

Experiment Number: 07062 - 02
Test Type: 30-day
Route: RESPIRATORY EXPOSURE WHOLE BODY
Species/Strain: MICE/B6C3F1

P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL
1020 Long Multiwalled Carbon Nanotube
CAS Number: L-MWNT-1020

Date Report Requested: 04/17/2013
Time Report Requested: 07:42:27
First Dose M/F: 05/30/11 / 05/30/11
Lab: BNW

F1_M3

NTP Study Number: C07062
Lock Date: 03/30/2012
Cage Range: ALL
Date Range: ALL
Reasons For Removal: ALL
Removal Date Range: ALL
Treatment Groups: Include ALL
Study Gender: Both
TDMSE Version: 3.0.1.1_001
PWG Approval Date: NONE

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

ALIMENTARY SYSTEM

| | | | | | | | | | | | |
|---------|--|---|--|---|--|--|--|---|--|--|-----------|
| Pharynx | | | | | | | | | | | 10 |
| | | + | | + | | | | + | | | |

CARDIOVASCULAR SYSTEM

NONE

ENDOCRINE SYSTEM

NONE

GENERAL BODY SYSTEM

NONE

GENITAL SYSTEM

NONE

HEMATOPOIETIC SYSTEM

| | | | | | | | | | | | |
|-----------------------|--|---|--|---|--|--|--|---|--|--|----------|
| Lymph Node, Bronchial | | | | | | | | | | | 6 |
| | | M | | M | | | | I | | | |

| | | | | | | | | | | | |
|-------------------------|--|---|--|---|--|--|--|---|--|--|----------|
| Lymph Node, Mediastinal | | | | | | | | | | | 9 |
| | | + | | + | | | | + | | | |

INTEGUMENTARY SYSTEM

NONE

MUSCULOSKELETAL SYSTEM

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

+ .. Tissue examined microscopically

X .. Lesion present

I .. Insufficient tissue

M .. Missing tissue

A .. Autolysis precludes evaluation

BLANK .. Not examined microscopically

1-4 .. Lesion qualified as:

1) Minimal 3) Moderate

2) Mild 4) Marked

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 Lab: BNW

| | | | | | | | | | | | | |
|-------------------------|-------------|---|---|---|---|---|---|---|---|---|---|-----------------|
| 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 | |
| | | 3 | 4 | 3 | 3 | 3 | 7 | 7 | 7 | 3 | 4 | |
| | | 0 | 4 | 1 | 0 | 1 | 2 | 2 | 2 | 1 | 4 | |
| Control | 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 | | |
| | | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 3 | | |
| | | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | | |
| | | | | | | | | | | | | * TOTALS |

NONE

NERVOUS SYSTEM

NONE

RESPIRATORY SYSTEM

| | | | | | | | | | | | |
|----------------------------------|--|--|---|--|---|--|--|---|--|--|--------------|
| Larynx | | | I | | + | | | + | | | 9 |
| Epiglottis, Metaplasia, Squamous | | | | | | | | | | | 1 1.0 |
| Lung | | | | | + | | | + | | | 10 |
| Nose | | | | | + | | | + | | | 10 |
| Inflammation, Suppurative | | | | | | | | | | | 1 1.0 |
| Trachea | | | | | + | | | + | | | 10 |

SPECIAL SENSES SYSTEM

NONE

URINARY SYSTEM

NONE

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

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| | | | | | | | | | | | |
|-------------------------|-------------|-----------------|---|---|---|---|---|---|---|---|---|
| B6C3F1 MICE MALE | DAY ON TEST | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | | 3 | 4 | 3 | 3 | 3 | 7 | 7 | 7 | 3 | 4 |
| | | 0 | 4 | 1 | 0 | 1 | 2 | 2 | 2 | 1 | 4 |
| 0.1 mg/m3 | ANIMAL ID | 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 | 3 | 3 | 3 | 3 | 3 | |
| | | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 |
| | | * TOTALS | | | | | | | | | |

ALIMENTARY SYSTEM

Pharynx + + + **10**

CARDIOVASCULAR SYSTEM

NONE

ENDOCRINE SYSTEM

NONE

GENERAL BODY SYSTEM

NONE

GENITAL SYSTEM

NONE

HEMATOPOIETIC SYSTEM

| | | | | | | | | | | | | |
|-------------------------------|--|--|---|--|---|--|--|--|---|----------|----------|------------|
| Lymph Node | | | | | | | | | | 1 | | |
| Lumbar, Hyperplasia, Lymphoid | | | | | | | | | | | 1 | 2.0 |
| Lumbar, Pigmentation | | | | | | | | | | | 1 | 2.0 |
| Lymph Node, Bronchial | | | + | | + | | | | + | | | 9 |
| Lymph Node, Mediastinal | | | + | | M | | | | + | | | 7 |

INTEGUMENTARY SYSTEM

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

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

Experiment Number: 07062 - 02
 Test Type: 30-day
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| | | | | | | | | | | | |
|-------------------------|-------------|---|---|---|---|---|---|---|---|---|---|
| B6C3F1 MICE MALE | DAY ON TEST | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | | 3 | 4 | 3 | 3 | 3 | 7 | 7 | 7 | 3 | 4 |
| | | 0 | 4 | 1 | 0 | 1 | 2 | 2 | 2 | 1 | 4 |
| 0.1 mg/m3 | ANIMAL ID | 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 | 3 | 3 | 3 | 3 | 3 | 3 |
| | | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 |
| * TOTALS | | | | | | | | | | | |

NONE

MUSCULOSKELETAL SYSTEM

NONE

NERVOUS SYSTEM

NONE

RESPIRATORY SYSTEM

| | | | | | | | | | | |
|----------------------------------|--|--|---|---|--|--|---|--|--|--------------|
| Larynx | | | + | + | | | + | | | 10 |
| Epiglottis, Metaplasia, Squamous | | | | | | | | | | 2 1.0 |
| Lung | | | + | + | | | + | | | 10 |
| Foreign Body | | | 1 | 1 | | | 1 | | | 9 1.0 |
| Nose | | | + | + | | | + | | | 10 |
| Trachea | | | + | + | | | + | | | 10 |

SPECIAL SENSES SYSTEM

NONE

URINARY SYSTEM

NONE

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

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 2) Mild 4) Marked

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| | | | | | | | | | | | |
|-------------------------|-------------|---|---|---|---|---|---|---|---|---|---|
| B6C3F1 MICE MALE | DAY ON TEST | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | | 3 | 4 | 3 | 3 | 3 | 7 | 7 | 7 | 3 | 4 |
| | | 0 | 4 | 1 | 0 | 1 | 2 | 2 | 2 | 1 | 4 |
| 0.3 mg/m3 | ANIMAL ID | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 |
| | | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 3 | 3 |
| | | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 |
| * TOTALS | | | | | | | | | | | |

ALIMENTARY SYSTEM

| | | | | | | | | | | | |
|---------|--|---|--|---|--|--|--|---|--|--|-----------|
| Pharynx | | | | | | | | | | | 10 |
| | | + | | + | | | | + | | | |

CARDIOVASCULAR SYSTEM

NONE

ENDOCRINE SYSTEM

NONE

GENERAL BODY SYSTEM

NONE

GENITAL SYSTEM

NONE

HEMATOPOIETIC SYSTEM

| | | | | | | | | | | | |
|-------------------------|--|--|--|--|--|--|--|--|--|--|--------------|
| Lymph Node, Bronchial | | | | | | | | | | | 7 |
| Lymph Node, Mediastinal | | | | | | | | | | | 8 |
| Foreign Body | | | | | | | | | | | 1 1.0 |

INTEGUMENTARY SYSTEM

NONE

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

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Lab: BNW

| | | | | | | | | | | | | | | |
|---|-------------|-----------------|---|---|---|---|---|---|---|---|---|---|---|---|
| B6C3F1 MICE MALE 1 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 |
| | | 3 | 4 | 3 | 3 | 3 | 7 | 7 | 7 | 3 | 4 | | | |
| | | 0 | 4 | 1 | 0 | 1 | 2 | 2 | 2 | 1 | 4 | | | |
| | ANIMAL ID | 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 | | | |
| | | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | | | |
| | | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | | | |
| | | * TOTALS | | | | | | | | | | | | |

ALIMENTARY SYSTEM

| | | | | | | | | | | | | | | | |
|---------|--|---|--|---|--|--|--|---|--|--|--|--|--|--|-----------|
| Pharynx | | | | | | | | | | | | | | | 10 |
| | | + | | + | | | | + | | | | | | | |

CARDIOVASCULAR SYSTEM

NONE

ENDOCRINE SYSTEM

NONE

GENERAL BODY SYSTEM

NONE

GENITAL SYSTEM

NONE

HEMATOPOIETIC SYSTEM

| | | | | | | | | | | | | | | | | | |
|-------------------------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|-----------|----------|------------|
| Lymph Node, Bronchial | | | | | | | | | | | | | | | 7 | | |
| Foreign Body | | | | | | | | | | | | | | | | 5 | 1.0 |
| Hyperplasia, Lymphoid | | | | | | | | | | | | | | | | 2 | 1.0 |
| Lymph Node, Mediastinal | | | | | | | | | | | | | | | 10 | | |
| Foreign Body | | | | | | | | | | | | | | | | 2 | 1.0 |
| Hyperplasia, Lymphoid | | | | | | | | | | | | | | | | 1 | 2.0 |

INTEGUMENTARY 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:
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 Lab: BNW

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

NONE

MUSCULOSKELETAL SYSTEM

NONE

NERVOUS SYSTEM

NONE

RESPIRATORY SYSTEM

| | | | | | | | | | | | | | | |
|---|--|---|--|---|--|--|--|--|---|--|--|--|--|--------|
| Larynx | | | | | | | | | | | | | | |
| Epiglottis, Metaplasia, Squamous | | + | | + | | | | | + | | | | | 10 |
| | | | | | | | | | 1 | | | | | 6 1.0 |
| Lung | | | | | | | | | | | | | | 10 |
| Foreign Body | | | | | | | | | | | | | | 10 1.4 |
| Inflammation, Chronic | | | | | | | | | 2 | | | | | 8 1.0 |
| | | | | | | | | | 1 | | | | | |
| Nose | | | | | | | | | | | | | | 10 |
| Respiratory Epithelium, Accumulation, Hyaline Droplet | | | | | | | | | | | | | | 3 1.0 |
| | | | | | | | | | 1 | | | | | |
| Trachea | | | | | | | | | | | | | | 8 |
| | | | | | | | | | + | | | | | |
| | | | | | | | | | + | | | | | |
| | | | | | | | | | | | | | | M |

SPECIAL SENSES SYSTEM

NONE

URINARY SYSTEM

* .. 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
 A .. Autolysis precludes evaluation
 BLANK .. Not examined microscopically

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

NONE

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

+ .. Tissue examined microscopically

X .. Lesion present

I .. Insufficient tissue

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

ALIMENTARY SYSTEM

| | | | | | | | | | | | |
|---------|--|---|--|---|--|--|--|---|--|--|-----------|
| Pharynx | | | | | | | | | | | 10 |
| | | + | | + | | | | + | | | |

CARDIOVASCULAR SYSTEM

NONE

ENDOCRINE SYSTEM

NONE

GENERAL BODY SYSTEM

NONE

GENITAL SYSTEM

NONE

HEMATOPOIETIC SYSTEM

| | | | | | | | | | | | | | |
|-------------------------|--|--|--|--|--|--|--|--|--|--|----------|----------|------------|
| Lymph Node, Bronchial | | | | | | | | | | | 9 | | |
| Foreign Body | | | | | | | | | | | | 9 | 1.0 |
| Hyperplasia, Lymphoid | | | | | | | | | | | | 5 | 1.8 |
| Lymph Node, Mediastinal | | | | | | | | | | | 9 | | |
| Foreign Body | | | | | | | | | | | | 1 | 1.0 |
| Hyperplasia, Lymphoid | | | | | | | | | | | | 1 | 3.0 |

INTEGUMENTARY SYSTEM

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

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A .. Autolysis precludes evaluation
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| | | | | | | | | | | | |
|-------------------------|-------------|---|---|---|---|---|---|---|---|-----------------|---|
| B6C3F1 MICE MALE | DAY ON TEST | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | | 3 | 4 | 3 | 3 | 3 | 7 | 7 | 7 | 3 | 4 |
| | | 0 | 4 | 1 | 0 | 1 | 2 | 2 | 2 | 1 | 4 |
| 3 mg/m3 | ANIMAL ID | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | |
| | | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 3 | |
| | | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 |
| | | | | | | | | | | * TOTALS | |

NONE

URINARY SYSTEM

NONE

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

+ .. Tissue examined microscopically

X .. Lesion present

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 First Dose M/F: 05/30/11 / 05/30/11
 Lab: BNW

| | | | | | | | | | | | | | | |
|--|-------------|-----------------|---|---|---|---|---|---|---|---|---|---|---|---|
| B6C3F1 MICE MALE 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 |
| | | 3 | 4 | 3 | 3 | 3 | 7 | 7 | 7 | 3 | 4 | | | |
| | | 0 | 4 | 1 | 0 | 1 | 2 | 2 | 2 | 1 | 4 | | | |
| | ANIMAL ID | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | |
| | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | |
| | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | |
| | | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | | | |
| | | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | | | |
| | | * TOTALS | | | | | | | | | | | | |

ALIMENTARY SYSTEM

Pharynx + + + **10**

CARDIOVASCULAR SYSTEM

NONE

ENDOCRINE SYSTEM

NONE

GENERAL BODY SYSTEM

NONE

GENITAL SYSTEM

NONE

HEMATOPOIETIC SYSTEM

| | | | | | | | | | | | | | | | |
|-------------------------|--|--|---|--|---|--|--|---|--|--|--|--|----------|----------|------------|
| Lymph Node, Bronchial | | | + | | I | | | + | | | | | 7 | | |
| Foreign Body | | | 2 | | | | | 1 | | | | | | 6 | 1.2 |
| Hyperplasia, Lymphoid | | | 2 | | | | | | | | | | | 3 | 1.7 |
| Lymph Node, Mediastinal | | | | | + | | | + | | | | | 9 | | |
| Foreign Body | | | | | | | | 1 | | | | | | 3 | 1.0 |
| Hyperplasia, Lymphoid | | | | | | | | 3 | | | | | | 3 | 2.7 |

INTEGUMENTARY SYSTEM

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

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

Experiment Number: 07062 - 02

Test Type: 30-day

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: MICE/B6C3F1

P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL

1020 Long Multiwalled Carbon Nanotube

CAS Number: L-MWNT-1020

Date Report Requested: 04/17/2013

Time Report Requested: 07:42:27

First Dose M/F: 05/30/11 / 05/30/11

Lab: BNW

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

NONE

URINARY SYSTEM

NONE

*** 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: 07062 - 02

Test Type: 30-day

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: MICE/B6C3F1

P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL

1020 Long Multiwalled Carbon Nanotube

CAS Number: L-MWNT-1020

Date Report Requested: 04/17/2013

Time Report Requested: 07:42:27

First Dose M/F: 05/30/11 / 05/30/11

Lab: BNW

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

Lymph Node, Mediastinal

I + +

7

INTEGUMENTARY SYSTEM

NONE

MUSCULOSKELETAL SYSTEM

NONE

NERVOUS SYSTEM

NONE

RESPIRATORY SYSTEM

| | | | | | | | | | |
|----------------------------------|--|--|---|---|--|--|---|----|-------|
| Larynx | | | + | + | | | + | 10 | |
| Epiglottis, Metaplasia, Squamous | | | | | | | | | 1 1.0 |
| Lung | | | + | + | | | + | 10 | |
| Nose | | | + | + | | | + | 10 | |
| Trachea | | | + | + | | | + | 10 | |

SPECIAL SENSES SYSTEM

NONE

URINARY SYSTEM

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

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

Experiment Number: 07062 - 02

Test Type: 30-day

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: MICE/B6C3F1

P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL

1020 Long Multiwalled Carbon Nanotube

CAS Number: L-MWNT-1020

Date Report Requested: 04/17/2013

Time Report Requested: 07:42:27

First Dose M/F: 05/30/11 / 05/30/11

Lab: BNW

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

NONE

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

+ .. Tissue examined microscopically

X .. Lesion present

I .. Insufficient tissue

M .. Missing tissue

A .. Autolysis precludes evaluation

BLANK .. Not examined microscopically

1-4 .. Lesion qualified as:

1) Minimal 3) Moderate

2) Mild 4) Marked

Experiment Number: 07062 - 02
 Test Type: 30-day
 Route: RESPIRATORY EXPOSURE WHOLE BODY
 Species/Strain: MICE/B6C3F1

P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL
 1020 Long Multiwalled Carbon Nanotube
 CAS Number: L-MWNT-1020

Date Report Requested: 04/17/2013
 Time Report Requested: 07:42:27
 First Dose M/F: 05/30/11 / 05/30/11
 Lab: BNW

| | | | | | | | | | | | |
|---------------------------|-------------|---|---|---|---|---|---|---|---|---|---|
| B6C3F1 MICE FEMALE | DAY ON TEST | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | | 3 | 4 | 3 | 3 | 3 | 7 | 7 | 7 | 3 | 4 |
| | | 1 | 5 | 2 | 1 | 2 | 3 | 3 | 3 | 2 | 5 |
| 0.1 mg/m3 | ANIMAL ID | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| | | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 3 | 3 |
| | | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 |
| * TOTALS | | | | | | | | | | | |

ALIMENTARY SYSTEM

Pharynx + + + **10**

CARDIOVASCULAR SYSTEM

NONE

ENDOCRINE SYSTEM

NONE

GENERAL BODY SYSTEM

NONE

GENITAL SYSTEM

NONE

HEMATOPOIETIC SYSTEM

| | | | | | | | | | | | |
|-------------------------|--|--|---|---|--|--|--|--|---|----------|--------------|
| Lymph Node | | | | | | | | | | 1 | |
| Lumbar, Pigmentation | | | | | | | | | | | 1 2.0 |
| Lymph Node, Bronchial | | | I | I | | | | | + | | 3 |
| Lymph Node, Mediastinal | | | + | + | | | | | + | | 8 |

INTEGUMENTARY SYSTEM

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

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

Experiment Number: 07062 - 02
 Test Type: 30-day
 Route: RESPIRATORY EXPOSURE WHOLE BODY
 Species/Strain: MICE/B6C3F1

P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL
 1020 Long Multiwalled Carbon Nanotube
 CAS Number: L-MWNT-1020

Date Report Requested: 04/17/2013
 Time Report Requested: 07:42:27
 First Dose M/F: 05/30/11 / 05/30/11
 Lab: BNW

| | | | | | | | | | | | |
|---------------------------|-------------|---|---|---|---|---|---|---|---|---|---|
| B6C3F1 MICE FEMALE | DAY ON TEST | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | | 3 | 4 | 3 | 3 | 3 | 7 | 7 | 7 | 3 | 4 |
| | | 1 | 5 | 2 | 1 | 2 | 3 | 3 | 3 | 2 | 5 |
| 0.1 mg/m3 | ANIMAL ID | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| | | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 3 | 3 |
| | | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 |
| * TOTALS | | | | | | | | | | | |

NONE

MUSCULOSKELETAL SYSTEM

NONE

NERVOUS SYSTEM

NONE

RESPIRATORY SYSTEM

| | | | | | | | | | | | |
|----------------------------------|--|--|---|---|--|--|--|---|--|--|--------------|
| Larynx | | | + | + | | | | + | | | 10 |
| Epiglottis, Metaplasia, Squamous | | | | | | | | | | | 1 1.0 |
| Lung | | | + | + | | | | + | | | 10 |
| Foreign Body | | | 1 | 1 | | | | 1 | | | 9 1.0 |
| Metaplasia, Osseous | | | | | | | | | | | 1 1.0 |
| Nose | | | + | + | | | | + | | | 10 |
| Trachea | | | + | + | | | | + | | | 9 |

SPECIAL SENSES SYSTEM

NONE

URINARY SYSTEM

NONE

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

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

Experiment Number: 07062 - 02
 Test Type: 30-day
 Route: RESPIRATORY EXPOSURE WHOLE BODY
 Species/Strain: MICE/B6C3F1

P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL
 1020 Long Multiwalled Carbon Nanotube
 CAS Number: L-MWNT-1020

Date Report Requested: 04/17/2013
 Time Report Requested: 07:42:27
 First Dose M/F: 05/30/11 / 05/30/11
 Lab: BNW

| | | | | | | | | | | | |
|---------------------------|-------------|---|---|---|---|---|---|---|---|---|---|
| B6C3F1 MICE FEMALE | DAY ON TEST | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | | 3 | 4 | 3 | 3 | 3 | 7 | 7 | 7 | 3 | 4 |
| | | 1 | 5 | 2 | 1 | 2 | 3 | 3 | 3 | 2 | 5 |
| 0.3 mg/m3 | ANIMAL ID | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | |
| | | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 3 | |
| | | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 |
| * TOTALS | | | | | | | | | | | |

ALIMENTARY SYSTEM

Pharynx + + + **10**

CARDIOVASCULAR SYSTEM

NONE

ENDOCRINE SYSTEM

NONE

GENERAL BODY SYSTEM

NONE

GENITAL SYSTEM

NONE

HEMATOPOIETIC SYSTEM

| | | | | | | | | | | | | |
|-------------------------|--|--|--|--|--|--|--|--|--|--|----------|------------|
| Lymph Node | | | | | | | | | | | 2 | |
| Lumbar, Pigmentation | | | | | | | | | | | 2 | 2.0 |
| Lymph Node, Bronchial | | | | | | | | | | | | 8 |
| Lymph Node, Mediastinal | | | | | | | | | | | | 8 |

INTEGUMENTARY SYSTEM

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

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

Experiment Number: 07062 - 02
 Test Type: 30-day
 Route: RESPIRATORY EXPOSURE WHOLE BODY
 Species/Strain: MICE/B6C3F1

P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL
 1020 Long Multiwalled Carbon Nanotube
 CAS Number: L-MWNT-1020

Date Report Requested: 04/17/2013
 Time Report Requested: 07:42:27
 First Dose M/F: 05/30/11 / 05/30/11
 Lab: BNW

| | | | | | | | | | | | |
|---------------------------|-------------|---|---|---|---|---|---|---|---|---|---|
| B6C3F1 MICE FEMALE | DAY ON TEST | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | | 3 | 4 | 3 | 3 | 3 | 7 | 7 | 7 | 3 | 4 |
| | | 1 | 5 | 2 | 1 | 2 | 3 | 3 | 3 | 2 | 5 |
| 0.3 mg/m3 | ANIMAL ID | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | |
| | | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 3 | |
| | | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 |
| * TOTALS | | | | | | | | | | | |

NONE

MUSCULOSKELETAL SYSTEM

NONE

NERVOUS SYSTEM

NONE

RESPIRATORY SYSTEM

| | | | | | | | | | | | |
|---|--|--|---|---|--|--|--|---|-----------|-----------|------------|
| Larynx | | | + | + | | | | + | 10 | | |
| Epiglottis, Metaplasia, Squamous | | | | | | | | | | 1 | 1.0 |
| Lung | | | + | + | | | | + | 10 | | |
| Foreign Body | | | 1 | 1 | | | | 1 | | 10 | 1.0 |
| Nose | | | + | + | | | | + | 10 | | |
| Olfactory Epithelium, Accumulation, Hyaline Droplet | | | | | | | | 1 | | 1 | 1.0 |
| Trachea | | | + | + | | | | + | 10 | | |

SPECIAL SENSES SYSTEM

NONE

URINARY SYSTEM

NONE

* .. 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: 07062 - 02
 Test Type: 30-day
 Route: RESPIRATORY EXPOSURE WHOLE BODY
 Species/Strain: MICE/B6C3F1

P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL
 1020 Long Multiwalled Carbon Nanotube
 CAS Number: L-MWNT-1020

Date Report Requested: 04/17/2013
 Time Report Requested: 07:42:27
 First Dose M/F: 05/30/11 / 05/30/11
 Lab: BNW

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

ALIMENTARY SYSTEM

Pharynx + + + **10**

CARDIOVASCULAR SYSTEM

NONE

ENDOCRINE SYSTEM

NONE

GENERAL BODY SYSTEM

NONE

GENITAL SYSTEM

NONE

HEMATOPOIETIC SYSTEM

| | | | | | | | | | | | | |
|-------------------------|--|--|---|---|---|--|--|--|---|----------|----------|------------|
| Lymph Node, Bronchial | | | + | | | | | | | 9 | | |
| Foreign Body | | | | + | | | | | 1 | | 3 | 1.0 |
| Hyperplasia, Lymphoid | | | | | 1 | | | | | | 2 | 1.0 |
| Lymph Node, Mediastinal | | | + | | | | | | | | 7 | |
| Hyperplasia, Lymphoid | | | | + | | | | | 2 | | 1 | 2.0 |

INTEGUMENTARY SYSTEM

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

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

Experiment Number: 07062 - 02

Test Type: 30-day

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: MICE/B6C3F1

P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL

1020 Long Multiwalled Carbon Nanotube

CAS Number: L-MWNT-1020

Date Report Requested: 04/17/2013

Time Report Requested: 07:42:27

First Dose M/F: 05/30/11 / 05/30/11

Lab: BNW

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

URINARY SYSTEM

NONE

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

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

Experiment Number: 07062 - 02
 Test Type: 30-day
 Route: RESPIRATORY EXPOSURE WHOLE BODY
 Species/Strain: MICE/B6C3F1

P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL
 1020 Long Multiwalled Carbon Nanotube
 CAS Number: L-MWNT-1020

Date Report Requested: 04/17/2013
 Time Report Requested: 07:42:27
 First Dose M/F: 05/30/11 / 05/30/11
 Lab: BNW

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

ALIMENTARY SYSTEM

Pharynx + + + **10**

CARDIOVASCULAR SYSTEM

NONE

ENDOCRINE SYSTEM

NONE

GENERAL BODY SYSTEM

NONE

GENITAL SYSTEM

NONE

HEMATOPOIETIC SYSTEM

| | | | | | | | | | | | | |
|-------------------------|--|--|---|--|---|--|--|--|---|----------|-----------|--------------|
| Lymph Node | | | | | | | | | | 1 | | |
| Lumbar, Pigmentation | | | | | | | | | | | 1 | 2.0 |
| Lymph Node, Bronchial | | | I | | M | | | | + | | 6 | |
| Foreign Body | | | | | | | | | 1 | | | 5 1.0 |
| Hyperplasia, Lymphoid | | | | | | | | | | | | 3 1.3 |
| Lymph Node, Mediastinal | | | | | | | | | + | | 10 | |
| Foreign Body | | | | | | | | | + | | | 4 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: 07062 - 02

Test Type: 30-day

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: MICE/B6C3F1

P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL

1020 Long Multiwalled Carbon Nanotube

CAS Number: L-MWNT-1020

Date Report Requested: 04/17/2013

Time Report Requested: 07:42:27

First Dose M/F: 05/30/11 / 05/30/11

Lab: BNW

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

*** TOTALS**

| | | | | | | | | | | | |
|---------|--|---|--|---|--|--|--|---|--|--|----------|
| Trachea | | | | | | | | | | | 9 |
| | | + | | + | | | | + | | | |

SPECIAL SENSES SYSTEM

NONE

URINARY SYSTEM

NONE

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

+ .. Tissue examined microscopically

X .. Lesion present

I .. Insufficient tissue

M .. Missing tissue

A .. Autolysis precludes evaluation

BLANK .. Not examined microscopically

1-4 .. Lesion qualified as:

1) Minimal 3) Moderate

2) Mild 4) Marked

Experiment Number: 07062 - 02
 Test Type: 30-day
 Route: RESPIRATORY EXPOSURE WHOLE BODY
 Species/Strain: MICE/B6C3F1

P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL
 1020 Long Multiwalled Carbon Nanotube
 CAS Number: L-MWNT-1020

Date Report Requested: 04/17/2013
 Time Report Requested: 07:42:27
 First Dose M/F: 05/30/11 / 05/30/11
 Lab: BNW

| | | | | | | | | | | | | | | |
|---------------------------|-------------|---|---|---|---|---|---|---|---|---|---|---|-----------------|---|
| B6C3F1 MICE FEMALE | 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 |
| 10 mg/m3 | | 3 | 4 | 3 | 3 | 3 | 7 | 7 | 7 | 3 | 3 | 4 | 4 | |
| | | 2 | 5 | 2 | 2 | 1 | 3 | 3 | 3 | 2 | 5 | | | |
| | ANIMAL ID | 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 | |
| | | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | | | |
| | | | | | | | | | | | | | * TOTALS | |

ALIMENTARY SYSTEM

Pharynx + + + + **10**

CARDIOVASCULAR SYSTEM

NONE

ENDOCRINE SYSTEM

NONE

GENERAL BODY SYSTEM

NONE

GENITAL SYSTEM

NONE

HEMATOPOIETIC SYSTEM

| | | | | | | | | | | | | | | | | |
|-------------------------|---|---|---|--|--|--|--|---|--|--|--|--|--|----------|----------|------------|
| Lymph Node | + | | | | | | | | | | | | | 1 | | |
| Lumbar, Pigmentation | 1 | | | | | | | | | | | | | | 1 | 1.0 |
| Lymph Node, Bronchial | I | I | + | | | | | M | | | | | | 6 | | |
| Foreign Body | | | 1 | | | | | | | | | | | | 5 | 1.0 |
| Hyperplasia, Lymphoid | | | 2 | | | | | | | | | | | | 5 | 1.8 |
| Lymph Node, Mediastinal | + | + | + | | | | | + | | | | | | 9 | | |
| Foreign Body | 1 | 1 | | | | | | 1 | | | | | | | 7 | 1.0 |

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 + .. Tissue examined microscopically
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Experiment Number: 07062 - 02
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| B6C3F1 MICE FEMALE | DAY ON TEST | | | | | | | | | | ANIMAL ID | |
|-----------------------|-------------|---|---|---|---|---|---|---|---|---|-----------------|--|
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | |
| 10 mg/m3 | 3 | 4 | 3 | 3 | 3 | 7 | 7 | 7 | 3 | 4 | 0 | |
| | 2 | 5 | 2 | 2 | 1 | 3 | 3 | 3 | 2 | 5 | 0 | |
| | 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 | 2 | |
| | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | |
| | | | | | | | | | | | * TOTALS | |
| Hyperplasia, Lymphoid | | | | | | | | | | | 5 1.4 | |

INTEGUMENTARY SYSTEM

NONE

MUSCULOSKELETAL SYSTEM

NONE

NERVOUS SYSTEM

NONE

RESPIRATORY SYSTEM

| | | | | | | | | |
|---|---|---|---|--|--|--|---|---------------|
| Larynx | + | + | + | | | | + | 10 |
| Epiglottis, Metaplasia, Squamous | 2 | 2 | 2 | | | | 2 | 10 1.9 |
| Lung | + | + | + | | | | + | 10 |
| Foreign Body | 3 | 3 | 3 | | | | 3 | 10 3.0 |
| Inflammation, Chronic | 2 | 3 | 3 | | | | 3 | 10 2.8 |
| Alveolus, Proteinosis | 2 | 2 | 1 | | | | 2 | 10 1.6 |
| Bronchiole, Epithelium, Hyperplasia | 1 | 1 | 1 | | | | 1 | 10 1.3 |
| Nose | + | + | + | | | | + | 10 |
| Olfactory Epithelium, Accumulation, Hyaline Droplet | 2 | 2 | 1 | | | | 1 | 10 1.8 |
| Respiratory Epithelium, Accumulation, Hyaline Droplet | 2 | 2 | 2 | | | | 2 | 10 2.0 |

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| | | | | | | | | | | | |
|---------------------------|-------------|-------|---|---|---|---|---|---|---|---|---|
| B6C3F1 MICE FEMALE | DAY ON TEST | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | | 3 | 4 | 3 | 3 | 3 | 7 | 7 | 3 | 3 | 4 |
| | | 2 | 5 | 2 | 2 | 1 | 3 | 3 | 3 | 2 | 5 |
| | | <hr/> | | | | | | | | | |
| 10 mg/m3 | ANIMAL ID | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | |
| | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| | | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 3 | 3 |
| | | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 |

*** TOTALS**

| | | | | | | | | | | | |
|---------|---|---|---|--|---|--|--|--|--|--|-----------|
| Trachea | + | + | + | | + | | | | | | 10 |
|---------|---|---|---|--|---|--|--|--|--|--|-----------|

SPECIAL SENSES SYSTEM

NONE

URINARY SYSTEM

NONE

*** END OF REPORT ***

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 + .. Tissue examined microscopically
 X .. Lesion present
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