BNW

| B6C3F1 MICE FEMALE | DAY ON TEST | ANIMAL ID |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | * TOTALS |      |
|--------------------|-------------|-----------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|----------|------|
|                    |             | 0733      | 0758 | 0773 | 0765 | 0777 | 0757 | 0777 | 0757 | 0777 | 0758 | 0773 | 0767 | 0777 | 0757 | 0777 | 0758 | 0773 | 0767 | 0777 | 0758 |          | 0773 |
| 10 mg/m3           |             | 0         | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0        | 3    |
|                    |             | 0         | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0        | 1    |
|                    |             | 3         | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3        | 1    |
|                    |             | 2         | 2    | 2    | 2    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 4    | 4    | 4    | 4    | 4    | 4    | 4    | 4        | 2    |
|                    |             | 6         | 7    | 8    | 9    | 0    | 1    | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 0    | 1    | 2    | 3    | 4    | 5    | 6        | 0    |

Skeletal Muscle Infiltration Cellular, Lymphocyte + 3 1 1.0

**NERVOUS SYSTEM**

Brain Compression + 50 1 2.0

Peripheral Nerve Degeneration Infiltration Cellular, Polymorphonuclear + 2 2 3 1 2.0 1 2.0

Spinal Cord Infiltration Cellular, Lymphocyte + 3 1 1.0

**RESPIRATORY SYSTEM**

Larynx Metaplasia, Squamous + + + + + + + + + + + + + + I + + + + + + + + + + 49 49 1.1

Lung Hemorrhage Infiltration Cellular, Histiocyte Infiltration Cellular, Lymphocyte Metaplasia, Osseous Alveolar Epithelium, Hyperplasia Bronchiole, Hyperplasia Perivascular, Inflammation, Chronic Active + 50 1 2.0 1 1.0 1 1.0 1 1.0 2 2.0 4 1.0 3 1.7

Nose Necrosis + + + + + + A + + + + + + + + + + + + + + + + 49 1 1.0

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Experiment Number: 20515 - 04

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: MICE/B6C3F1

P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 03/08/2013

Time Report Requested: 14:13:47

First Dose M/F: 05/05/08 / 05/05/08

Lab: BNW

| B6C3F1 MICE FEMALE<br>10 mg/m3  | DAY ON TEST |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | * TOTALS |       |       |           |               |      |
|---|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|----------|-------|-------|-----------|---------------|------|
|   | 0733        | 0733  | 0732  | 0655  | 0730  | 0770  | 0579  | 0733  | 0738  | 0733  | 0734  | 0733  | 0733  | 0731  | 0722  | 0678  | 0722  | 0733  | 0731  | 0733  |          |       | 0733  | 0733      | 0732          | 0732 |
| ANIMAL ID   | 00326       | 00337 | 00338 | 00339 | 00340 | 00341 | 00342 | 00343 | 00344 | 00345 | 00346 | 00347 | 00348 | 00349 | 00350 | 00351 | 00352 | 00353 | 00354 | 00355 | 00356    | 00357 | 00358 | 00359     |               |      |
| Olfactory Epithelium, Accumulation, Hyaline Droplet                                     |             | 2     | 2     | 1     | 2     | 2     |       | 2     | 3     | 2     | 1     |       | 2     | 3     | 2     | 2     | 2     | 2     |       |       | 2        | 2     | 2     | 2         | <b>40 1.9</b> |      |
| Olfactory Epithelium, Atrophy   |             |       |       |       |       | 1     |       |       |       |       |       |       |       |       |       |       |       |       |       |       |          |       |       |           | <b>1 1.0</b>  |      |
| Olfactory Epithelium, Metaplasia, Respiratory Epithelium, Accumulation, Hyaline Droplet |             |       |       |       |       |       |       |       | 2     |       |       |       |       |       | 1     |       |       |       |       |       |          |       |       |           | <b>4 1.3</b>  |      |
| Respiratory Epithelium, Accumulation, Hyaline Droplet                                   | 1           | 2     | 2     | 1     | 2     | 2     |       | 2     | 3     | 2     | 1     | 1     | 2     | 3     | 2     | 2     | 2     | 2     | 2     | 1     | 1        | 2     | 2     | 2         | <b>48 1.7</b> |      |
| Respiratory Epithelium, Hyperplasia   | 2           | 1     | 2     | 1     | 2     | 2     |       | 2     | 1     | 2     | 1     | 2     | 2     | 1     | 1     | 2     | 2     | 2     | 2     | 2     | 1        | 2     | 2     | 2         | <b>48 1.5</b> |      |
| Respiratory Epithelium, Metaplasia, Squamous  |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |          |       |       |           | <b>1 1.0</b>  |      |
| Respiratory Epithelium, Necrosis  |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |          |       |       |           | <b>1 1.0</b>  |      |
| Trachea   | +           | +     | +     | +     | +     | +     | A     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +        | +     | +     | <b>49</b> |               |      |
| <b>SPECIAL SENSES SYSTEM</b>  |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |          |       |       |           |               |      |
| Eye   | +           | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +        | +     | +     | +         | <b>50</b>     |      |
| Cornea, Inflammation, Chronic Active  |             |       |       |       |       |       |       |       |       |       |       |       |       | 2     |       |       |       |       |       |       |          |       |       |           | <b>1 2.0</b>  |      |
| Harderian Gland   | +           | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +        | +     | +     | +         | <b>50</b>     |      |
| Hyperplasia   |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |          |       |       |           | <b>1 1.0</b>  |      |
| Inflammation, Chronic Active  |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |          |       |       |           | <b>1 4.0</b>  |      |
| <b>URINARY SYSTEM</b>   |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |          |       |       |           |               |      |
| Kidney  | +           | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +        | +     | +     | +         | <b>50</b>     |      |
| Accumulation, Hyaline Droplet   |             |       |       |       |       |       |       |       | 2     |       |       |       |       |       |       |       |       |       |       |       |          |       |       |           | <b>1 2.0</b>  |      |
| Infarct   |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | 2     |       |          |       |       |           | <b>4 2.0</b>  |      |
| Metaplasia, Osseous   |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |          |       |       |           | <b>1 1.0</b>  |      |
| Nephropathy   | 1           | 2     | 2     |       | 2     | 2     | 2     | 2     | 1     | 2     | 1     | 1     | 2     | 2     | 2     | 2     | 1     | 3     |       | 2     |          | 1     | 1     | 2         | <b>46 1.8</b> |      |
| Urethra   |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |          |       | +     |           | <b>1</b>      |      |

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

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

Experiment Number: 20515 - 04  
 Test Type: CHRONIC  
 Route: RESPIRATORY EXPOSURE WHOLE BODY  
 Species/Strain: MICE/B6C3F1

**P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL**  
 Metal working fluids (CIMSTAR 3800)  
 CAS Number: CIMSTAR3800

Date Report Requested: 03/08/2013  
 Time Report Requested: 14:13:47  
 First Dose M/F: 05/05/08 / 05/05/08  
 Lab: BNW

| B6C3F1 MICE FEMALE                           | DAY ON TEST | ANIMAL ID |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | * TOTALS |      |      |      |      |
|--|-------------|-----------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|----------|------|------|------|------|
|  |             | 0733      | 0753 | 0772 | 0765 | 0777 | 0757 | 0775 | 0757 | 0775 | 0757 | 0775 | 0766 | 0777 | 0777 | 0777 | 0766 | 0777 | 0755 | 0777 | 0777 |          | 0777 | 0777 | 0777 | 0777 |
| 10 mg/m3                                     |             | 0         | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0        | 0    | 0    | 0    | 50   |
|  |             | 0         | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0        | 0    | 0    | 0    | 1    |
|  |             | 3         | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3        | 3    | 3    | 3    | 3.0  |
|  |             | 2         | 2    | 2    | 2    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 4    | 4    | 4    | 4    | 4    | 4    | 4        | 4    | 4    | 5    |      |
|  |             | 6         | 7    | 8    | 9    | 0    | 1    | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 0    | 1    | 2    | 3    | 4    | 5    | 6        | 7    | 8    | 9    |      |
| Urinary Bladder                              |             | +         | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +        | +    | +    | 50   |      |
| Artery, Serosa, Inflammation, Chronic Active |             |           |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |          |      |      | 1    |      |

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















Experiment Number: 20515 - 04

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: MICE/B6C3F1

P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 03/08/2013

Time Report Requested: 14:13:47

First Dose M/F: 05/05/08 / 05/05/08

Lab: BNW

| B6C3F1 MICE FEMALE<br>30 mg/m3  | DAY ON TEST |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | ANIMAL ID | females<br>(cont...) |  |
|---|-------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-----------|----------------------|--|
|   | 0732        | 0733 | 0734 | 0735 | 0736 | 0737 | 0738 | 0739 | 0740 | 0741 | 0742 | 0743 | 0744 | 0745 | 0746 | 0747 | 0748 | 0749 | 0750 | 0751 | 0752 | 0753 | 0754 | 0755 |           |                      |  |
| Olfactory Epithelium, Accumulation, Hyaline Droplet                                     | 2           | 3    | 2    | 3    | 2    | 3    | 3    | 2    | 3    | 2    | 3    | 2    | 2    | 3    | 2    | 3    | 3    | 3    | 3    | 3    | 3    | 2    | 2    | 2    |           |                      |  |
| Olfactory Epithelium, Metaplasia, Respiratory Epithelium, Accumulation, Hyaline Droplet | 2           | 3    | 2    | 3    | 2    | 3    | 3    | 2    | 3    | 2    | 3    | 2    | 1    | 3    | 2    | 3    | 3    | 3    | 3    | 3    | 3    | 2    | 2    | 2    |           |                      |  |
| Respiratory Epithelium, Hyperplasia   | 2           |      |      | 1    |      | 2    | 2    | 1    | 2    |      |      |      | 1    |      | 1    | 2    | 1    | 1    | 1    | 1    | 2    | 2    | 1    | 2    | 1         | 2                    |  |
| Trachea   | +           | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +         |                      |  |
| <b>SPECIAL SENSES SYSTEM</b>  |             |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |           |                      |  |
| Eye   | +           | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +         |                      |  |
| Atrophy   |             |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 4    |      |      |      |      |      |      |      |           |                      |  |
| Lens, Degeneration  |             |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 1         |                      |  |
| Harderian Gland   | +           | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +         |                      |  |
| Atrophy   |             |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 2         |                      |  |
| Hyperplasia   |             |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 2    |      |      |      |      |      |      |      |      | 1         |                      |  |
| Inflammation, Suppurative   |             |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 1         |                      |  |
| Inflammation, Chronic Active  |             |      |      | 1    |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |           |                      |  |
| <b>URINARY SYSTEM</b>   |             |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |           |                      |  |
| Kidney  | +           | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +         |                      |  |
| Infarct   | 2           |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 2    |           | 2                    |  |
| Metaplasia, Osseous   |             |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 1    |      |      |      |      |      |      |      |           |                      |  |
| Nephropathy   | 2           | 1    | 3    | 1    | 2    | 2    | 2    | 2    | 1    | 2    | 1    | 1    | 2    | 1    | 1    | 2    | 2    | 1    | 1    | 1    | 2    | 1    | 1    | 4    | 2         |                      |  |
| Ureter  |             |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | +         |                      |  |
| Urinary Bladder   | +           | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +         |                      |  |

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

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X .. Lesion present

I .. Insufficient tissue

M .. Missing tissue

A .. Autolysis precludes evaluation

BLANK .. Not examined microscopically

1-4 .. Lesion qualified as:

1) Minimal 3) Moderate

2) Mild 4) Marked





Experiment Number: 20515 - 04

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: MICE/B6C3F1

**P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL**

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 03/08/2013

Time Report Requested: 14:13:47

First Dose M/F: 05/05/08 / 05/05/08

Lab: BNW

| B6C3F1 MICE FEMALE<br>30 mg/m3          | DAY ON TEST           |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       | * TOTALS              |                       |                       |                       |                  |
|---|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|------------------|
|   | 0<br>7<br>3<br>3      | 0<br>7<br>3<br>1      | 0<br>6<br>8<br>1      | 0<br>7<br>3<br>1      | 0<br>7<br>3<br>2      | 0<br>7<br>3<br>2      | 0<br>7<br>0<br>5      | 0<br>6<br>7<br>4      | 0<br>6<br>4<br>3      | 0<br>7<br>3<br>1      | 0<br>7<br>3<br>3      | 0<br>7<br>3<br>3      | 0<br>7<br>3<br>2      | 0<br>7<br>3<br>1      | 0<br>7<br>3<br>0      | 0<br>7<br>3<br>2      | 0<br>7<br>3<br>3      | 0<br>7<br>3<br>3      | 0<br>5<br>9<br>5      | 0<br>7<br>3<br>3      |                       | 0<br>7<br>3<br>1      | 0<br>5<br>3<br>0      |                       |                  |
| ANIMAL ID                               | 0<br>0<br>5<br>2<br>6 | 0<br>0<br>5<br>2<br>7 | 0<br>0<br>5<br>2<br>8 | 0<br>0<br>5<br>2<br>9 | 0<br>0<br>5<br>3<br>0 | 0<br>0<br>5<br>3<br>1 | 0<br>0<br>5<br>3<br>2 | 0<br>0<br>5<br>3<br>3 | 0<br>0<br>5<br>3<br>4 | 0<br>0<br>5<br>3<br>5 | 0<br>0<br>5<br>3<br>6 | 0<br>0<br>5<br>3<br>7 | 0<br>0<br>5<br>3<br>8 | 0<br>0<br>5<br>3<br>9 | 0<br>0<br>5<br>4<br>0 | 0<br>0<br>5<br>4<br>1 | 0<br>0<br>5<br>4<br>2 | 0<br>0<br>5<br>4<br>3 | 0<br>0<br>5<br>4<br>4 | 0<br>0<br>5<br>4<br>5 | 0<br>0<br>5<br>4<br>6 | 0<br>0<br>5<br>4<br>7 | 0<br>0<br>5<br>4<br>8 | 0<br>0<br>5<br>4<br>9 | 0<br>0<br>5<br>0 |
| Centrilobular, Hypertrophy              |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       | 3                     | 1 3.0                 |                       |                       |                  |
| Mesentery                               |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       | 21                    |                       |                       |                  |
| Fibrosis                                |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       | 1 2.0                 |                       |                       |                  |
| Inflammation, Suppurative               |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       | 1 3.0                 |                       |                       |                  |
| Inflammation, Chronic Active            |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       | 1 2.0                 |                       |                       |                  |
| Necrosis                                |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       | 1 2.0                 |                       |                       |                  |
| Arteriole, Inflammation, Chronic Active |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       | 1 3.0                 |                       |                       |                  |
| Fat, Cyst                               |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       | 1                     | 1 1.0                 |                       |                       |                  |
| Fat, Necrosis                           |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       | 1                     | 7 1.6                 |                       |                       |                  |
| Pancreas                                |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       | 50                    |                       |                       |                  |
| Acinus, Atrophy                         |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       | 1 2.0                 |                       |                       |                  |
| Acinus, Hypertrophy                     |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       | 1 1.0                 |                       |                       |                  |
| Salivary Glands                         |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       | 50                    |                       |                       |                  |
| Stomach, Forestomach                    |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       | 50                    |                       |                       |                  |
| Hyperplasia, Squamous                   |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       | 2 2.5                 |                       |                       |                  |
| Ulcer                                   |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       | 2                     | 1 2.0                 |                       |                       |                  |
| Arteriole, Inflammation, Chronic Active |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       | 1 1.0                 |                       |                       |                  |
| Stomach, Glandular                      |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       | 50                    |                       |                       |                  |
| Fibrosis                                |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       | 1 1.0                 |                       |                       |                  |
| Arteriole, Inflammation, Chronic Active |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       | 1 3.0                 |                       |                       |                  |
| Glands, Mineralization                  |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       | 1                     | 2 1.0                 |                       |                       |                  |
| Tooth                                   |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       | 2                     |                       |                       |                  |
| Dysplasia                               |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       | 2 2.0                 |                       |                       |                  |

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

+ .. Tissue examined microscopically

X .. Lesion present

I .. Insufficient tissue

M .. Missing tissue

A .. Autolysis precludes evaluation

BLANK .. Not examined microscopically

1-4 .. Lesion qualified as:

1) Minimal 3) Moderate

2) Mild 4) Marked











Experiment Number: 20515 - 04

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: MICE/B6C3F1

P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 03/08/2013

Time Report Requested: 14:13:47

First Dose M/F: 05/05/08 / 05/05/08

Lab: BNW

| B6C3F1 MICE FEMALE                                    | DAY ON TEST |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | * TOTALS |     |
|---|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|----------|-----|
|   | 0733        | 0733  | 0681  | 0733  | 0733  | 0733  | 0733  | 0667  | 0667  | 0733  | 0733  | 0733  | 0733  | 0733  | 0733  | 0733  | 0733  | 0733  | 0733  | 0733  | 0577  | 0733  | 0733  | 0733  |          |     |
| 30 mg/m3  | ANIMAL ID   |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |          |     |
|   | 00526       | 00527 | 00528 | 00529 | 00530 | 00531 | 00532 | 00533 | 00534 | 00535 | 00536 | 00537 | 00538 | 00539 | 00540 | 00541 | 00542 | 00543 | 00544 | 00545 | 00546 | 00547 | 00548 | 00549 |          |     |
| Olfactory Epithelium, Accumulation, Hyaline Droplet   | 3           | 3     | 2     | 3     | 2     | 2     | 3     | 3     | 3     | 3     | 2     | 3     | 3     | 2     | 3     | 3     | 2     | 3     | 3     | 2     | 3     | 3     | 3     | 2     | 50       | 2.6 |
| Olfactory Epithelium, Metaplasia, Respiratory         |             |       | 2     | 3     | 2     |       |       |       |       | 1     |       | 2     | 2     | 1     |       |       |       |       |       |       |       |       |       |       | 12       | 1.6 |
| Respiratory Epithelium, Accumulation, Hyaline Droplet | 3           | 3     | 2     | 3     | 2     | 2     | 3     | 3     | 3     | 3     | 2     | 3     | 3     | 2     | 3     | 3     | 2     | 3     | 3     | 2     | 1     | 3     | 3     | 2     | 50       | 2.6 |
| Respiratory Epithelium, Hyperplasia                   | 1           | 2     |       | 2     | 2     | 2     | 2     |       | 2     | 2     |       | 2     | 2     |       | 2     | 2     | 1     | 1     | 1     | 1     | 1     | 2     | 1     | 2     | 39       | 1.6 |
| Trachea   | +           | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | 50       |     |
| <b>SPECIAL SENSES SYSTEM</b>                          |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |          |     |
| Eye   | +           | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | 50       |     |
| Atrophy   |             |       |       |       |       |       |       |       |       | 4     |       |       |       |       |       |       |       |       |       |       |       |       |       |       | 2        | 4.0 |
| Lens, Degeneration                                    |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | 1     |       |       |       | 2        | 1.0 |
| Harderian Gland                                       | +           | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | 50       |     |
| Atrophy   |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | 1        | 2.0 |
| Hyperplasia   |             |       |       |       |       |       | 3     | 3     |       |       |       | 1     |       |       |       |       |       |       |       |       | 3     |       |       |       | 6        | 2.2 |
| Inflammation, Suppurative                             |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | 1        | 1.0 |
| Inflammation, Chronic Active                          |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | 1        | 1.0 |
| <b>URINARY SYSTEM</b>                                 |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |          |     |
| Kidney  | +           | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | 50       |     |
| Infarct   |             |       |       |       |       |       |       |       |       |       |       |       | 2     |       |       |       |       |       |       |       |       |       |       |       | 4        | 2.0 |
| Metaplasia, Osseous                                   |             |       |       |       |       |       |       |       |       |       |       | 2     |       |       |       |       |       |       |       |       |       |       |       |       | 2        | 1.5 |
| Nephropathy   | 1           | 1     | 1     | 1     | 1     | 1     | 3     | 2     | 2     | 2     | 1     | 1     | 1     | 2     | 1     | 3     | 2     | 1     |       | 2     | 1     | 2     | 1     | 1     | 49       | 1.6 |
| Ureter  |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | 1        |     |
| Urinary Bladder                                       | +           | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | 50       |     |

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

+ .. Tissue examined microscopically

X .. Lesion present

I .. Insufficient tissue

M .. Missing tissue

A .. Autolysis precludes evaluation

BLANK .. Not examined microscopically

1-4 .. Lesion qualified as:

1) Minimal 3) Moderate

2) Mild 4) Marked



Experiment Number: 20515 - 04  
 Test Type: CHRONIC  
 Route: RESPIRATORY EXPOSURE WHOLE BODY  
 Species/Strain: MICE/B6C3F1

**P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL**  
 Metal working fluids (CIMSTAR 3800)  
 CAS Number: CIMSTAR3800

Date Report Requested: 03/08/2013  
 Time Report Requested: 14:13:47  
 First Dose M/F: 05/05/08 / 05/05/08  
 Lab: BNW

|                           |             |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                              |
|---------------------------|-------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------------------------------|
| <b>B6C3F1 MICE FEMALE</b> | DAY ON TEST | 0733 | 0733 | 0733 | 0593 | 0733 | 0743 | 0253 | 0564 | 0654 | 0573 | 0773 | 0773 | 0773 | 0773 | 0773 | 0673 | 0773 | 0773 | 0573 | 0773 | 0753 | 0773 | 0573 | <b>females<br/>(cont...)</b> |
|                           | ANIMAL ID   | 0070 | 0070 | 0070 | 0070 | 0070 | 0070 | 0070 | 0070 | 0070 | 0070 | 0070 | 0070 | 0070 | 0070 | 0070 | 0070 | 0070 | 0070 | 0070 | 0070 | 0070 | 0070 | 0070 |                              |

**ALIMENTARY SYSTEM**

|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Esophagus   | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Gallbladder   | + | + | + | + | + | A | + | + | + | + | + | + | + | + | + | + | + | + | + | + | M | + | M |   |
| Intestine Large, Cecum                                  | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Intestine Large, Colon                                  | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Intestine Large, Rectum<br>Inflammation, Chronic Active | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Intestine Small, Duodenum                               | + | + | + | + | + | A | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Intestine Small, Ileum                                  | + | + | + | + | + | A | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Intestine Small, Jejunum                                | + | + | + | + | + | A | + | + | A | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Liver   | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Amyloid Deposition                                      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Angiectasis   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Basophilic Focus  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Cyst  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Eosinophilic Focus                                      |   | X |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Fatty Change  |   |   |   |   |   |   | 3 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Infiltration Cellular, Lymphocyte                       |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Necrosis  |   |   |   |   |   |   | 3 |   |   |   |   |   | 2 |   |   |   |   |   |   |   |   |   |   |   |
| Tension Lipidosis                                       |   | X |   |   |   |   |   |   |   |   |   |   | X |   |   |   |   |   |   |   |   | 2 |   |   |
| Mesentery   |   | + | + |   |   | + | + | M |   |   | + |   |   |   |   |   |   |   |   |   |   | + |   | + |

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

Experiment Number: 20515 - 04  
 Test Type: CHRONIC  
 Route: RESPIRATORY EXPOSURE WHOLE BODY  
 Species/Strain: MICE/B6C3F1

**P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL**  
 Metal working fluids (CIMSTAR 3800)  
 CAS Number: CIMSTAR3800

Date Report Requested: 03/08/2013  
 Time Report Requested: 14:13:47  
 First Dose M/F: 05/05/08 / 05/05/08  
 Lab: BNW

| B6C3F1 MICE FEMALE<br>100 mg/m3    | DAY ON TEST      |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  | ANIMAL ID | females<br>(cont...) |  |
|------------------------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|-----------|----------------------|--|
|                                    | 0<br>7<br>3<br>3 | 0<br>7<br>3<br>1 | 0<br>7<br>3<br>2 | 0<br>5<br>9<br>6 | 0<br>7<br>3<br>3 | 0<br>7<br>3<br>2 | 0<br>4<br>3<br>3 | 0<br>2<br>5<br>0 | 0<br>5<br>3<br>6 | 0<br>6<br>4<br>4 | 0<br>5<br>3<br>6 | 0<br>7<br>3<br>3 | 0<br>7<br>3<br>3 | 0<br>7<br>3<br>2 | 0<br>7<br>3<br>1 | 0<br>7<br>3<br>3 | 0<br>6<br>9<br>1 | 0<br>7<br>1<br>2 | 0<br>7<br>3<br>2 | 0<br>5<br>6<br>3 | 0<br>7<br>3<br>3 | 0<br>7<br>3<br>1 | 0<br>5<br>3<br>4 | 0<br>7<br>3<br>7 | 0<br>5<br>3<br>4 |           |                      |  |
| Fat, Necrosis                      |                  |                  |                  | 1                |                  |                  |                  | 3                |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  | 1                |                  |                  |                  |                  |                  |                  | 2         |                      |  |
| Vein, Inflammation, Chronic Active |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |           |                      |  |
| Pancreas                           | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +         |                      |  |
| Inflammation, Chronic Active       |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |           |                      |  |
| Lipomatosis                        |                  |                  |                  | 1                |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |           |                      |  |
| Acinus, Atrophy                    |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |           |                      |  |
| Acinus, Hyperplasia                |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  | 2                |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |           |                      |  |
| Acinus, Hypertrophy                |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |           |                      |  |
| Salivary Glands                    | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +         |                      |  |
| Stomach, Forestomach               | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +         |                      |  |
| Hyperplasia, Squamous              |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  | 3                |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |           |                      |  |
| Inflammation, Chronic Active       |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |           |                      |  |
| Ulcer                              |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  | 1                |                  |           |                      |  |
| Stomach, Glandular                 | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +                | +         |                      |  |
| Ulcer                              |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |           |                      |  |
| Glands, Mineralization             |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  | 1                |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |           |                      |  |
| Tooth                              |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |           |                      |  |
| Dysplasia                          |                  |                  |                  |                  | +                |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  | +         |                      |  |
| Inflammation, Chronic Active       |                  |                  |                  |                  | 2                |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  | 1         |                      |  |

**CARDIOVASCULAR SYSTEM**

|                                  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|----------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Blood Vessel                     | + | + | + | + | + | + | + | + | + | + | + | M | + | + | + | + | I | + | + | + | + | + | + | I | + | + |
| Aorta, Embolus Bacterial         |   |   |   |   |   |   |   |   |   |   |   | 3 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Aorta, Inflammation, Suppurative |   |   |   |   |   |   |   |   |   |   |   | 3 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |

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

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

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



Experiment Number: 20515 - 04  
 Test Type: CHRONIC  
 Route: RESPIRATORY EXPOSURE WHOLE BODY  
 Species/Strain: MICE/B6C3F1

**P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL**  
 Metal working fluids (CIMSTAR 3800)  
 CAS Number: CIMSTAR3800

Date Report Requested: 03/08/2013  
 Time Report Requested: 14:13:47  
 First Dose M/F: 05/05/08 / 05/05/08  
 Lab: BNW

|                           |             |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |                              |
|---------------------------|-------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------------------------------|
| <b>B6C3F1 MICE FEMALE</b> | DAY ON TEST | 0733 | 0733 | 0733 | 0593 | 0773 | 0423 | 0256 | 0064 | 0056 | 0073 | 0073 | 0077 | 0077 | 0077 | 0077 | 0077 | 0067 | 0077 | 0077 | 0077 | 0057 | 0077 | 0075 | 0075 | <b>females<br/>(cont...)</b> |
|                           | ANIMAL ID   | 0070 | 0070 | 0070 | 0070 | 0070 | 0070 | 0070 | 0070 | 0070 | 0070 | 0070 | 0070 | 0070 | 0070 | 0070 | 0070 | 0070 | 0070 | 0070 | 0070 | 0070 | 0070 | 0070 | 0070 |                              |

NONE

**GENITAL SYSTEM**

|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Clitoral Gland<br>Hyperplasia, Basal Cell | + | + | + | + | + | + | + | M | + | + | + | + | + | + | M | + | + | + | + | + | + | + | + | + | + |
| Ovary                                     | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Angiectasis                               |   |   |   |   |   |   | 3 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Cyst                                      |   | 2 | 1 | 1 | 3 |   |   | 1 |   |   |   |   |   | 2 | 1 |   |   |   | 1 |   |   |   |   | 2 |   |
| Hemorrhage                                |   |   | 1 |   |   | 2 |   |   | 1 |   |   |   |   | 1 |   | 1 |   |   |   |   |   |   |   | 1 |   |
| Inflammation, Chronic Active              |   |   |   |   | 2 |   | 4 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Mineralization                            |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Thrombosis                                |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Uterus                                    | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Angiectasis                               |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Dilatation                                |   |   |   |   |   |   |   |   | 3 |   |   |   |   |   | 3 |   |   |   | 4 |   |   |   |   | 3 |   |
| Hemorrhage                                |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | 2 |   |   |
| Inflammation, Chronic Active              |   | 2 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Endometrium, Hyperplasia, Cystic          | 3 | 2 | 3 | 4 | 2 | 2 |   |   | 1 |   | 3 | 3 | 2 | 4 | 3 | 1 |   |   |   | 2 | 2 | 2 |   | 3 |   |

**HEMATOPOIETIC SYSTEM**

|                                 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|---------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Bone Marrow                     | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Lymph Node                      |   |   |   |   |   |   | M |   |   |   | + |   |   |   |   |   |   |   |   |   |   |   |   | + | + |
| Ectasia                         |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Iliac, Hyperplasia, Plasma Cell |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Lumbar, Hyperplasia, Lymphoid   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | 1 |

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





Experiment Number: 20515 - 04  
 Test Type: CHRONIC  
 Route: RESPIRATORY EXPOSURE WHOLE BODY  
 Species/Strain: MICE/B6C3F1

P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL  
 Metal working fluids (CIMSTAR 3800)  
 CAS Number: CIMSTAR3800

Date Report Requested: 03/08/2013  
 Time Report Requested: 14:13:47  
 First Dose M/F: 05/05/08 / 05/05/08  
 Lab: BNW

|                           |             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |                              |
|---------------------------|-------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|------------------------------|
| <b>B6C3F1 MICE FEMALE</b> | DAY ON TEST | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |                              |
|                           |             | 7 | 7 | 7 | 5 | 7 | 7 | 4 | 2 | 5 | 6 | 5 | 7 | 7 | 7 | 7 | 7 | 7 | 6 | 7 | 7 | 7 | 5 | 7 | 7 | 5 |                              |
|                           |             | 3 | 3 | 3 | 9 | 3 | 3 | 3 | 5 | 3 | 4 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 9 | 1 | 1 | 3 | 6 | 3 | 3 | 7 |                              |
| <b>100 mg/m3</b>          | ANIMAL ID   | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | <b>females<br/>(cont...)</b> |
|                           |             | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 |                              |
|                           |             | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 2 |                              |

**MUSCULOSKELETAL SYSTEM**

|  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|--|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Bone                                     | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Fibro-Osseous Lesion                     |   |   |   | 2 |   | 1 | 2 | 1 |   |   | 1 |   | 1 |   | 2 |   | 2 |   |   | 1 |   |   |   | 2 |   |
| Cranium, Inflammation, Chronic Active    |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | 3 |
| Femur, Tibia, Arthrosis                  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Pelvis, Degeneration                     |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Vertebra, Fracture                       |   |   |   |   |   |   |   |   | 4 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Skeletal Muscle                          |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Degeneration                             |   |   |   | + |   |   |   |   |   | + |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Infiltration Cellular, Polymorphonuclear |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | 2 |

**NERVOUS SYSTEM**

|  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|--|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Brain                                  | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Compression                            |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | 3 |   |   |   |   |
| Meninges, Inflammation, Chronic Active |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | 1 |
| Peripheral Nerve                       |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Degeneration                           |   |   |   | + |   |   |   |   |   | + |   |   |   |   |   |   |   |   |   |   |   |   |   |   | 2 |
| Spinal Cord                            |   |   |   | + |   |   |   |   |   | + |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |

**RESPIRATORY SYSTEM**

|                              |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Larynx                       | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Inflammation, Chronic Active |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | 1 |
| Metaplasia, Squamous         | 3 | 4 | 4 | 3 | 4 | 3 | 2 | 3 | 4 | 3 | 3 | 4 | 3 | 3 | 3 | 4 | 4 | 3 | 4 | 3 | 3 | 4 | 3 | 4 | 3 |
| Necrosis                     |   |   |   |   |   |   |   |   |   | 2 |   |   |   |   |   |   |   |   |   |   |   |   |   |   | 1 |

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

Experiment Number: 20515 - 04

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: MICE/B6C3F1

**P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL**

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 03/08/2013

Time Report Requested: 14:13:47

First Dose M/F: 05/05/08 / 05/05/08

Lab: BNW

| B6C3F1 MICE FEMALE<br>100 mg/m3                       | DAY ON TEST                                 |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  | ANIMAL ID | females<br>(cont...) |                  |
|---|---|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|-----------|----------------------|------------------|
|   | 0<br>7<br>3<br>3                            | 0<br>7<br>3<br>1 | 0<br>7<br>3<br>2 | 0<br>5<br>9<br>6 | 0<br>7<br>3<br>3 | 0<br>7<br>3<br>2 | 0<br>4<br>3<br>3 | 0<br>2<br>5<br>0 | 0<br>5<br>3<br>6 | 0<br>6<br>4<br>6 | 0<br>5<br>3<br>3 | 0<br>7<br>3<br>3 | 0<br>7<br>3<br>2 | 0<br>7<br>3<br>1 | 0<br>7<br>3<br>3 | 0<br>6<br>9<br>1 | 0<br>7<br>1<br>2 | 0<br>7<br>3<br>2 | 0<br>5<br>6<br>3 | 0<br>7<br>3<br>3 |           |                      | 0<br>7<br>3<br>1 |
| Lung  | +   |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |           |                      |                  |
| Congestion  |   |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |           | 3                    |                  |
| Hemorrhage  | 2   |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |           |                      |                  |
| Infiltration Cellular, Histiocyte                     | 1 1   |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |           | 2                    |                  |
| Infiltration Cellular, Mixed Cell                     |   |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |           |                      |                  |
| Thrombosis  | 3   |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |           |                      |                  |
| Alveolar Epithelium, Hyperplasia                      | 3   |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |           | 1                    |                  |
| Bronchiole, Hyperplasia                               | 1 |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |           |                      |                  |
| Interstitial, Inflammation, Chronic Active            | 2   |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |           |                      |                  |
| Perivascular, Inflammation, Chronic Active            | 1 2   |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |           | 1                    |                  |
| Nose  | +   |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |           |                      |                  |
| Inflammation, Chronic Active                          | 1 2   |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |           | 1                    |                  |
| Necrosis  |   |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |           |                      |                  |
| Olfactory Epithelium, Accumulation, Hyaline Droplet   | 3 |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |           |                      |                  |
| Olfactory Epithelium, Atrophy                         |   |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |           | 3                    |                  |
| Olfactory Epithelium, Metaplasia, Respiratory         | 1 1 1                                       |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |           | 2                    |                  |
| Respiratory Epithelium, Accumulation, Hyaline Droplet | 3 |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |           |                      |                  |
| Respiratory Epithelium, Hyperplasia                   | 2 1 2 1 1 1 2 2 1 1 1 1 1 1 1 2 2 1 1 2     |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |           |                      |                  |
| Respiratory Epithelium, Metaplasia, Squamous          |   |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |           | 1                    |                  |
| Trachea   | +   |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |           |                      |                  |

**SPECIAL SENSES SYSTEM**

|                                      |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |
|--------------------------------------|---|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|---|
| Eye                                  | + |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |
| Cornea, Inflammation, Chronic Active |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |   |
| Lens, Degeneration                   |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 2 |

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

+ .. Tissue examined microscopically

X .. Lesion present

I .. Insufficient tissue

M .. Missing tissue

A .. Autolysis precludes evaluation

BLANK .. Not examined microscopically

1-4 .. Lesion qualified as:

1) Minimal 3) Moderate

2) Mild 4) Marked

Experiment Number: 20515 - 04

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: MICE/B6C3F1

P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 03/08/2013

Time Report Requested: 14:13:47

First Dose M/F: 05/05/08 / 05/05/08

Lab: BNW

| B6C3F1 MICE FEMALE<br><br>100 mg/m3 | DAY ON TEST |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | ANIMAL ID | females<br>(cont...) |   |
|-------------------------------------|-------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|-----------|----------------------|---|
|                                     | 0           | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |           |                      | 0 |
|                                     | 7           | 7 | 7 | 5 | 7 | 7 | 4 | 2 | 5 | 6 | 5 | 7 | 7 | 7 | 7 | 7 | 7 | 6 | 7 | 7 | 7 | 5 | 7 | 7 | 5 | 7         | 0                    |   |
|                                     | 3           | 3 | 3 | 9 | 3 | 3 | 3 | 5 | 3 | 4 | 3 | 3 | 3 | 3 | 3 | 3 | 9 | 1 | 1 | 3 | 6 | 3 | 3 | 3 | 7 | 0         |                      |   |
|                                     | 3           | 1 | 2 | 6 | 3 | 2 | 3 | 0 | 6 | 4 | 6 | 3 | 3 | 2 | 1 | 3 | 2 | 1 | 2 | 3 | 2 | 3 | 3 | 1 | 4 | 0         |                      |   |
|                                     | 0           | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0         |                      |   |
|                                     | 7           | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7         |                      |   |
|                                     | 0           | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 7 |           |                      |   |
|                                     | 0           | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 7 |           |                      |   |
|                                     | 1           | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 7 |           |                      |   |
| Harderian Gland                     | +           |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |           |                      |   |
| <b>URINARY SYSTEM</b>               |             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |           |                      |   |
| Kidney                              | +           |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |           |                      |   |
| Infarct                             | 3           |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |           |                      |   |
| Inflammation, Suppurative           | 2           |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |           |                      |   |
| Metaplasia, Osseous                 | 1           |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |           |                      |   |
| Nephropathy                         | 1           | 2 | 1 | 1 |   | 1 | 1 |   | 2 | 1 | 2 | 1 | 2 | 2 | 1 | 1 | 2 | 2 | 2 | 1 | 1 | 2 | 1 | 1 |   |           |                      |   |
| Glomerulus, Amyloid Deposition      |             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |           |                      |   |
| Urinary Bladder                     | +           |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |           |                      |   |

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

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



Experiment Number: 20515 - 04  
 Test Type: CHRONIC  
 Route: RESPIRATORY EXPOSURE WHOLE BODY  
 Species/Strain: MICE/B6C3F1

**P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL**  
 Metal working fluids (CIMSTAR 3800)  
 CAS Number: CIMSTAR3800

Date Report Requested: 03/08/2013  
 Time Report Requested: 14:13:47  
 First Dose M/F: 05/05/08 / 05/05/08  
 Lab: BNW

| B6C3F1 MICE FEMALE<br>100 mg/m3    | DAY ON TEST |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | * TOTALS |
|------------------------------------|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|----------|
|                                    | 0732        | 0733  | 0732  | 0731  | 0736  | 0738  | 0739  | 0733  | 0732  | 0732  | 0731  | 0732  | 0732  | 0733  | 0733  | 0733  | 0733  | 0734  | 0731  | 0732  | 0739  | 0733  | 0732  | 0738  |          |
| ANIMAL ID                          | 00726       | 00707 | 00707 | 00707 | 00707 | 00707 | 00707 | 00707 | 00707 | 00707 | 00707 | 00707 | 00707 | 00707 | 00707 | 00707 | 00707 | 00707 | 00707 | 00707 | 00707 | 00707 | 00707 | 00707 |          |
| Fat, Necrosis                      |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |          |
| Vein, Inflammation, Chronic Active | 3           |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |          |
| Pancreas                           | +           | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     |          |
| Inflammation, Chronic Active       |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | 3     |       |          |
| Lipomatosis                        |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |          |
| Acinus, Atrophy                    |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | 3     | 2     |       |          |
| Acinus, Hyperplasia                |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |          |
| Acinus, Hypertrophy                |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |          |
| Salivary Glands                    | M           | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     |          |
| Stomach, Forestomach               | +           | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     |          |
| Hyperplasia, Squamous              |             |       |       |       | 4     |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |          |
| Inflammation, Chronic Active       |             |       |       |       |       | 2     |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |          |
| Ulcer                              |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |          |
| Stomach, Glandular                 | +           | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     |          |
| Ulcer                              |             |       |       |       |       | 1     |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |          |
| Glands, Mineralization             |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |          |
| Tooth                              |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |          |
| Dysplasia                          |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |          |
| Inflammation, Chronic Active       |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |          |

**CARDIOVASCULAR SYSTEM**

|                                  |   |   |   |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|----------------------------------|---|---|---|---|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| Blood Vessel                     | + | + | M | I |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Aorta, Embolus Bacterial         |   |   |   |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Aorta, Inflammation, Suppurative |   |   |   |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

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M .. Missing tissue  
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Experiment Number: 20515 - 04  
 Test Type: CHRONIC  
 Route: RESPIRATORY EXPOSURE WHOLE BODY  
 Species/Strain: MICE/B6C3F1

**P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL**  
 Metal working fluids (CIMSTAR 3800)  
 CAS Number: CIMSTAR3800

Date Report Requested: 03/08/2013  
 Time Report Requested: 14:13:47  
 First Dose M/F: 05/05/08 / 05/05/08  
 Lab: BNW

| B6C3F1 MICE FEMALE<br>100 mg/m3     | DAY ON TEST           |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       | * TOTALS              |                       |                       |                       |                       |    |
|-------------------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|----|
|                                     | 0<br>7<br>3<br>2      | 0<br>7<br>3<br>3      | 0<br>7<br>3<br>2      | 0<br>7<br>3<br>1      | 0<br>6<br>6<br>3      | 0<br>6<br>8<br>8      | 0<br>6<br>6<br>9      | 0<br>7<br>3<br>2      | 0<br>7<br>3<br>2      | 0<br>7<br>3<br>1      | 0<br>7<br>3<br>2      | 0<br>7<br>3<br>2      | 0<br>7<br>3<br>3      | 0<br>7<br>3<br>3      | 0<br>7<br>3<br>3      | 0<br>6<br>3<br>4      | 0<br>7<br>3<br>1      | 0<br>7<br>3<br>2      | 0<br>6<br>3<br>3      | 0<br>7<br>3<br>2      |                       | 0<br>7<br>3<br>2      | 0<br>6<br>8<br>8      | 0<br>7<br>3<br>1      |                       |    |
| ANIMAL ID                           | 0<br>0<br>7<br>2<br>6 | 0<br>0<br>7<br>2<br>7 | 0<br>0<br>7<br>2<br>8 | 0<br>0<br>7<br>2<br>9 | 0<br>0<br>7<br>3<br>0 | 0<br>0<br>7<br>3<br>1 | 0<br>0<br>7<br>3<br>2 | 0<br>0<br>7<br>3<br>3 | 0<br>0<br>7<br>3<br>4 | 0<br>0<br>7<br>3<br>5 | 0<br>0<br>7<br>3<br>6 | 0<br>0<br>7<br>3<br>7 | 0<br>0<br>7<br>3<br>8 | 0<br>0<br>7<br>3<br>9 | 0<br>0<br>7<br>4<br>0 | 0<br>0<br>7<br>4<br>1 | 0<br>0<br>7<br>4<br>2 | 0<br>0<br>7<br>4<br>3 | 0<br>0<br>7<br>4<br>4 | 0<br>0<br>7<br>4<br>5 | 0<br>0<br>7<br>4<br>6 | 0<br>0<br>7<br>4<br>7 | 0<br>0<br>7<br>4<br>8 | 0<br>0<br>7<br>4<br>9 | 0<br>0<br>7<br>5<br>0 |    |
| Heart                               | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | 50                    |    |
| Cardiomyopathy                      |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       | 5 2.0                 |    |
| Congestion                          |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       | 1 2.0                 |    |
| Necrosis                            |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       | 1 3.0                 |    |
| <b>ENDOCRINE SYSTEM</b>             |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |    |
| Adrenal Cortex                      | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | 50                    |    |
| Atrophy                             |                       |                       |                       |                       |                       | 2                     |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       | 1 2.0                 |    |
| Hyperplasia                         |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       | 1                     |                       | 1                     |                       |                       |                       |                       |                       |                       |                       | 1                     |                       |                       |                       | 6 1.2                 |    |
| Vacuolization Cytoplasmic           |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       | 4                     |                       |                       |                       |                       |                       |                       |                       |                       | 2 4.0                 |    |
| Adrenal Medulla                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | 50                    |    |
| Hyperplasia                         |                       |                       | 4                     |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       | 4 1.8                 |    |
| Islets, Pancreatic                  | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | 49                    |    |
| Parathyroid Gland                   | M                     | +                     | +                     | M                     | +                     | +                     | +                     | +                     | M                     | M                     | M                     | M                     | M                     | M                     | +                     | +                     | M                     | +                     | M                     | M                     | M                     | +                     | +                     | M                     | M                     | 25 |
| Pituitary Gland                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | 50                    |    |
| Angiectasis                         |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       | 3                     |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       | 4 3.0                 |    |
| Pars Distalis, Cyst                 |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       | 1 2.0                 |    |
| Pars Distalis, Hyperplasia          |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       | 3                     | 2                     |                       | 1                     |                       | 2                     |                       |                       |                       | 1                     |                       | 1                     | 3                     | 3                     | 24 2.3                |    |
| Pars Intermedia, Pars Nervosa, Cyst |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       | 1 2.0                 |    |
| Thyroid Gland                       | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | +                     | 50                    |    |
| Inflammation, Chronic Active        |                       |                       |                       |                       |                       |                       |                       | 2                     |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       | 1                     |                       | 2 1.5                 |    |
| Follicular Cell, Hyperplasia        |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       | 2                     |                       |                       |                       |                       |                       |                       |                       |                       |                       |                       | 2                     |                       |                       | 3 2.3                 |    |

**GENERAL BODY SYSTEM**

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



Experiment Number: 20515 - 04  
 Test Type: CHRONIC  
 Route: RESPIRATORY EXPOSURE WHOLE BODY  
 Species/Strain: MICE/B6C3F1

**P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL**  
 Metal working fluids (CIMSTAR 3800)  
 CAS Number: CIMSTAR3800

Date Report Requested: 03/08/2013  
 Time Report Requested: 14:13:47  
 First Dose M/F: 05/05/08 / 05/05/08  
 Lab: BNW

| B6C3F1 MICE FEMALE<br>100 mg/m3   | DAY ON TEST |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | * TOTALS                |    |
|---|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------------------------|----|
|   | 0732        | 0733  | 0732  | 0731  | 0738  | 0736  | 0736  | 0737  | 0737  | 0737  | 0737  | 0737  | 0737  | 0737  | 0737  | 0737  | 0737  | 0737  | 0737  | 0737  | 0737  | 0737  | 0737  | 0737  |                         |    |
| ANIMAL ID   | 00726       | 00707 | 00700 | 00700 | 00700 | 00700 | 00700 | 00700 | 00700 | 00700 | 00700 | 00700 | 00700 | 00700 | 00700 | 00700 | 00700 | 00700 | 00700 | 00700 | 00700 | 00700 | 00700 | 00700 |                         |    |
| Lymph Node, Bronchial Infiltration Cellular, Histiocyte                         | M           | M     | M     | M     | +     | +     | M     | M     | +     | M     | M     | M     | +     | M     | M     | +     | +     | M     | M     | +     | M     | +     | M     | M     | 27                      |    |
|   |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | 1 2.0                   |    |
| Lymph Node, Mandibular  | M           | +     | +     | M     | +     | +     | +     | M     | +     | +     | +     | +     | M     | +     | +     | M     | +     | M     | M     | +     | +     | M     | M     | +     | M                       | 35 |
| Lymph Node, Mediastinal Hyperplasia, Lymphoid Infiltration Cellular, Mixed Cell | +           | +     | +     | +     | +     | +     | +     | +     | M     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | 47                      |    |
|   |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | 2 2.0<br>1 3.0          |    |
| Lymph Node, Mesenteric Angiectasis  | +           | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | 49                      |    |
|   |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | 1 4.0                   |    |
| Spleen Hematopoietic Cell Proliferation   | +           | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | 49                      |    |
| Hyperplasia, Lymphoid Infiltration Cellular, Mast Cell                          |             |       |       | 3     |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | 2 2.5<br>1 2.0<br>1 3.0 |    |
| Thymus Atrophy Necrosis   | +           | +     | +     | +     | +     | M     | M     | +     | +     | I     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | M     | +                       | 45 |
|   |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | 1 3.0<br>1 3.0          |    |
| <b>INTEGUMENTARY SYSTEM</b>   |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                         |    |
| Mammary Gland Hyperplasia   | +           | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | 50                      |    |
|   |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | 1 1.0                   |    |
| Skin Infiltration Cellular, Mast Cell Inflammation, Chronic Active Ulcer        | +           | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | 50                      |    |
|   |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | 1 1.0<br>2 2.5<br>3 3.3 |    |

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



Experiment Number: 20515 - 04  
 Test Type: CHRONIC  
 Route: RESPIRATORY EXPOSURE WHOLE BODY  
 Species/Strain: MICE/B6C3F1

**P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL**  
 Metal working fluids (CIMSTAR 3800)  
 CAS Number: CIMSTAR3800

Date Report Requested: 03/08/2013  
 Time Report Requested: 14:13:47  
 First Dose M/F: 05/05/08 / 05/05/08  
 Lab: BNW

| B6C3F1 MICE FEMALE | DAY ON TEST      |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  | * TOTALS         |                  |
|--------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
|                    | 0<br>7<br>3<br>2 | 0<br>7<br>3<br>3 | 0<br>7<br>3<br>2 | 0<br>7<br>3<br>1 | 0<br>6<br>6<br>3 | 0<br>6<br>8<br>8 | 0<br>6<br>6<br>9 | 0<br>7<br>3<br>3 | 0<br>7<br>3<br>2 | 0<br>7<br>3<br>2 | 0<br>7<br>3<br>1 | 0<br>7<br>3<br>2 | 0<br>7<br>3<br>3 | 0<br>7<br>3<br>3 | 0<br>7<br>3<br>3 | 0<br>6<br>3<br>4 | 0<br>7<br>3<br>1 | 0<br>7<br>3<br>2 | 0<br>6<br>3<br>3 | 0<br>7<br>3<br>2 | 0<br>7<br>3<br>2 | 0<br>6<br>8<br>8 | 0<br>7<br>3<br>1 |                  |                  |
| 100 mg/m3          | ANIMAL ID        |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |                  |
|                    | 0<br>7<br>2<br>6 | 0<br>0<br>7<br>2 | 0<br>0<br>7<br>2 | 0<br>0<br>7<br>2 | 0<br>0<br>7<br>3 | 0<br>0<br>7<br>3 | 0<br>0<br>7<br>3 | 0<br>0<br>7<br>3 | 0<br>0<br>7<br>3 | 0<br>0<br>7<br>3 | 0<br>0<br>7<br>3 | 0<br>0<br>7<br>3 | 0<br>0<br>7<br>3 | 0<br>0<br>7<br>3 | 0<br>0<br>7<br>3 | 0<br>0<br>7<br>4 | 0<br>0<br>7<br>4 | 0<br>0<br>7<br>4 | 0<br>0<br>7<br>4 | 0<br>0<br>7<br>4 | 0<br>0<br>7<br>4 | 0<br>0<br>7<br>4 | 0<br>0<br>7<br>4 | 0<br>0<br>7<br>5 | 0<br>0<br>7<br>0 |

**MUSCULOSKELETAL SYSTEM**

|  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |    |    |     |
|--|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|----|----|-----|
| Bone                                     | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |    |     |
| Fibro-Osseous Lesion                     | 2 |   |   | 1 | 1 |   | 2 |   | 2 | 1 |   |   |   | 2 | 1 |   |   |   |   | 1 | 1 | 2 | 2 | 2 |   |    | 23 | 1.5 |
| Cranium, Inflammation, Chronic Active    |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |    | 1  | 3.0 |
| Femur, Tibia, Arthrosis                  |   |   |   |   |   |   |   |   |   |   |   |   | 2 |   |   |   |   |   |   |   |   |   |   |   |   |    | 1  | 2.0 |
| Pelvis, Degeneration                     |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | 2 |   |   |   |   |    | 1  | 2.0 |
| Vertebra, Fracture                       |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |    | 1  | 4.0 |
| Skeletal Muscle                          |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | + |   |   |   | + |   |   |   | 4  |    |     |
| Degeneration                             |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |    | 1  | 2.0 |
| Infiltration Cellular, Polymorphonuclear |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |    | 1  | 2.0 |

**NERVOUS SYSTEM**

|  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |    |   |     |
|--|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|----|---|-----|
| Brain                                  | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |   |     |
| Compression                            |   |   |   |   |   | 3 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |    | 3 | 3.0 |
| Meninges, Inflammation, Chronic Active |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |    | 1 | 1.0 |
| Peripheral Nerve                       |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |    | 3 |     |
| Degeneration                           |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |    | 1 | 2.0 |
| Spinal Cord                            |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |    | 3 |     |

**RESPIRATORY SYSTEM**

|                              |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |    |     |     |
|------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|----|-----|-----|
| Larynx                       | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |     |     |
| Inflammation, Chronic Active |   |   |   | 1 |   | 3 |   | 1 |   |   |   |   |   | 1 | 1 | 1 |   |   |   |   |   | 1 | 1 |   |   |    | 10  | 1.2 |
| Metaplasia, Squamous         | 4 | 4 | 3 | 3 | 3 | 4 | 4 | 3 | 4 | 4 | 4 | 3 | 4 | 4 | 4 | 3 | 3 | 3 | 4 | 3 | 4 | 4 | 3 | 3 |   | 50 | 3.5 |     |
| Necrosis                     |   |   |   |   |   |   |   |   |   |   |   |   |   | 1 |   |   |   |   |   |   |   |   |   |   |   |    | 4   | 1.5 |

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

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

Experiment Number: 20515 - 04

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: MICE/B6C3F1

**P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL**

Metal working fluids (CIMSTAR 3800)

CAS Number: CIMSTAR3800

Date Report Requested: 03/08/2013

Time Report Requested: 14:13:47

First Dose M/F: 05/05/08 / 05/05/08

Lab: BNW

| B6C3F1 MICE FEMALE                                    | DAY ON TEST |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | * TOTALS |        |        |
|---|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|----------|--------|--------|
|   | 0732        | 0733  | 0732  | 0731  | 0763  | 0768  | 0769  | 0773  | 0773  | 0773  | 0773  | 0773  | 0773  | 0773  | 0773  | 0773  | 0773  | 0773  | 0773  | 0773  |          | 0773   |        |
| 100 mg/m3   | ANIMAL ID   |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | * TOTALS |        |        |
|   | 00726       | 00707 | 00707 | 00707 | 00707 | 00707 | 00707 | 00707 | 00707 | 00707 | 00707 | 00707 | 00707 | 00707 | 00707 | 00707 | 00707 | 00707 | 00707 | 00707 |          | 00707  |        |
| Lung  | +           | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +        | 50     |        |
| Congestion  |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |          | 1 3.0  |        |
| Hemorrhage  |             |       |       |       |       |       |       | 1     |       |       |       |       |       |       |       |       |       |       |       |       |          | 2 1.5  |        |
| Infiltration Cellular, Histiocyte                     |             |       |       |       |       |       |       |       |       |       | 2     |       |       |       |       |       |       | 2     | 1     |       |          | 6 1.5  |        |
| Infiltration Cellular, Mixed Cell                     |             |       |       |       |       |       |       |       | 1     |       |       |       |       |       |       |       |       |       |       |       |          | 1 1.0  |        |
| Thrombosis  |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |          | 1 3.0  |        |
| Alveolar Epithelium, Hyperplasia                      |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       | 2     |       |       |       |       | 2        | 4 2.0  |        |
| Bronchiole, Hyperplasia                               | 1           | 1     | 1     | 1     |       | 1     |       | 1     | 1     | 1     | 1     | 1     | 1     | 1     | 1     | 1     | 1     | 1     | 1     | 1     | 1        | 41 1.0 |        |
| Interstitial, Inflammation, Chronic Active            |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |          | 1 2.0  |        |
| Perivascular, Inflammation, Chronic Active            |             |       |       | 2     |       |       |       |       |       | 3     |       |       |       |       | 2     |       |       | 3     | 2     |       | 2        | 3      | 11 2.0 |
| Nose  | +           | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +        | 50     |        |
| Inflammation, Chronic Active                          |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       | 3     |       |          |        | 5 1.6  |
| Necrosis  |             |       |       |       |       |       |       |       |       |       |       |       | 1     |       |       |       |       |       |       |       |          | 1 1.0  |        |
| Olfactory Epithelium, Accumulation, Hyaline Droplet   | 3           | 3     | 3     | 3     | 3     | 3     | 3     | 3     | 3     | 3     | 3     | 3     | 3     | 3     | 3     | 3     | 3     | 3     | 3     | 3     | 3        | 49 3.0 |        |
| Olfactory Epithelium, Atrophy                         |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |          | 1 3.0  |        |
| Olfactory Epithelium, Metaplasia, Respiratory         | 1           | 2     |       | 1     |       |       |       |       |       |       | 2     | 1     | 1     |       |       | 2     | 1     |       | 1     | 2     | 2        | 23 1.5 |        |
| Respiratory Epithelium, Accumulation, Hyaline Droplet | 3           | 3     | 3     | 3     | 3     | 2     | 3     | 2     | 3     | 3     | 3     | 3     | 3     | 3     | 3     | 3     | 3     | 3     | 3     | 3     | 3        | 50 3.0 |        |
| Respiratory Epithelium, Hyperplasia                   | 2           | 2     | 2     | 2     | 1     | 1     | 2     |       | 1     | 2     |       | 2     | 2     | 1     | 1     |       |       | 2     | 2     |       | 2        | 39 1.5 |        |
| Respiratory Epithelium, Metaplasia, Squamous          |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |          | 1 1.0  |        |
| Trachea   | +           | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +        | 50     |        |
| <b>SPECIAL SENSES SYSTEM</b>                          |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |          |        |        |
| Eye   | +           | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +     | +        | 50     |        |
| Cornea, Inflammation, Chronic Active                  |             |       |       | 3     |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |          | 1 3.0  |        |
| Lens, Degeneration                                    |             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |          | 1 2.0  |        |

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

+ .. Tissue examined microscopically

X .. Lesion present

I .. Insufficient tissue

M .. Missing tissue

A .. Autolysis precludes evaluation

BLANK .. Not examined microscopically

1-4 .. Lesion qualified as:

1) Minimal 3) Moderate

2) Mild 4) Marked

Experiment Number: 20515 - 04  
 Test Type: CHRONIC  
 Route: RESPIRATORY EXPOSURE WHOLE BODY  
 Species/Strain: MICE/B6C3F1

**P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL**  
 Metal working fluids (CIMSTAR 3800)  
 CAS Number: CIMSTAR3800

Date Report Requested: 03/08/2013  
 Time Report Requested: 14:13:47  
 First Dose M/F: 05/05/08 / 05/05/08  
 Lab: BNW

| B6C3F1 MICE FEMALE<br>100 mg/m3 | DAY ON TEST | ANIMAL ID |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      | * TOTALS |      |      |      |      |        |
|---------------------------------|-------------|-----------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|----------|------|------|------|------|--------|
|                                 |             | 0732      | 0733 | 0732 | 0731 | 0733 | 0738 | 0739 | 0733 | 0732 | 0732 | 0731 | 0732 | 0732 | 0733 | 0733 | 0733 | 0734 | 0731 | 0732 | 0739 |          | 0733 | 0732 | 0732 | 0738 | 0733   |
| Harderian Gland                 |             | +         | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +        | +    | +    | +    | +    | 50     |
| <b>URINARY SYSTEM</b>           |             |           |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |          |      |      |      |      |        |
| Kidney                          |             | +         | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +        | +    | +    | +    | +    | 50     |
| Infarct                         |             |           |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |          |      |      |      |      | 1 3.0  |
| Inflammation, Suppurative       |             |           |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |          |      |      |      |      | 1 2.0  |
| Metaplasia, Osseous             |             |           |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |          |      |      |      |      | 1 1.0  |
| Nephropathy                     |             | 4         | 1    | 1    | 1    | 2    | 3    | 2    | 1    | 2    | 1    | 1    | 1    | 2    | 2    | 1    | 1    | 1    | 1    | 1    | 1    | 1        | 2    | 1    | 2    | 1    | 47 1.4 |
| Glomerulus, Amyloid Deposition  |             |           |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |          |      |      | 2    |      | 1 2.0  |
| Urinary Bladder                 |             | +         | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +    | +        | +    | +    | +    | +    | 50     |

\*\*\* END OF REPORT \*\*\*

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