

**Experiment Number:** 20725 - 02  
**Test Type:** 90-DAY  
**Route:** RESPIRATORY EXPOSURE WHOLE BODY  
**Species/Strain:** MICE/B6C3F1

**P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS**

2,3-Butanedione  
**CAS Number:** 431-03-8

**Date Report Requested:** 04/29/2016  
**Time Report Requested:** 14:39:21  
**First Dose M/F:** 07/28/08 / 07/28/08  
**Lab:** BNW

F1\_Rev.1\_M3

**NTP Study Number:** C20725  
**Lock Date:** 02/27/2009  
**Cage Range:** ALL  
**Date Range:** ALL  
**Reasons For Removal:** ALL  
**Removal Date Range:** ALL  
**Treatment Groups:** Include ALL  
**Study Gender:** Both  
**TDMSE Version:** 3.0.2.3\_002  
**PWG Approval Date:** NONE

**Experiment Number:** 20725 - 02  
**Test Type:** 90-DAY  
**Route:** RESPIRATORY EXPOSURE WHOLE BODY  
**Species/Strain:** MICE/B6C3F1

**P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS**  
2,3-Butanedione  
**CAS Number:** 431-03-8

**Date Report Requested:** 04/29/2016  
**Time Report Requested:** 14:39:21  
**First Dose M/F:** 07/28/08 / 07/28/08  
**Lab:** BNW

## SUMMARY OF STATISTICALLY SIGNIFICANT ( $P \leq .05$ ) RESULTS IN THE ANALYSIS OF 2,3-BUTANEDIONE

### MALE MICE

#### Organ

Larynx  
Larynx: Epithelium  
Larynx: Respiratory Epithelium

Larynx: Squamous Epithelium

Lung: Bronchus

Lung: Bronchus, Epithelium

Nose  
Nose: Olfactory Epithelium

Nose: Respiratory Epithelium

Nose: Septum  
Nose: Turbinate

Trachea  
Trachea: Epithelium

#### Morphology

Inflammation Chronic  
Necrosis  
Hyperplasia  
Hyperplasia Atypical  
Metaplasia  
Metaplasia Atypical Squamous  
Regeneration  
Hyperplasia  
Hyperplasia Atypical  
Infiltration Cellular Polymorphonuclear  
Inflammation Chronic  
Degeneration  
Hyperplasia  
Hyperplasia Atypical  
Metaplasia Atypical Squamous  
Regeneration  
Inflammation  
Atrophy  
Metaplasia Respiratory  
Metaplasia  
Necrosis  
Regeneration  
Perforation  
Atrophy  
Necrosis  
Inflammation Chronic  
Degeneration  
Hyperplasia  
Metaplasia Atypical Squamous  
Regeneration

### FEMALE MICE

Experiment Number: 20725 - 02

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: MICE/B6C3F1

**P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS**

2,3-Butanedione

CAS Number: 431-03-8

Date Report Requested: 04/29/2016

Time Report Requested: 14:39:21

First Dose M/F: 07/28/08 / 07/28/08

Lab: BNW

**SUMMARY OF STATISTICALLY SIGNIFICANT (P<=.05) RESULTS IN THE ANALYSIS OF 2,3-BUTANEDIONE**

**Organ**

Clitoral Gland  
Intestine Small, Jejunum  
Larynx  
Larynx: Epithelium  
Larynx: Respiratory Epithelium

Larynx: Squamous Epithelium

Lung: Bronchus

Lung: Bronchus, Epithelium

Nose

Nose: Olfactory Epithelium

Nose: Respiratory Epithelium

Nose: Septum

Nose: Turbinate

Trachea

Trachea: Epithelium

**Morphology**

Inflammation Chronic  
Diverticulum  
Inflammation Chronic  
Necrosis  
Hyperplasia  
Metaplasia  
Metaplasia Atypical Squamous  
Regeneration  
Hyperplasia  
Hyperplasia Atypical  
Infiltration Cellular Polymorphonuclear  
Inflammation Chronic  
Hyperplasia Atypical  
Metaplasia Atypical Squamous  
Regeneration  
Inflammation  
Atrophy  
Metaplasia Respiratory  
Accumulation, Hyaline Droplet  
Metaplasia  
Necrosis  
Regeneration  
Necrosis  
Atrophy  
Necrosis  
Inflammation Chronic  
Degeneration  
Hyperplasia  
Metaplasia Atypical Squamous  
Regeneration

Experiment Number: 20725 - 02  
 Test Type: 90-DAY  
 Route: RESPIRATORY EXPOSURE WHOLE BODY  
 Species/Strain: MICE/B6C3F1

P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS  
 2,3-Butanedione  
 CAS Number: 431-03-8

Date Report Requested: 04/29/2016  
 Time Report Requested: 14:39:21  
 First Dose M/F: 07/28/08 / 07/28/08  
 Lab: BNW

**STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN MICE(B6C3F1)  
 TERMINAL SACRIFICE AT 14 WEEKS**

DOSE	Males					
	CONTROL	6.25 ppm	12.5 ppm	25 ppm	50 ppm	100 ppm
<b>Adrenal Cortex</b>						
<b>Accessory Adrenal Cortical Nodule</b>						
<b>LESION RATES</b>						
OVERALL (a)	1/10 (10%)	0/0 (0%)	0/0 (0%)	0/0 (0%)	0/0 (0%)	0/10 (0%)
POLY-3 RATE (b)	1/10.00	0/0.00	0/0.00	0/0.00	0/0.00	0/10.00
POLY-3 PERCENT (g)	10%	0%	0%	0%	0%	0%
TERMINAL (d)	1/10 (10%)	0/0 (0%)	0/0 (0%)	0/0 (0%)	0/0 (0%)	0/10 (0%)
FIRST INCIDENCE	95 (T)	---	---	---	---	---
<b>STATISTICAL TESTS</b>						
POLY 3	(e)	(e)	(e)	(e)	(e)	P=0.500N
POLY 1.5	(e)	(e)	(e)	(e)	(e)	P=0.500N
POLY 6	(e)	(e)	(e)	(e)	(e)	P=0.500N
COCH-ARM / FISHERS	P=0.304N	(e)	(e)	(e)	(e)	P=0.500N
MAX-ISO-POLY-3	(e)	(e)	(e)	(e)	(e)	P=0.158N

Experiment Number: 20725 - 02

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: MICE/B6C3F1

P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS

2,3-Butanedione

CAS Number: 431-03-8

Date Report Requested: 04/29/2016

Time Report Requested: 14:39:21

First Dose M/F: 07/28/08 / 07/28/08

Lab: BNW

**STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN MICE(B6C3F1)  
TERMINAL SACRIFICE AT 14 WEEKS**

DOSE	Males					
	CONTROL	6.25 ppm	12.5 ppm	25 ppm	50 ppm	100 ppm
<b>Eye: Cornea, Epithelium Cellular Alteration Focal</b>						
<b>LESION RATES</b>						
OVERALL (a)	0/10 (0%)	0/0 (0%)	0/0 (0%)	0/0 (0%)	0/0 (0%)	0/10 (0%)
POLY-3 RATE (b)	0/10.00	0/0.00	0/0.00	0/0.00	0/0.00	0/10.00
POLY-3 PERCENT (g)	0%	0%	0%	0%	0%	0%
TERMINAL (d)	0/10 (0%)	0/0 (0%)	0/0 (0%)	0/0 (0%)	0/0 (0%)	0/10 (0%)
FIRST INCIDENCE	---	---	---	---	---	---
<b>STATISTICAL TESTS</b>						
POLY 3	(n)	(n)	(n)	(n)	(n)	(n)
POLY 1.5	(n)	(n)	(n)	(n)	(n)	(n)
POLY 6	(n)	(n)	(n)	(n)	(n)	(n)
COCH-ARM / FISHERS	(n)	(n)	(n)	(n)	(n)	(n)
MAX-ISO-POLY-3	(n)	(n)	(n)	(n)	(n)	(n)

Experiment Number: 20725 - 02

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: MICE/B6C3F1

P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS

2,3-Butanedione

CAS Number: 431-03-8

Date Report Requested: 04/29/2016

Time Report Requested: 14:39:21

First Dose M/F: 07/28/08 / 07/28/08

Lab: BNW

**STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN MICE(B6C3F1)  
TERMINAL SACRIFICE AT 14 WEEKS**

DOSE	Males					
	CONTROL	6.25 ppm	12.5 ppm	25 ppm	50 ppm	100 ppm
<b>Gallbladder Inflammation</b>						
<b>LESION RATES</b>						
OVERALL (a)	0/8 (0%)	0/0 (0%)	0/0 (0%)	0/0 (0%)	0/0 (0%)	0/8 (0%)
POLY-3 RATE (b)	0/8.00	0/0.00	0/0.00	0/0.00	0/0.00	0/8.00
POLY-3 PERCENT (g)	0%	0%	0%	0%	0%	0%
TERMINAL (d)	0/8 (0%)	0/0 (0%)	0/0 (0%)	0/0 (0%)	0/0 (0%)	0/8 (0%)
FIRST INCIDENCE	---	---	---	---	---	---
<b>STATISTICAL TESTS</b>						
POLY 3	(n)	(n)	(n)	(n)	(n)	(n)
POLY 1.5	(n)	(n)	(n)	(n)	(n)	(n)
POLY 6	(n)	(n)	(n)	(n)	(n)	(n)
COCH-ARM / FISHERS	(n)	(n)	(n)	(n)	(n)	(n)
MAX-ISO-POLY-3	(n)	(n)	(n)	(n)	(n)	(n)

Experiment Number: 20725 - 02  
 Test Type: 90-DAY  
 Route: RESPIRATORY EXPOSURE WHOLE BODY  
 Species/Strain: MICE/B6C3F1

P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS  
 2,3-Butanedione  
 CAS Number: 431-03-8

Date Report Requested: 04/29/2016  
 Time Report Requested: 14:39:21  
 First Dose M/F: 07/28/08 / 07/28/08  
 Lab: BNW

**STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN MICE(B6C3F1)  
 TERMINAL SACRIFICE AT 14 WEEKS**

DOSE	Males					
	CONTROL	6.25 ppm	12.5 ppm	25 ppm	50 ppm	100 ppm
<b>Intestine Small, Jejunum Diverticulum</b>						
<b>LESION RATES</b>						
OVERALL (a)	0/10 (0%)	0/0 (0%)	0/0 (0%)	0/0 (0%)	0/0 (0%)	0/10 (0%)
POLY-3 RATE (b)	0/10.00	0/0.00	0/0.00	0/0.00	0/0.00	0/10.00
POLY-3 PERCENT (g)	0%	0%	0%	0%	0%	0%
TERMINAL (d)	0/10 (0%)	0/0 (0%)	0/0 (0%)	0/0 (0%)	0/0 (0%)	0/10 (0%)
FIRST INCIDENCE	---	---	---	---	---	---
<b>STATISTICAL TESTS</b>						
POLY 3	(n)	(n)	(n)	(n)	(n)	(n)
POLY 1.5	(n)	(n)	(n)	(n)	(n)	(n)
POLY 6	(n)	(n)	(n)	(n)	(n)	(n)
COCH-ARM / FISHERS	(n)	(n)	(n)	(n)	(n)	(n)
MAX-ISO-POLY-3	(n)	(n)	(n)	(n)	(n)	(n)

Experiment Number: 20725 - 02  
 Test Type: 90-DAY  
 Route: RESPIRATORY EXPOSURE WHOLE BODY  
 Species/Strain: MICE/B6C3F1

P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS  
 2,3-Butanedione  
 CAS Number: 431-03-8

Date Report Requested: 04/29/2016  
 Time Report Requested: 14:39:21  
 First Dose M/F: 07/28/08 / 07/28/08  
 Lab: BNW

**STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN MICE(B6C3F1)  
 TERMINAL SACRIFICE AT 14 WEEKS**

DOSE	Males					
	CONTROL	6.25 ppm	12.5 ppm	25 ppm	50 ppm	100 ppm
<b>Kidney: Renal Tubule Casts Protein</b>						
<b>LESION RATES</b>						
OVERALL (a)	0/10 (0%)	0/0 (0%)	0/0 (0%)	0/0 (0%)	0/0 (0%)	0/10 (0%)
POLY-3 RATE (b)	0/10.00	0/0.00	0/0.00	0/0.00	0/0.00	0/10.00
POLY-3 PERCENT (g)	0%	0%	0%	0%	0%	0%
TERMINAL (d)	0/10 (0%)	0/0 (0%)	0/0 (0%)	0/0 (0%)	0/0 (0%)	0/10 (0%)
FIRST INCIDENCE	---	---	---	---	---	---
<b>STATISTICAL TESTS</b>						
POLY 3	(n)	(n)	(n)	(n)	(n)	(n)
POLY 1.5	(n)	(n)	(n)	(n)	(n)	(n)
POLY 6	(n)	(n)	(n)	(n)	(n)	(n)
COCH-ARM / FISHERS	(n)	(n)	(n)	(n)	(n)	(n)
MAX-ISO-POLY-3	(n)	(n)	(n)	(n)	(n)	(n)



Experiment Number: 20725 - 02

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: MICE/B6C3F1

P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS

2,3-Butanedione

CAS Number: 431-03-8

Date Report Requested: 04/29/2016

Time Report Requested: 14:39:21

First Dose M/F: 07/28/08 / 07/28/08

Lab: BNW

STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN MICE(B6C3F1)  
TERMINAL SACRIFICE AT 14 WEEKS

DOSE	Males					
	CONTROL	6.25 ppm	12.5 ppm	25 ppm	50 ppm	100 ppm
<b>Kidney: Renal Tubule Regeneration</b>						
<b>LESION RATES</b>						
OVERALL (a)	1/10 (10%)	0/0 (0%)	0/0 (0%)	0/0 (0%)	0/0 (0%)	0/10 (0%)
POLY-3 RATE (b)	1/10.00	0/0.00	0/0.00	0/0.00	0/0.00	0/10.00
POLY-3 PERCENT (g)	10%	0%	0%	0%	0%	0%
TERMINAL (d)	1/10 (10%)	0/0 (0%)	0/0 (0%)	0/0 (0%)	0/0 (0%)	0/10 (0%)
FIRST INCIDENCE	95 (T)	---	---	---	---	---
<b>STATISTICAL TESTS</b>						
POLY 3	(e)	(e)	(e)	(e)	(e)	P=0.500N
POLY 1.5	(e)	(e)	(e)	(e)	(e)	P=0.500N
POLY 6	(e)	(e)	(e)	(e)	(e)	P=0.500N
COCH-ARM / FISHERS	P=0.304N	(e)	(e)	(e)	(e)	P=0.500N
MAX-ISO-POLY-3	(e)	(e)	(e)	(e)	(e)	P=0.158N

Experiment Number: 20725 - 02  
 Test Type: 90-DAY  
 Route: RESPIRATORY EXPOSURE WHOLE BODY  
 Species/Strain: MICE/B6C3F1

P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS  
 2,3-Butanedione  
 CAS Number: 431-03-8

Date Report Requested: 04/29/2016  
 Time Report Requested: 14:39:21  
 First Dose M/F: 07/28/08 / 07/28/08  
 Lab: BNW

**STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN MICE(B6C3F1)  
 TERMINAL SACRIFICE AT 14 WEEKS**

DOSE	Males					
	CONTROL	6.25 ppm	12.5 ppm	25 ppm	50 ppm	100 ppm
<b>Larynx</b>						
<b>Inflammation Chronic</b>						
<b>LESION RATES</b>						
OVERALL (a)	1/10 (10%)	1/10 (10%)	3/10 (30%)	3/10 (30%)	8/10 (80%)	10/10 (100%)
POLY-3 RATE (b)	1/10.00	1/10.00	3/10.00	3/10.00	8/10.00	10/10.00
POLY-3 PERCENT (g)	10%	10%	30%	30%	80%	100%
TERMINAL (d)	1/10 (10%)	1/10 (10%)	3/10 (30%)	3/10 (30%)	8/10 (80%)	10/10 (100%)
FIRST INCIDENCE	95 (T)	95 (T)	95 (T)	95 (T)	95 (T)	95 (T)
<b>STATISTICAL TESTS</b>						
POLY 3	P<0.001**	P=0.760	P=0.292	P=0.292	P<0.001**	P<0.001**
POLY 1.5	P<0.001**	P=0.760	P=0.292	P=0.292	P<0.001**	P<0.001**
POLY 6	P<0.001**	P=0.760	P=0.292	P=0.292	P<0.001**	P<0.001**
COCH-ARM / FISHERS	P<0.001**	P=0.763N	P=0.291	P=0.291	P=0.003**	P<0.001**
MAX-ISO-POLY-3	P<0.001**	P=1.000	P=0.136	P=0.136	P<0.001**	P<0.001**

Experiment Number: 20725 - 02  
 Test Type: 90-DAY  
 Route: RESPIRATORY EXPOSURE WHOLE BODY  
 Species/Strain: MICE/B6C3F1

P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS  
 2,3-Butanedione  
 CAS Number: 431-03-8

Date Report Requested: 04/29/2016  
 Time Report Requested: 14:39:21  
 First Dose M/F: 07/28/08 / 07/28/08  
 Lab: BNW

**STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN MICE(B6C3F1)  
 TERMINAL SACRIFICE AT 14 WEEKS**

DOSE	Males					
	CONTROL	6.25 ppm	12.5 ppm	25 ppm	50 ppm	100 ppm
<b>Larynx: Epithelium Necrosis</b>						
<b>LESION RATES</b>						
OVERALL (a)	0/10 (0%)	0/10 (0%)	2/10 (20%)	1/10 (10%)	9/10 (90%)	8/10 (80%)
POLY-3 RATE (b)	0/10.00	0/10.00	2/10.00	1/10.00	9/10.00	8/10.00
POLY-3 PERCENT (g)	0%	0%	20%	10%	90%	80%
TERMINAL (d)	0/10 (0%)	0/10 (0%)	2/10 (20%)	1/10 (10%)	9/10 (90%)	8/10 (80%)
FIRST INCIDENCE	---	---	95 (T)	95 (T)	95 (T)	95 (T)
<b>STATISTICAL TESTS</b>						
POLY 3	P<0.001**	(e)	P=0.227	P=0.500	P<0.001**	P<0.001**
POLY 1.5	P<0.001**	(e)	P=0.227	P=0.500	P<0.001**	P<0.001**
POLY 6	P<0.001**	(e)	P=0.227	P=0.500	P<0.001**	P<0.001**
COCH-ARM / FISHERS	P<0.001**	(e)	P=0.237	P=0.500	P<0.001**	P<0.001**
MAX-ISO-POLY-3	P<0.001**	(e)	P=0.066	P=0.158	P<0.001**	P<0.001**

Experiment Number: 20725 - 02

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: MICE/B6C3F1

P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS

2,3-Butanedione

CAS Number: 431-03-8

Date Report Requested: 04/29/2016

Time Report Requested: 14:39:21

First Dose M/F: 07/28/08 / 07/28/08

Lab: BNW

STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN MICE(B6C3F1)  
TERMINAL SACRIFICE AT 14 WEEKS

DOSE	Males					
	CONTROL	6.25 ppm	12.5 ppm	25 ppm	50 ppm	100 ppm
<b>Larynx: Respiratory Epithelium Hyperplasia</b>						
<b>LESION RATES</b>						
OVERALL (a)	0/10 (0%)	0/10 (0%)	0/10 (0%)	2/10 (20%)	8/10 (80%)	8/10 (80%)
POLY-3 RATE (b)	0/10.00	0/10.00	0/10.00	2/10.00	8/10.00	8/10.00
POLY-3 PERCENT (g)	0%	0%	0%	20%	80%	80%
TERMINAL (d)	0/10 (0%)	0/10 (0%)	0/10 (0%)	2/10 (20%)	8/10 (80%)	8/10 (80%)
FIRST INCIDENCE	---	---	---	95 (T)	95 (T)	95 (T)
<b>STATISTICAL TESTS</b>						
POLY 3	P<0.001**	(e)	(e)	P=0.227	P<0.001**	P<0.001**
POLY 1.5	P<0.001**	(e)	(e)	P=0.227	P<0.001**	P<0.001**
POLY 6	P<0.001**	(e)	(e)	P=0.227	P<0.001**	P<0.001**
COCH-ARM / FISHERS	P<0.001**	(e)	(e)	P=0.237	P<0.001**	P<0.001**
MAX-ISO-POLY-3	P<0.001**	(e)	(e)	P=0.066	P<0.001**	P<0.001**

Experiment Number: 20725 - 02

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: MICE/B6C3F1

P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS

2,3-Butanedione

CAS Number: 431-03-8

Date Report Requested: 04/29/2016

Time Report Requested: 14:39:21

First Dose M/F: 07/28/08 / 07/28/08

Lab: BNW

STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN MICE(B6C3F1)  
TERMINAL SACRIFICE AT 14 WEEKS

DOSE	Males					
	CONTROL	6.25 ppm	12.5 ppm	25 ppm	50 ppm	100 ppm
Larynx: Respiratory Epithelium Hyperplasia Atypical						
<b>LESION RATES</b>						
OVERALL (a)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	1/10 (10%)
POLY-3 RATE (b)	0/10.00	0/10.00	0/10.00	0/10.00	0/10.00	1/10.00
POLY-3 PERCENT (g)	0%	0%	0%	0%	0%	10%
TERMINAL (d)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	1/10 (10%)
FIRST INCIDENCE	---	---	---	---	---	95 (T)
<b>STATISTICAL TESTS</b>						
POLY 3	P=0.107	(e)	(e)	(e)	(e)	P=0.500
POLY 1.5	P=0.107	(e)	(e)	(e)	(e)	P=0.500
POLY 6	P=0.107	(e)	(e)	(e)	(e)	P=0.500
COCH-ARM / FISHERS	P=0.105	(e)	(e)	(e)	(e)	P=0.500
MAX-ISO-POLY-3	P=0.041*	(e)	(e)	(e)	(e)	P=0.158

Experiment Number: 20725 - 02  
 Test Type: 90-DAY  
 Route: RESPIRATORY EXPOSURE WHOLE BODY  
 Species/Strain: MICE/B6C3F1

P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS  
 2,3-Butanedione  
 CAS Number: 431-03-8

Date Report Requested: 04/29/2016  
 Time Report Requested: 14:39:21  
 First Dose M/F: 07/28/08 / 07/28/08  
 Lab: BNW

**STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN MICE(B6C3F1)  
 TERMINAL SACRIFICE AT 14 WEEKS**

DOSE	Males					
	CONTROL	6.25 ppm	12.5 ppm	25 ppm	50 ppm	100 ppm
<b>Larynx: Respiratory Epithelium Metaplasia</b>						
<b>LESION RATES</b>						
OVERALL (a)	0/10 (0%)	0/10 (0%)	0/10 (0%)	1/10 (10%)	3/10 (30%)	0/10 (0%)
POLY-3 RATE (b)	0/10.00	0/10.00	0/10.00	1/10.00	3/10.00	0/10.00
POLY-3 PERCENT (g)	0%	0%	0%	10%	30%	0%
TERMINAL (d)	0/10 (0%)	0/10 (0%)	0/10 (0%)	1/10 (10%)	3/10 (30%)	0/10 (0%)
FIRST INCIDENCE	---	---	---	95 (T)	95 (T)	---
<b>STATISTICAL TESTS</b>						
POLY 3	P=0.371	(e)	(e)	P=0.500	P=0.095	(e)
POLY 1.5	P=0.371	(e)	(e)	P=0.500	P=0.095	(e)
POLY 6	P=0.371	(e)	(e)	P=0.500	P=0.095	(e)
COCH-ARM / FISHERS	P=0.378	(e)	(e)	P=0.500	P=0.105	(e)
MAX-ISO-POLY-3	P=0.076	(e)	(e)	P=0.158	P=0.025*	(e)

Experiment Number: 20725 - 02  
 Test Type: 90-DAY  
 Route: RESPIRATORY EXPOSURE WHOLE BODY  
 Species/Strain: MICE/B6C3F1

P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS  
 2,3-Butanedione  
 CAS Number: 431-03-8

Date Report Requested: 04/29/2016  
 Time Report Requested: 14:39:21  
 First Dose M/F: 07/28/08 / 07/28/08  
 Lab: BNW

**STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN MICE(B6C3F1)  
 TERMINAL SACRIFICE AT 14 WEEKS**

DOSE	Males					
	CONTROL	6.25 ppm	12.5 ppm	25 ppm	50 ppm	100 ppm
<b>Larynx: Respiratory Epithelium Metaplasia Atypical Squamous</b>						
<b>LESION RATES</b>						
OVERALL (a)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	7/10 (70%)	10/10 (100%)
POLY-3 RATE (b)	0/10.00	0/10.00	0/10.00	0/10.00	7/10.00	10/10.00
POLY-3 PERCENT (g)	0%	0%	0%	0%	70%	100%
TERMINAL (d)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	7/10 (70%)	10/10 (100%)
FIRST INCIDENCE	---	---	---	---	95 (T)	95 (T)
<b>STATISTICAL TESTS</b>						
POLY 3	P<0.001**	(e)	(e)	(e)	P<0.001**	P<0.001**
POLY 1.5	P<0.001**	(e)	(e)	(e)	P<0.001**	P<0.001**
POLY 6	P<0.001**	(e)	(e)	(e)	P<0.001**	P<0.001**
COCH-ARM / FISHERS	P<0.001**	(e)	(e)	(e)	P=0.002**	P<0.001**
MAX-ISO-POLY-3	P<0.001**	(e)	(e)	(e)	P<0.001**	(e)

Experiment Number: 20725 - 02

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: MICE/B6C3F1

P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS

2,3-Butanedione

CAS Number: 431-03-8

Date Report Requested: 04/29/2016

Time Report Requested: 14:39:21

First Dose M/F: 07/28/08 / 07/28/08

Lab: BNW

STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN MICE(B6C3F1)  
TERMINAL SACRIFICE AT 14 WEEKS

DOSE	Males					
	CONTROL	6.25 ppm	12.5 ppm	25 ppm	50 ppm	100 ppm
<b>Larynx: Respiratory Epithelium Regeneration</b>						
<b>LESION RATES</b>						
OVERALL (a)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	5/10 (50%)	0/10 (0%)
POLY-3 RATE (b)	0/10.00	0/10.00	0/10.00	0/10.00	5/10.00	0/10.00
POLY-3 PERCENT (g)	0%	0%	0%	0%	50%	0%
TERMINAL (d)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	5/10 (50%)	0/10 (0%)
FIRST INCIDENCE	---	---	---	---	95 (T)	---
<b>STATISTICAL TESTS</b>						
POLY 3	P=0.134	(e)	(e)	(e)	P=0.008**	(e)
POLY 1.5	P=0.134	(e)	(e)	(e)	P=0.008**	(e)
POLY 6	P=0.134	(e)	(e)	(e)	P=0.008**	(e)
COCH-ARM / FISHERS	P=0.194	(e)	(e)	(e)	P=0.016*	(e)
MAX-ISO-POLY-3	P=0.005**	(e)	(e)	(e)	P<0.001**	(e)



Experiment Number: 20725 - 02

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: MICE/B6C3F1

## P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS

2,3-Butanedione

CAS Number: 431-03-8

Date Report Requested: 04/29/2016

Time Report Requested: 14:39:21

First Dose M/F: 07/28/08 / 07/28/08

Lab: BNW

**STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN MICE(B6C3F1)  
TERMINAL SACRIFICE AT 14 WEEKS**

DOSE	Males					
	CONTROL	6.25 ppm	12.5 ppm	25 ppm	50 ppm	100 ppm
<b>Larynx: Squamous Epithelium Hyperplasia</b>						
<b>LESION RATES</b>						
OVERALL (a)	0/10 (0%)	0/10 (0%)	0/10 (0%)	3/10 (30%)	3/10 (30%)	5/10 (50%)
POLY-3 RATE (b)	0/10.00	0/10.00	0/10.00	3/10.00	3/10.00	5/10.00
POLY-3 PERCENT (g)	0%	0%	0%	30%	30%	50%
TERMINAL (d)	0/10 (0%)	0/10 (0%)	0/10 (0%)	3/10 (30%)	3/10 (30%)	5/10 (50%)
FIRST INCIDENCE	---	---	---	95 (T)	95 (T)	95 (T)
<b>STATISTICAL TESTS</b>						
POLY 3	P<0.001**	(e)	(e)	P=0.095	P=0.095	P=0.008**
POLY 1.5	P<0.001**	(e)	(e)	P=0.095	P=0.095	P=0.008**
POLY 6	P<0.001**	(e)	(e)	P=0.095	P=0.095	P=0.008**
COCH-ARM / FISHERS	P<0.001**	(e)	(e)	P=0.105	P=0.105	P=0.016*
MAX-ISO-POLY-3	P<0.001**	(e)	(e)	P=0.025*	P=0.025*	P<0.001**

Experiment Number: 20725 - 02  
 Test Type: 90-DAY  
 Route: RESPIRATORY EXPOSURE WHOLE BODY  
 Species/Strain: MICE/B6C3F1

P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS  
 2,3-Butanedione  
 CAS Number: 431-03-8

Date Report Requested: 04/29/2016  
 Time Report Requested: 14:39:21  
 First Dose M/F: 07/28/08 / 07/28/08  
 Lab: BNW

**STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN MICE(B6C3F1)  
 TERMINAL SACRIFICE AT 14 WEEKS**

DOSE	Males					
	CONTROL	6.25 ppm	12.5 ppm	25 ppm	50 ppm	100 ppm
<b>Larynx: Squamous Epithelium Hyperplasia Atypical</b>						
<b>LESION RATES</b>						
OVERALL (a)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	7/10 (70%)	5/10 (50%)
POLY-3 RATE (b)	0/10.00	0/10.00	0/10.00	0/10.00	7/10.00	5/10.00
POLY-3 PERCENT (g)	0%	0%	0%	0%	70%	50%
TERMINAL (d)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	7/10 (70%)	5/10 (50%)
FIRST INCIDENCE	---	---	---	---	95 (T)	95 (T)
<b>STATISTICAL TESTS</b>						
POLY 3	P<0.001**	(e)	(e)	(e)	P<0.001**	P=0.008**
POLY 1.5	P<0.001**	(e)	(e)	(e)	P<0.001**	P=0.008**
POLY 6	P<0.001**	(e)	(e)	(e)	P<0.001**	P=0.008**
COCH-ARM / FISHERS	P<0.001**	(e)	(e)	(e)	P=0.002**	P=0.016*
MAX-ISO-POLY-3	P<0.001**	(e)	(e)	(e)	P<0.001**	P<0.001**

Experiment Number: 20725 - 02

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: MICE/B6C3F1

P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS

2,3-Butanedione

CAS Number: 431-03-8

Date Report Requested: 04/29/2016

Time Report Requested: 14:39:21

First Dose M/F: 07/28/08 / 07/28/08

Lab: BNW

STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN MICE(B6C3F1)  
TERMINAL SACRIFICE AT 14 WEEKS

DOSE	Males					
	CONTROL	6.25 ppm	12.5 ppm	25 ppm	50 ppm	100 ppm
<b>Liver</b>						
<b>Inflammation Chronic</b>						
<b>LESION RATES</b>						
OVERALL (a)	2/10 (20%)	0/0 (0%)	0/0 (0%)	0/0 (0%)	0/0 (0%)	4/10 (40%)
POLY-3 RATE (b)	2/10.00	0/0.00	0/0.00	0/0.00	0/0.00	4/10.00
POLY-3 PERCENT (g)	20%	0%	0%	0%	0%	40%
TERMINAL (d)	2/10 (20%)	0/0 (0%)	0/0 (0%)	0/0 (0%)	0/0 (0%)	4/10 (40%)
FIRST INCIDENCE	95 (T)	---	---	---	---	95 (T)
<b>STATISTICAL TESTS</b>						
POLY 3	(e)	(e)	(e)	(e)	(e)	P=0.318
POLY 1.5	(e)	(e)	(e)	(e)	(e)	P=0.318
POLY 6	(e)	(e)	(e)	(e)	(e)	P=0.318
COCH-ARM / FISHERS	P=0.232	(e)	(e)	(e)	(e)	P=0.314
MAX-ISO-POLY-3	(e)	(e)	(e)	(e)	(e)	P=0.172

Experiment Number: 20725 - 02

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: MICE/B6C3F1

P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS

2,3-Butanedione

CAS Number: 431-03-8

Date Report Requested: 04/29/2016

Time Report Requested: 14:39:21

First Dose M/F: 07/28/08 / 07/28/08

Lab: BNW

STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN MICE(B6C3F1)  
TERMINAL SACRIFICE AT 14 WEEKS

DOSE	Males					
	CONTROL	6.25 ppm	12.5 ppm	25 ppm	50 ppm	100 ppm
<b>Lung</b>						
<b>Metaplasia Osseous</b>						
<b>LESION RATES</b>						
OVERALL (a)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)
POLY-3 RATE (b)	0/10.00	0/10.00	0/10.00	0/10.00	0/10.00	0/10.00
POLY-3 PERCENT (g)	0%	0%	0%	0%	0%	0%
TERMINAL (d)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)
FIRST INCIDENCE	---	---	---	---	---	---
<b>STATISTICAL TESTS</b>						
POLY 3	(n)	(n)	(n)	(n)	(n)	(n)
POLY 1.5	(n)	(n)	(n)	(n)	(n)	(n)
POLY 6	(n)	(n)	(n)	(n)	(n)	(n)
COCH-ARM / FISHERS	(n)	(n)	(n)	(n)	(n)	(n)
MAX-ISO-POLY-3	(n)	(n)	(n)	(n)	(n)	(n)

Experiment Number: 20725 - 02  
 Test Type: 90-DAY  
 Route: RESPIRATORY EXPOSURE WHOLE BODY  
 Species/Strain: MICE/B6C3F1

P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS  
 2,3-Butanedione  
 CAS Number: 431-03-8

Date Report Requested: 04/29/2016  
 Time Report Requested: 14:39:21  
 First Dose M/F: 07/28/08 / 07/28/08  
 Lab: BNW

**STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN MICE(B6C3F1)  
 TERMINAL SACRIFICE AT 14 WEEKS**

DOSE	Males					
	CONTROL	6.25 ppm	12.5 ppm	25 ppm	50 ppm	100 ppm
<b>Lung: Bronchus</b>						
<b>Infiltration Cellular Polymorphonuclear</b>						
<b>LESION RATES</b>						
OVERALL (a)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	10/10 (100%)
POLY-3 RATE (b)	0/10.00	0/10.00	0/10.00	0/10.00	0/10.00	10/10.00
POLY-3 PERCENT (g)	0%	0%	0%	0%	0%	100%
TERMINAL (d)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	10/10 (100%)
FIRST INCIDENCE	---	---	---	---	---	95 (T)
<b>STATISTICAL TESTS</b>						
POLY 3	P<0.001**	(e)	(e)	(e)	(e)	P<0.001**
POLY 1.5	P<0.001**	(e)	(e)	(e)	(e)	P<0.001**
POLY 6	P<0.001**	(e)	(e)	(e)	(e)	P<0.001**
COCH-ARM / FISHERS	P<0.001**	(e)	(e)	(e)	(e)	P<0.001**
MAX-ISO-POLY-3	P<0.001**	(e)	(e)	(e)	(e)	(e)

Experiment Number: 20725 - 02  
 Test Type: 90-DAY  
 Route: RESPIRATORY EXPOSURE WHOLE BODY  
 Species/Strain: MICE/B6C3F1

P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS  
 2,3-Butanedione  
 CAS Number: 431-03-8

Date Report Requested: 04/29/2016  
 Time Report Requested: 14:39:21  
 First Dose M/F: 07/28/08 / 07/28/08  
 Lab: BNW

**STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN MICE(B6C3F1)  
 TERMINAL SACRIFICE AT 14 WEEKS**

DOSE	Males					
	CONTROL	6.25 ppm	12.5 ppm	25 ppm	50 ppm	100 ppm
<b>Lung: Bronchus Inflammation Chronic</b>						
<b>LESION RATES</b>						
OVERALL (a)	1/10 (10%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	7/10 (70%)	10/10 (100%)
POLY-3 RATE (b)	1/10.00	0/10.00	0/10.00	0/10.00	7/10.00	10/10.00
POLY-3 PERCENT (g)	10%	0%	0%	0%	70%	100%
TERMINAL (d)	1/10 (10%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	7/10 (70%)	10/10 (100%)
FIRST INCIDENCE	95 (T)	---	---	---	95 (T)	95 (T)
<b>STATISTICAL TESTS</b>						
POLY 3	P<0.001**	P=0.500N	P=0.500N	P=0.500N	P=0.003**	P<0.001**
POLY 1.5	P<0.001**	P=0.500N	P=0.500N	P=0.500N	P=0.003**	P<0.001**
POLY 6	P<0.001**	P=0.500N	P=0.500N	P=0.500N	P=0.003**	P<0.001**
COCH-ARM / FISHERS	P<0.001**	P=0.500N	P=0.500N	P=0.500N	P=0.010**	P<0.001**
MAX-ISO-POLY-3	P<0.001**	P=0.158N	P=0.158N	P=0.158N	P<0.001**	P<0.001**

Experiment Number: 20725 - 02

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: MICE/B6C3F1

P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS

2,3-Butanedione

CAS Number: 431-03-8

Date Report Requested: 04/29/2016

Time Report Requested: 14:39:21

First Dose M/F: 07/28/08 / 07/28/08

Lab: BNW

STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN MICE(B6C3F1)  
TERMINAL SACRIFICE AT 14 WEEKS

DOSE	Males					
	CONTROL	6.25 ppm	12.5 ppm	25 ppm	50 ppm	100 ppm
<b>Lung: Bronchus, Epithelium Degeneration</b>						
<b>LESION RATES</b>						
OVERALL (a)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	1/10 (10%)
POLY-3 RATE (b)	0/10.00	0/10.00	0/10.00	0/10.00	0/10.00	1/10.00
POLY-3 PERCENT (g)	0%	0%	0%	0%	0%	10%
TERMINAL (d)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	1/10 (10%)
FIRST INCIDENCE	---	---	---	---	---	95 (T)
<b>STATISTICAL TESTS</b>						
POLY 3	P=0.107	(e)	(e)	(e)	(e)	P=0.500
POLY 1.5	P=0.107	(e)	(e)	(e)	(e)	P=0.500
POLY 6	P=0.107	(e)	(e)	(e)	(e)	P=0.500
COCH-ARM / FISHERS	P=0.105	(e)	(e)	(e)	(e)	P=0.500
MAX-ISO-POLY-3	P=0.041*	(e)	(e)	(e)	(e)	P=0.158

Experiment Number: 20725 - 02

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: MICE/B6C3F1

P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS

2,3-Butanedione

CAS Number: 431-03-8

Date Report Requested: 04/29/2016

Time Report Requested: 14:39:21

First Dose M/F: 07/28/08 / 07/28/08

Lab: BNW

STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN MICE(B6C3F1)  
TERMINAL SACRIFICE AT 14 WEEKS

DOSE	Males					
	CONTROL	6.25 ppm	12.5 ppm	25 ppm	50 ppm	100 ppm
<b>Lung: Bronchus, Epithelium Hyperplasia</b>						
<b>LESION RATES</b>						
OVERALL (a)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	1/10 (10%)
POLY-3 RATE (b)	0/10.00	0/10.00	0/10.00	0/10.00	0/10.00	1/10.00
POLY-3 PERCENT (g)	0%	0%	0%	0%	0%	10%
TERMINAL (d)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	1/10 (10%)
FIRST INCIDENCE	---	---	---	---	---	95 (T)
<b>STATISTICAL TESTS</b>						
POLY 3	P=0.107	(e)	(e)	(e)	(e)	P=0.500
POLY 1.5	P=0.107	(e)	(e)	(e)	(e)	P=0.500
POLY 6	P=0.107	(e)	(e)	(e)	(e)	P=0.500
COCH-ARM / FISHERS	P=0.105	(e)	(e)	(e)	(e)	P=0.500
MAX-ISO-POLY-3	P=0.041*	(e)	(e)	(e)	(e)	P=0.158



Experiment Number: 20725 - 02  
 Test Type: 90-DAY  
 Route: RESPIRATORY EXPOSURE WHOLE BODY  
 Species/Strain: MICE/B6C3F1

P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS  
 2,3-Butanedione  
 CAS Number: 431-03-8

Date Report Requested: 04/29/2016  
 Time Report Requested: 14:39:21  
 First Dose M/F: 07/28/08 / 07/28/08  
 Lab: BNW

**STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN MICE(B6C3F1)  
 TERMINAL SACRIFICE AT 14 WEEKS**

DOSE	Males					
	CONTROL	6.25 ppm	12.5 ppm	25 ppm	50 ppm	100 ppm
<b>Lung: Bronchus, Epithelium Hyperplasia Atypical</b>						
<b>LESION RATES</b>						
OVERALL (a)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	2/10 (20%)	9/10 (90%)
POLY-3 RATE (b)	0/10.00	0/10.00	0/10.00	0/10.00	2/10.00	9/10.00
POLY-3 PERCENT (g)	0%	0%	0%	0%	20%	90%
TERMINAL (d)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	2/10 (20%)	9/10 (90%)
FIRST INCIDENCE	---	---	---	---	95 (T)	95 (T)
<b>STATISTICAL TESTS</b>						
POLY 3	P<0.001**	(e)	(e)	(e)	P=0.227	P<0.001**
POLY 1.5	P<0.001**	(e)	(e)	(e)	P=0.227	P<0.001**
POLY 6	P<0.001**	(e)	(e)	(e)	P=0.227	P<0.001**
COCH-ARM / FISHERS	P<0.001**	(e)	(e)	(e)	P=0.237	P<0.001**
MAX-ISO-POLY-3	P<0.001**	(e)	(e)	(e)	P=0.066	P<0.001**

Experiment Number: 20725 - 02  
 Test Type: 90-DAY  
 Route: RESPIRATORY EXPOSURE WHOLE BODY  
 Species/Strain: MICE/B6C3F1

P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS  
 2,3-Butanedione  
 CAS Number: 431-03-8

Date Report Requested: 04/29/2016  
 Time Report Requested: 14:39:21  
 First Dose M/F: 07/28/08 / 07/28/08  
 Lab: BNW

**STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN MICE(B6C3F1)  
 TERMINAL SACRIFICE AT 14 WEEKS**

DOSE	Males					
	CONTROL	6.25 ppm	12.5 ppm	25 ppm	50 ppm	100 ppm
<b>Lung: Bronchus, Epithelium Metaplasia Atypical Squamous</b>						
<b>LESION RATES</b>						
OVERALL (a)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	10/10 (100%)
POLY-3 RATE (b)	0/10.00	0/10.00	0/10.00	0/10.00	0/10.00	10/10.00
POLY-3 PERCENT (g)	0%	0%	0%	0%	0%	100%
TERMINAL (d)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	10/10 (100%)
FIRST INCIDENCE	---	---	---	---	---	95 (T)
<b>STATISTICAL TESTS</b>						
POLY 3	P<0.001**	(e)	(e)	(e)	(e)	P<0.001**
POLY 1.5	P<0.001**	(e)	(e)	(e)	(e)	P<0.001**
POLY 6	P<0.001**	(e)	(e)	(e)	(e)	P<0.001**
COCH-ARM / FISHERS	P<0.001**	(e)	(e)	(e)	(e)	P<0.001**
MAX-ISO-POLY-3	P<0.001**	(e)	(e)	(e)	(e)	(e)

Experiment Number: 20725 - 02

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: MICE/B6C3F1

P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS

2,3-Butanedione

CAS Number: 431-03-8

Date Report Requested: 04/29/2016

Time Report Requested: 14:39:21

First Dose M/F: 07/28/08 / 07/28/08

Lab: BNW

STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN MICE(B6C3F1)  
TERMINAL SACRIFICE AT 14 WEEKS

DOSE	Males					
	CONTROL	6.25 ppm	12.5 ppm	25 ppm	50 ppm	100 ppm
<b>Lung: Bronchus, Epithelium Regeneration</b>						
<b>LESION RATES</b>						
OVERALL (a)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	1/10 (10%)	9/10 (90%)
POLY-3 RATE (b)	0/10.00	0/10.00	0/10.00	0/10.00	1/10.00	9/10.00
POLY-3 PERCENT (g)	0%	0%	0%	0%	10%	90%
TERMINAL (d)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	1/10 (10%)	9/10 (90%)
FIRST INCIDENCE	---	---	---	---	95 (T)	95 (T)
<b>STATISTICAL TESTS</b>						
POLY 3	P<0.001**	(e)	(e)	(e)	P=0.500	P<0.001**
POLY 1.5	P<0.001**	(e)	(e)	(e)	P=0.500	P<0.001**
POLY 6	P<0.001**	(e)	(e)	(e)	P=0.500	P<0.001**
COCH-ARM / FISHERS	P<0.001**	(e)	(e)	(e)	P=0.500	P<0.001**
MAX-ISO-POLY-3	P<0.001**	(e)	(e)	(e)	P=0.158	P<0.001**

Experiment Number: 20725 - 02

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: MICE/B6C3F1

P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS

2,3-Butanedione

CAS Number: 431-03-8

Date Report Requested: 04/29/2016

Time Report Requested: 14:39:21

First Dose M/F: 07/28/08 / 07/28/08

Lab: BNW

STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN MICE(B6C3F1)  
TERMINAL SACRIFICE AT 14 WEEKS

DOSE	Males					
	CONTROL	6.25 ppm	12.5 ppm	25 ppm	50 ppm	100 ppm
<b>Nose Inflammation</b>						
<b>LESION RATES</b>						
OVERALL (a)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	10/10 (100%)	10/10 (100%)
POLY-3 RATE (b)	0/10.00	0/10.00	0/10.00	0/10.00	10/10.00	10/10.00
POLY-3 PERCENT (g)	0%	0%	0%	0%	100%	100%
TERMINAL (d)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	10/10 (100%)	10/10 (100%)
FIRST INCIDENCE	---	---	---	---	95 (T)	95 (T)
<b>STATISTICAL TESTS</b>						
POLY 3	P<0.001**	(e)	(e)	(e)	P<0.001**	P<0.001**
POLY 1.5	P<0.001**	(e)	(e)	(e)	P<0.001**	P<0.001**
POLY 6	P<0.001**	(e)	(e)	(e)	P<0.001**	P<0.001**
COCH-ARM / FISHERS	P<0.001**	(e)	(e)	(e)	P<0.001**	P<0.001**
MAX-ISO-POLY-3	P<0.001**	(e)	(e)	(e)	(e)	(e)

Experiment Number: 20725 - 02  
 Test Type: 90-DAY  
 Route: RESPIRATORY EXPOSURE WHOLE BODY  
 Species/Strain: MICE/B6C3F1

P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS  
 2,3-Butanedione  
 CAS Number: 431-03-8

Date Report Requested: 04/29/2016  
 Time Report Requested: 14:39:21  
 First Dose M/F: 07/28/08 / 07/28/08  
 Lab: BNW

**STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN MICE(B6C3F1)  
 TERMINAL SACRIFICE AT 14 WEEKS**

DOSE	Males					
	CONTROL	6.25 ppm	12.5 ppm	25 ppm	50 ppm	100 ppm
<b>Nose</b>						
<b>Inflammation Chronic</b>						
<b>LESION RATES</b>						
OVERALL (a)	0/10 (0%)	1/10 (10%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)
POLY-3 RATE (b)	0/10.00	1/10.00	0/10.00	0/10.00	0/10.00	0/10.00
POLY-3 PERCENT (g)	0%	10%	0%	0%	0%	0%
TERMINAL (d)	0/10 (0%)	1/10 (10%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)
FIRST INCIDENCE	---	95 (T)	---	---	---	---
<b>STATISTICAL TESTS</b>						
POLY 3	P=0.484N	P=0.500	(e)	(e)	(e)	(e)
POLY 1.5	P=0.484N	P=0.500	(e)	(e)	(e)	(e)
POLY 6	P=0.484N	P=0.500	(e)	(e)	(e)	(e)
COCH-ARM / FISHERS	P=0.484N	P=0.500	(e)	(e)	(e)	(e)
MAX-ISO-POLY-3	P=0.193N	P=0.158	(e)	(e)	(e)	(e)

Experiment Number: 20725 - 02  
 Test Type: 90-DAY  
 Route: RESPIRATORY EXPOSURE WHOLE BODY  
 Species/Strain: MICE/B6C3F1

P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS  
 2,3-Butanedione  
 CAS Number: 431-03-8

Date Report Requested: 04/29/2016  
 Time Report Requested: 14:39:21  
 First Dose M/F: 07/28/08 / 07/28/08  
 Lab: BNW

**STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN MICE(B6C3F1)  
 TERMINAL SACRIFICE AT 14 WEEKS**

DOSE	Males					
	CONTROL	6.25 ppm	12.5 ppm	25 ppm	50 ppm	100 ppm
<b>Nose: Olfactory Epithelium Accumulation, Hyaline Droplet</b>						
<b>LESION RATES</b>						
OVERALL (a)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)
POLY-3 RATE (b)	0/10.00	0/10.00	0/10.00	0/10.00	0/10.00	0/10.00
POLY-3 PERCENT (g)	0%	0%	0%	0%	0%	0%
TERMINAL (d)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)
FIRST INCIDENCE	---	---	---	---	---	---
<b>STATISTICAL TESTS</b>						
POLY 3	(n)	(n)	(n)	(n)	(n)	(n)
POLY 1.5	(n)	(n)	(n)	(n)	(n)	(n)
POLY 6	(n)	(n)	(n)	(n)	(n)	(n)
COCH-ARM / FISHERS	(n)	(n)	(n)	(n)	(n)	(n)
MAX-ISO-POLY-3	(n)	(n)	(n)	(n)	(n)	(n)

Experiment Number: 20725 - 02

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: MICE/B6C3F1

P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS

2,3-Butanedione

CAS Number: 431-03-8

Date Report Requested: 04/29/2016

Time Report Requested: 14:39:21

First Dose M/F: 07/28/08 / 07/28/08

Lab: BNW

STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN MICE(B6C3F1)  
TERMINAL SACRIFICE AT 14 WEEKS

DOSE	Males					
	CONTROL	6.25 ppm	12.5 ppm	25 ppm	50 ppm	100 ppm
<b>Nose: Olfactory Epithelium Atrophy</b>						
<b>LESION RATES</b>						
OVERALL (a)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	10/10 (100%)	10/10 (100%)
POLY-3 RATE (b)	0/10.00	0/10.00	0/10.00	0/10.00	10/10.00	10/10.00
POLY-3 PERCENT (g)	0%	0%	0%	0%	100%	100%
TERMINAL (d)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	10/10 (100%)	10/10 (100%)
FIRST INCIDENCE	---	---	---	---	95 (T)	95 (T)
<b>STATISTICAL TESTS</b>						
POLY 3	P<0.001**	(e)	(e)	(e)	P<0.001**	P<0.001**
POLY 1.5	P<0.001**	(e)	(e)	(e)	P<0.001**	P<0.001**
POLY 6	P<0.001**	(e)	(e)	(e)	P<0.001**	P<0.001**
COCH-ARM / FISHERS	P<0.001**	(e)	(e)	(e)	P<0.001**	P<0.001**
MAX-ISO-POLY-3	P<0.001**	(e)	(e)	(e)	(e)	(e)

Experiment Number: 20725 - 02

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: MICE/B6C3F1

## P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS

2,3-Butanedione

CAS Number: 431-03-8

Date Report Requested: 04/29/2016

Time Report Requested: 14:39:21

First Dose M/F: 07/28/08 / 07/28/08

Lab: BNW

**STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN MICE(B6C3F1)  
TERMINAL SACRIFICE AT 14 WEEKS**

DOSE	Males					
	CONTROL	6.25 ppm	12.5 ppm	25 ppm	50 ppm	100 ppm
<b>Nose: Olfactory Epithelium Metaplasia Respiratory</b>						
<b>LESION RATES</b>						
OVERALL (a)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	6/10 (60%)	7/10 (70%)
POLY-3 RATE (b)	0/10.00	0/10.00	0/10.00	0/10.00	6/10.00	7/10.00
POLY-3 PERCENT (g)	0%	0%	0%	0%	60%	70%
TERMINAL (d)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	6/10 (60%)	7/10 (70%)
FIRST INCIDENCE	---	---	---	---	95 (T)	95 (T)
<b>STATISTICAL TESTS</b>						
POLY 3	P<0.001**	(e)	(e)	(e)	P<0.001**	P<0.001**
POLY 1.5	P<0.001**	(e)	(e)	(e)	P<0.001**	P<0.001**
POLY 6	P<0.001**	(e)	(e)	(e)	P<0.001**	P<0.001**
COCH-ARM / FISHERS	P<0.001**	(e)	(e)	(e)	P=0.005**	P=0.002**
MAX-ISO-POLY-3	P<0.001**	(e)	(e)	(e)	P<0.001**	P<0.001**



Experiment Number: 20725 - 02

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: MICE/B6C3F1

P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS

2,3-Butanedione

CAS Number: 431-03-8

Date Report Requested: 04/29/2016

Time Report Requested: 14:39:21

First Dose M/F: 07/28/08 / 07/28/08

Lab: BNW

STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN MICE(B6C3F1)  
TERMINAL SACRIFICE AT 14 WEEKS

DOSE	Males					
	CONTROL	6.25 ppm	12.5 ppm	25 ppm	50 ppm	100 ppm
<b>Nose: Olfactory Epithelium</b>						
<b>Necrosis</b>						
<b>LESION RATES</b>						
OVERALL (a)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)
POLY-3 RATE (b)	0/10.00	0/10.00	0/10.00	0/10.00	0/10.00	0/10.00
POLY-3 PERCENT (g)	0%	0%	0%	0%	0%	0%
TERMINAL (d)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)
FIRST INCIDENCE	---	---	---	---	---	---
<b>STATISTICAL TESTS</b>						
POLY 3	(n)	(n)	(n)	(n)	(n)	(n)
POLY 1.5	(n)	(n)	(n)	(n)	(n)	(n)
POLY 6	(n)	(n)	(n)	(n)	(n)	(n)
COCH-ARM / FISHERS	(n)	(n)	(n)	(n)	(n)	(n)
MAX-ISO-POLY-3	(n)	(n)	(n)	(n)	(n)	(n)

Experiment Number: 20725 - 02

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: MICE/B6C3F1

P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS

2,3-Butanedione

CAS Number: 431-03-8

Date Report Requested: 04/29/2016

Time Report Requested: 14:39:21

First Dose M/F: 07/28/08 / 07/28/08

Lab: BNW

STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN MICE(B6C3F1)  
TERMINAL SACRIFICE AT 14 WEEKS

DOSE	Males					
	CONTROL	6.25 ppm	12.5 ppm	25 ppm	50 ppm	100 ppm
<b>Nose: Respiratory Epithelium Accumulation, Hyaline Droplet</b>						
<b>LESION RATES</b>						
OVERALL (a)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)
POLY-3 RATE (b)	0/10.00	0/10.00	0/10.00	0/10.00	0/10.00	0/10.00
POLY-3 PERCENT (g)	0%	0%	0%	0%	0%	0%
TERMINAL (d)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)
FIRST INCIDENCE	---	---	---	---	---	---
<b>STATISTICAL TESTS</b>						
POLY 3	(n)	(n)	(n)	(n)	(n)	(n)
POLY 1.5	(n)	(n)	(n)	(n)	(n)	(n)
POLY 6	(n)	(n)	(n)	(n)	(n)	(n)
COCH-ARM / FISHERS	(n)	(n)	(n)	(n)	(n)	(n)
MAX-ISO-POLY-3	(n)	(n)	(n)	(n)	(n)	(n)

Experiment Number: 20725 - 02

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: MICE/B6C3F1

P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS

2,3-Butanedione

CAS Number: 431-03-8

Date Report Requested: 04/29/2016

Time Report Requested: 14:39:21

First Dose M/F: 07/28/08 / 07/28/08

Lab: BNW

STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN MICE(B6C3F1)  
TERMINAL SACRIFICE AT 14 WEEKS

DOSE	Males					
	CONTROL	6.25 ppm	12.5 ppm	25 ppm	50 ppm	100 ppm
<b>Nose: Respiratory Epithelium Degeneration</b>						
<b>LESION RATES</b>						
OVERALL (a)	0/10 (0%)	0/10 (0%)	0/10 (0%)	1/10 (10%)	0/10 (0%)	0/10 (0%)
POLY-3 RATE (b)	0/10.00	0/10.00	0/10.00	1/10.00	0/10.00	0/10.00
POLY-3 PERCENT (g)	0%	0%	0%	10%	0%	0%
TERMINAL (d)	0/10 (0%)	0/10 (0%)	0/10 (0%)	1/10 (10%)	0/10 (0%)	0/10 (0%)
FIRST INCIDENCE	---	---	---	95 (T)	---	---
<b>STATISTICAL TESTS</b>						
POLY 3	P=0.697N	(e)	(e)	P=0.500	(e)	(e)
POLY 1.5	P=0.697N	(e)	(e)	P=0.500	(e)	(e)
POLY 6	P=0.697N	(e)	(e)	P=0.500	(e)	(e)
COCH-ARM / FISHERS	P=0.698N	(e)	(e)	P=0.500	(e)	(e)
MAX-ISO-POLY-3	P=0.282	(e)	(e)	P=0.158	(e)	(e)

Experiment Number: 20725 - 02

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: MICE/B6C3F1

## P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS

2,3-Butanedione

CAS Number: 431-03-8

Date Report Requested: 04/29/2016

Time Report Requested: 14:39:21

First Dose M/F: 07/28/08 / 07/28/08

Lab: BNW

**STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN MICE(B6C3F1)  
TERMINAL SACRIFICE AT 14 WEEKS**

DOSE	Males					
	CONTROL	6.25 ppm	12.5 ppm	25 ppm	50 ppm	100 ppm
<b>Nose: Respiratory Epithelium Metaplasia</b>						
<b>LESION RATES</b>						
OVERALL (a)	0/10 (0%)	0/10 (0%)	0/10 (0%)	1/10 (10%)	10/10 (100%)	10/10 (100%)
POLY-3 RATE (b)	0/10.00	0/10.00	0/10.00	1/10.00	10/10.00	10/10.00
POLY-3 PERCENT (g)	0%	0%	0%	10%	100%	100%
TERMINAL (d)	0/10 (0%)	0/10 (0%)	0/10 (0%)	1/10 (10%)	10/10 (100%)	10/10 (100%)
FIRST INCIDENCE	---	---	---	95 (T)	95 (T)	95 (T)
<b>STATISTICAL TESTS</b>						
POLY 3	P<0.001**	(e)	(e)	P=0.500	P<0.001**	P<0.001**
POLY 1.5	P<0.001**	(e)	(e)	P=0.500	P<0.001**	P<0.001**
POLY 6	P<0.001**	(e)	(e)	P=0.500	P<0.001**	P<0.001**
COCH-ARM / FISHERS	P<0.001**	(e)	(e)	P=0.500	P<0.001**	P<0.001**
MAX-ISO-POLY-3	P<0.001**	(e)	(e)	P=0.158	(e)	(e)

Experiment Number: 20725 - 02

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: MICE/B6C3F1

## P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS

2,3-Butanedione

CAS Number: 431-03-8

Date Report Requested: 04/29/2016

Time Report Requested: 14:39:21

First Dose M/F: 07/28/08 / 07/28/08

Lab: BNW

**STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN MICE(B6C3F1)  
TERMINAL SACRIFICE AT 14 WEEKS**

DOSE	Males					
	CONTROL	6.25 ppm	12.5 ppm	25 ppm	50 ppm	100 ppm
<b>Nose: Respiratory Epithelium Necrosis</b>						
<b>LESION RATES</b>						
OVERALL (a)	0/10 (0%)	0/10 (0%)	0/10 (0%)	8/10 (80%)	10/10 (100%)	10/10 (100%)
POLY-3 RATE (b)	0/10.00	0/10.00	0/10.00	8/10.00	10/10.00	10/10.00
POLY-3 PERCENT (g)	0%	0%	0%	80%	100%	100%
TERMINAL (d)	0/10 (0%)	0/10 (0%)	0/10 (0%)	8/10 (80%)	10/10 (100%)	10/10 (100%)
FIRST INCIDENCE	---	---	---	95 (T)	95 (T)	95 (T)
<b>STATISTICAL TESTS</b>						
POLY 3	P<0.001**	(e)	(e)	P<0.001**	P<0.001**	P<0.001**
POLY 1.5	P<0.001**	(e)	(e)	P<0.001**	P<0.001**	P<0.001**
POLY 6	P<0.001**	(e)	(e)	P<0.001**	P<0.001**	P<0.001**
COCH-ARM / FISHERS	P<0.001**	(e)	(e)	P<0.001**	P<0.001**	P<0.001**
MAX-ISO-POLY-3	P<0.001**	(e)	(e)	P<0.001**	(e)	(e)

Experiment Number: 20725 - 02  
 Test Type: 90-DAY  
 Route: RESPIRATORY EXPOSURE WHOLE BODY  
 Species/Strain: MICE/B6C3F1

P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS  
 2,3-Butanedione  
 CAS Number: 431-03-8

Date Report Requested: 04/29/2016  
 Time Report Requested: 14:39:21  
 First Dose M/F: 07/28/08 / 07/28/08  
 Lab: BNW

**STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN MICE(B6C3F1)  
 TERMINAL SACRIFICE AT 14 WEEKS**

DOSE	Males					
	CONTROL	6.25 ppm	12.5 ppm	25 ppm	50 ppm	100 ppm
<b>Nose: Respiratory Epithelium Regeneration</b>						
<b>LESION RATES</b>						
OVERALL (a)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	10/10 (100%)	10/10 (100%)
POLY-3 RATE (b)	0/10.00	0/10.00	0/10.00	0/10.00	10/10.00	10/10.00
POLY-3 PERCENT (g)	0%	0%	0%	0%	100%	100%
TERMINAL (d)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	10/10 (100%)	10/10 (100%)
FIRST INCIDENCE	---	---	---	---	95 (T)	95 (T)
<b>STATISTICAL TESTS</b>						
POLY 3	P<0.001**	(e)	(e)	(e)	P<0.001**	P<0.001**
POLY 1.5	P<0.001**	(e)	(e)	(e)	P<0.001**	P<0.001**
POLY 6	P<0.001**	(e)	(e)	(e)	P<0.001**	P<0.001**
COCH-ARM / FISHERS	P<0.001**	(e)	(e)	(e)	P<0.001**	P<0.001**
MAX-ISO-POLY-3	P<0.001**	(e)	(e)	(e)	(e)	(e)

Experiment Number: 20725 - 02  
 Test Type: 90-DAY  
 Route: RESPIRATORY EXPOSURE WHOLE BODY  
 Species/Strain: MICE/B6C3F1

P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS  
 2,3-Butanedione  
 CAS Number: 431-03-8

Date Report Requested: 04/29/2016  
 Time Report Requested: 14:39:21  
 First Dose M/F: 07/28/08 / 07/28/08  
 Lab: BNW

**STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN MICE(B6C3F1)  
 TERMINAL SACRIFICE AT 14 WEEKS**

DOSE	Males					
	CONTROL	6.25 ppm	12.5 ppm	25 ppm	50 ppm	100 ppm
<b>Nose: Septum</b>						
<b>Necrosis</b>						
<b>LESION RATES</b>						
OVERALL (a)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)
POLY-3 RATE (b)	0/10.00	0/10.00	0/10.00	0/10.00	0/10.00	0/10.00
POLY-3 PERCENT (g)	0%	0%	0%	0%	0%	0%
TERMINAL (d)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)
FIRST INCIDENCE	---	---	---	---	---	---
<b>STATISTICAL TESTS</b>						
POLY 3	(n)	(n)	(n)	(n)	(n)	(n)
POLY 1.5	(n)	(n)	(n)	(n)	(n)	(n)
POLY 6	(n)	(n)	(n)	(n)	(n)	(n)
COCH-ARM / FISHERS	(n)	(n)	(n)	(n)	(n)	(n)
MAX-ISO-POLY-3	(n)	(n)	(n)	(n)	(n)	(n)

Experiment Number: 20725 - 02  
 Test Type: 90-DAY  
 Route: RESPIRATORY EXPOSURE WHOLE BODY  
 Species/Strain: MICE/B6C3F1

P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS  
 2,3-Butanedione  
 CAS Number: 431-03-8

Date Report Requested: 04/29/2016  
 Time Report Requested: 14:39:21  
 First Dose M/F: 07/28/08 / 07/28/08  
 Lab: BNW

**STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN MICE(B6C3F1)  
 TERMINAL SACRIFICE AT 14 WEEKS**

DOSE	Males					
	CONTROL	6.25 ppm	12.5 ppm	25 ppm	50 ppm	100 ppm
<b>Nose: Septum Perforation</b>						
<b>LESION RATES</b>						
OVERALL (a)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	2/10 (20%)
POLY-3 RATE (b)	0/10.00	0/10.00	0/10.00	0/10.00	0/10.00	2/10.00
POLY-3 PERCENT (g)	0%	0%	0%	0%	0%	20%
TERMINAL (d)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	2/10 (20%)
FIRST INCIDENCE	---	---	---	---	---	95 (T)
<b>STATISTICAL TESTS</b>						
POLY 3	P=0.008**	(e)	(e)	(e)	(e)	P=0.227
POLY 1.5	P=0.008**	(e)	(e)	(e)	(e)	P=0.227
POLY 6	P=0.008**	(e)	(e)	(e)	(e)	P=0.227
COCH-ARM / FISHERS	P=0.010**	(e)	(e)	(e)	(e)	P=0.237
MAX-ISO-POLY-3	P=0.005**	(e)	(e)	(e)	(e)	P=0.066



Experiment Number: 20725 - 02  
 Test Type: 90-DAY  
 Route: RESPIRATORY EXPOSURE WHOLE BODY  
 Species/Strain: MICE/B6C3F1

P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS  
 2,3-Butanedione  
 CAS Number: 431-03-8

Date Report Requested: 04/29/2016  
 Time Report Requested: 14:39:21  
 First Dose M/F: 07/28/08 / 07/28/08  
 Lab: BNW

**STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN MICE(B6C3F1)  
 TERMINAL SACRIFICE AT 14 WEEKS**

DOSE	Males					
	CONTROL	6.25 ppm	12.5 ppm	25 ppm	50 ppm	100 ppm
<b>Nose: Turbinate Atrophy</b>						
<b>LESION RATES</b>						
OVERALL (a)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	10/10 (100%)	10/10 (100%)
POLY-3 RATE (b)	0/10.00	0/10.00	0/10.00	0/10.00	10/10.00	10/10.00
POLY-3 PERCENT (g)	0%	0%	0%	0%	100%	100%
TERMINAL (d)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	10/10 (100%)	10/10 (100%)
FIRST INCIDENCE	---	---	---	---	95 (T)	95 (T)
<b>STATISTICAL TESTS</b>						
POLY 3	P<0.001**	(e)	(e)	(e)	P<0.001**	P<0.001**
POLY 1.5	P<0.001**	(e)	(e)	(e)	P<0.001**	P<0.001**
POLY 6	P<0.001**	(e)	(e)	(e)	P<0.001**	P<0.001**
COCH-ARM / FISHERS	P<0.001**	(e)	(e)	(e)	P<0.001**	P<0.001**
MAX-ISO-POLY-3	P<0.001**	(e)	(e)	(e)	(e)	(e)

Experiment Number: 20725 - 02

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: MICE/B6C3F1

P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS

2,3-Butanedione

CAS Number: 431-03-8

Date Report Requested: 04/29/2016

Time Report Requested: 14:39:21

First Dose M/F: 07/28/08 / 07/28/08

Lab: BNW

STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN MICE(B6C3F1)  
TERMINAL SACRIFICE AT 14 WEEKS

DOSE	Males					
	CONTROL	6.25 ppm	12.5 ppm	25 ppm	50 ppm	100 ppm
<b>Nose: Turbinate Necrosis</b>						
<b>LESION RATES</b>						
OVERALL (a)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	3/10 (30%)	5/10 (50%)
POLY-3 RATE (b)	0/10.00	0/10.00	0/10.00	0/10.00	3/10.00	5/10.00
POLY-3 PERCENT (g)	0%	0%	0%	0%	30%	50%
TERMINAL (d)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	3/10 (30%)	5/10 (50%)
FIRST INCIDENCE	---	---	---	---	95 (T)	95 (T)
<b>STATISTICAL TESTS</b>						
POLY 3	P<0.001**	(e)	(e)	(e)	P=0.095	P=0.008**
POLY 1.5	P<0.001**	(e)	(e)	(e)	P=0.095	P=0.008**
POLY 6	P<0.001**	(e)	(e)	(e)	P=0.095	P=0.008**
COCH-ARM / FISHERS	P<0.001**	(e)	(e)	(e)	P=0.105	P=0.016*
MAX-ISO-POLY-3	P<0.001**	(e)	(e)	(e)	P=0.025*	P<0.001**

Experiment Number: 20725 - 02

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: MICE/B6C3F1

P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS

2,3-Butanedione

CAS Number: 431-03-8

Date Report Requested: 04/29/2016

Time Report Requested: 14:39:21

First Dose M/F: 07/28/08 / 07/28/08

Lab: BNW

STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN MICE(B6C3F1)  
TERMINAL SACRIFICE AT 14 WEEKS

DOSE	Males					
	CONTROL	6.25 ppm	12.5 ppm	25 ppm	50 ppm	100 ppm
<b>Preputial Gland Inflammation Chronic</b>						
<b>LESION RATES</b>						
OVERALL (a)	0/10 (0%)	0/0 (0%)	0/0 (0%)	0/0 (0%)	0/0 (0%)	1/10 (10%)
POLY-3 RATE (b)	0/10.00	0/0.00	0/0.00	0/0.00	0/0.00	1/10.00
POLY-3 PERCENT (g)	0%	0%	0%	0%	0%	10%
TERMINAL (d)	0/10 (0%)	0/0 (0%)	0/0 (0%)	0/0 (0%)	0/0 (0%)	1/10 (10%)
FIRST INCIDENCE	---	---	---	---	---	95 (T)
<b>STATISTICAL TESTS</b>						
POLY 3	(e)	(e)	(e)	(e)	(e)	P=0.500
POLY 1.5	(e)	(e)	(e)	(e)	(e)	P=0.500
POLY 6	(e)	(e)	(e)	(e)	(e)	P=0.500
COCH-ARM / FISHERS	P=0.304	(e)	(e)	(e)	(e)	P=0.500
MAX-ISO-POLY-3	(e)	(e)	(e)	(e)	(e)	P=0.158

Experiment Number: 20725 - 02  
 Test Type: 90-DAY  
 Route: RESPIRATORY EXPOSURE WHOLE BODY  
 Species/Strain: MICE/B6C3F1

P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS  
 2,3-Butanedione  
 CAS Number: 431-03-8

Date Report Requested: 04/29/2016  
 Time Report Requested: 14:39:21  
 First Dose M/F: 07/28/08 / 07/28/08  
 Lab: BNW

**STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN MICE(B6C3F1)  
 TERMINAL SACRIFICE AT 14 WEEKS**

DOSE	Males					
	CONTROL	6.25 ppm	12.5 ppm	25 ppm	50 ppm	100 ppm
<b>Trachea Inflammation Chronic</b>						
<b>LESION RATES</b>						
OVERALL (a)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	7/10 (70%)
POLY-3 RATE (b)	0/10.00	0/10.00	0/10.00	0/10.00	0/10.00	7/10.00
POLY-3 PERCENT (g)	0%	0%	0%	0%	0%	70%
TERMINAL (d)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	7/10 (70%)
FIRST INCIDENCE	---	---	---	---	---	95 (T)
<b>STATISTICAL TESTS</b>						
POLY 3	P<0.001**	(e)	(e)	(e)	(e)	P<0.001**
POLY 1.5	P<0.001**	(e)	(e)	(e)	(e)	P<0.001**
POLY 6	P<0.001**	(e)	(e)	(e)	(e)	P<0.001**
COCH-ARM / FISHERS	P<0.001**	(e)	(e)	(e)	(e)	P=0.002**
MAX-ISO-POLY-3	P<0.001**	(e)	(e)	(e)	(e)	P<0.001**

Experiment Number: 20725 - 02  
 Test Type: 90-DAY  
 Route: RESPIRATORY EXPOSURE WHOLE BODY  
 Species/Strain: MICE/B6C3F1

P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS  
 2,3-Butanedione  
 CAS Number: 431-03-8

Date Report Requested: 04/29/2016  
 Time Report Requested: 14:39:21  
 First Dose M/F: 07/28/08 / 07/28/08  
 Lab: BNW

**STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN MICE(B6C3F1)  
 TERMINAL SACRIFICE AT 14 WEEKS**

DOSE	Males					
	CONTROL	6.25 ppm	12.5 ppm	25 ppm	50 ppm	100 ppm
<b>Trachea: Epithelium Degeneration</b>						
<b>LESION RATES</b>						
OVERALL (a)	0/10 (0%)	0/10 (0%)	0/10 (0%)	1/10 (10%)	3/10 (30%)	8/10 (80%)
POLY-3 RATE (b)	0/10.00	0/10.00	0/10.00	1/10.00	3/10.00	8/10.00
POLY-3 PERCENT (g)	0%	0%	0%	10%	30%	80%
TERMINAL (d)	0/10 (0%)	0/10 (0%)	0/10 (0%)	1/10 (10%)	3/10 (30%)	8/10 (80%)
FIRST INCIDENCE	---	---	---	95 (T)	95 (T)	95 (T)
<b>STATISTICAL TESTS</b>						
POLY 3	P<0.001**	(e)	(e)	P=0.500	P=0.095	P<0.001**
POLY 1.5	P<0.001**	(e)	(e)	P=0.500	P=0.095	P<0.001**
POLY 6	P<0.001**	(e)	(e)	P=0.500	P=0.095	P<0.001**
COCH-ARM / FISHERS	P<0.001**	(e)	(e)	P=0.500	P=0.105	P<0.001**
MAX-ISO-POLY-3	P<0.001**	(e)	(e)	P=0.158	P=0.025*	P<0.001**

Experiment Number: 20725 - 02  
 Test Type: 90-DAY  
 Route: RESPIRATORY EXPOSURE WHOLE BODY  
 Species/Strain: MICE/B6C3F1

P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS  
 2,3-Butanedione  
 CAS Number: 431-03-8

Date Report Requested: 04/29/2016  
 Time Report Requested: 14:39:21  
 First Dose M/F: 07/28/08 / 07/28/08  
 Lab: BNW

**STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN MICE(B6C3F1)  
 TERMINAL SACRIFICE AT 14 WEEKS**

DOSE	Males					
	CONTROL	6.25 ppm	12.5 ppm	25 ppm	50 ppm	100 ppm
Trachea: Epithelium Hyperplasia						
<b>LESION RATES</b>						
OVERALL (a)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	2/10 (20%)	9/10 (90%)
POLY-3 RATE (b)	0/10.00	0/10.00	0/10.00	0/10.00	2/10.00	9/10.00
POLY-3 PERCENT (g)	0%	0%	0%	0%	20%	90%
TERMINAL (d)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	2/10 (20%)	9/10 (90%)
FIRST INCIDENCE	---	---	---	---	95 (T)	95 (T)
<b>STATISTICAL TESTS</b>						
POLY 3	P<0.001**	(e)	(e)	(e)	P=0.227	P<0.001**
POLY 1.5	P<0.001**	(e)	(e)	(e)	P=0.227	P<0.001**
POLY 6	P<0.001**	(e)	(e)	(e)	P=0.227	P<0.001**
COCH-ARM / FISHERS	P<0.001**	(e)	(e)	(e)	P=0.237	P<0.001**
MAX-ISO-POLY-3	P<0.001**	(e)	(e)	(e)	P=0.066	P<0.001**

Experiment Number: 20725 - 02  
 Test Type: 90-DAY  
 Route: RESPIRATORY EXPOSURE WHOLE BODY  
 Species/Strain: MICE/B6C3F1

P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS  
 2,3-Butanedione  
 CAS Number: 431-03-8

Date Report Requested: 04/29/2016  
 Time Report Requested: 14:39:21  
 First Dose M/F: 07/28/08 / 07/28/08  
 Lab: BNW

**STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN MICE(B6C3F1)  
 TERMINAL SACRIFICE AT 14 WEEKS**

DOSE	Males					
	CONTROL	6.25 ppm	12.5 ppm	25 ppm	50 ppm	100 ppm
Trachea: Epithelium Metaplasia Atypical Squamous						
<b>LESION RATES</b>						
OVERALL (a)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	10/10 (100%)
POLY-3 RATE (b)	0/10.00	0/10.00	0/10.00	0/10.00	0/10.00	10/10.00
POLY-3 PERCENT (g)	0%	0%	0%	0%	0%	100%
TERMINAL (d)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	10/10 (100%)
FIRST INCIDENCE	---	---	---	---	---	95 (T)
<b>STATISTICAL TESTS</b>						
POLY 3	P<0.001**	(e)	(e)	(e)	(e)	P<0.001**
POLY 1.5	P<0.001**	(e)	(e)	(e)	(e)	P<0.001**
POLY 6	P<0.001**	(e)	(e)	(e)	(e)	P<0.001**
COCH-ARM / FISHERS	P<0.001**	(e)	(e)	(e)	(e)	P<0.001**
MAX-ISO-POLY-3	P<0.001**	(e)	(e)	(e)	(e)	(e)

Experiment Number: 20725 - 02

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: MICE/B6C3F1

P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS

2,3-Butanedione

CAS Number: 431-03-8

Date Report Requested: 04/29/2016

Time Report Requested: 14:39:21

First Dose M/F: 07/28/08 / 07/28/08

Lab: BNW

STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN MICE(B6C3F1)  
TERMINAL SACRIFICE AT 14 WEEKS

DOSE	Males					
	CONTROL	6.25 ppm	12.5 ppm	25 ppm	50 ppm	100 ppm
Trachea: Epithelium Regeneration						
<b>LESION RATES</b>						
OVERALL (a)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	7/10 (70%)	0/10 (0%)
POLY-3 RATE (b)	0/10.00	0/10.00	0/10.00	0/10.00	7/10.00	0/10.00
POLY-3 PERCENT (g)	0%	0%	0%	0%	70%	0%
TERMINAL (d)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	7/10 (70%)	0/10 (0%)
FIRST INCIDENCE	---	---	---	---	95 (T)	---
<b>STATISTICAL TESTS</b>						
POLY 3	P=0.030*	(e)	(e)	(e)	P<0.001**	(e)
POLY 1.5	P=0.030*	(e)	(e)	(e)	P<0.001**	(e)
POLY 6	P=0.030*	(e)	(e)	(e)	P<0.001**	(e)
COCH-ARM / FISHERS	P=0.124	(e)	(e)	(e)	P=0.002**	(e)
MAX-ISO-POLY-3	P<0.001**	(e)	(e)	(e)	P<0.001**	(e)



Experiment Number: 20725 - 02

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: MICE/B6C3F1

P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS

2,3-Butanedione

CAS Number: 431-03-8

Date Report Requested: 04/29/2016

Time Report Requested: 14:39:21

First Dose M/F: 07/28/08 / 07/28/08

Lab: BNW

STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN MICE(B6C3F1)  
TERMINAL SACRIFICE AT 14 WEEKS

DOSE	Females					
	CONTROL	6.25 ppm	12.5 ppm	25 ppm	50 ppm	100 ppm
<b>Adrenal Cortex</b>						
<b>Accessory Adrenal Cortical Nodule</b>						
<b>LESION RATES</b>						
OVERALL (a)	0/10 (0%)	0/0 (0%)	0/0 (0%)	0/0 (0%)	0/0 (0%)	0/10 (0%)
POLY-3 RATE (b)	0/10.00	0/0.00	0/0.00	0/0.00	0/0.00	0/10.00
POLY-3 PERCENT (g)	0%	0%	0%	0%	0%	0%
TERMINAL (d)	0/10 (0%)	0/0 (0%)	0/0 (0%)	0/0 (0%)	0/0 (0%)	0/10 (0%)
FIRST INCIDENCE	---	---	---	---	---	---
<b>STATISTICAL TESTS</b>						
POLY 3	(n)	(n)	(n)	(n)	(n)	(n)
POLY 1.5	(n)	(n)	(n)	(n)	(n)	(n)
POLY 6	(n)	(n)	(n)	(n)	(n)	(n)
COCH-ARM / FISHERS	(n)	(n)	(n)	(n)	(n)	(n)
MAX-ISO-POLY-3	(n)	(n)	(n)	(n)	(n)	(n)

Experiment Number: 20725 - 02

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: MICE/B6C3F1

P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS

2,3-Butanedione

CAS Number: 431-03-8

Date Report Requested: 04/29/2016

Time Report Requested: 14:39:21

First Dose M/F: 07/28/08 / 07/28/08

Lab: BNW

STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN MICE(B6C3F1)  
TERMINAL SACRIFICE AT 14 WEEKS

DOSE	Females					
	CONTROL	6.25 ppm	12.5 ppm	25 ppm	50 ppm	100 ppm
<b>Clitoral Gland Inflammation Chronic</b>						
<b>LESION RATES</b>						
OVERALL (a)	0/10 (0%)	0/0 (0%)	0/0 (0%)	0/0 (0%)	0/0 (0%)	2/6 (33%)
POLY-3 RATE (b)	0/10.00	0/0.00	0/0.00	0/0.00	0/0.00	2/6.00
POLY-3 PERCENT (g)	0%	0%	0%	0%	0%	33.3%
TERMINAL (d)	0/10 (0%)	0/0 (0%)	0/0 (0%)	0/0 (0%)	0/0 (0%)	2/6 (33%)
FIRST INCIDENCE	---	---	---	---	---	96 (T)
<b>STATISTICAL TESTS</b>						
POLY 3	(e)	(e)	(e)	(e)	(e)	P=0.105
POLY 1.5	(e)	(e)	(e)	(e)	(e)	P=0.105
POLY 6	(e)	(e)	(e)	(e)	(e)	P=0.105
COCH-ARM / FISHERS	P=0.059	(e)	(e)	(e)	(e)	P=0.125
MAX-ISO-POLY-3	(e)	(e)	(e)	(e)	(e)	P=0.030*

Experiment Number: 20725 - 02  
 Test Type: 90-DAY  
 Route: RESPIRATORY EXPOSURE WHOLE BODY  
 Species/Strain: MICE/B6C3F1

P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS  
 2,3-Butanedione  
 CAS Number: 431-03-8

Date Report Requested: 04/29/2016  
 Time Report Requested: 14:39:21  
 First Dose M/F: 07/28/08 / 07/28/08  
 Lab: BNW

**STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN MICE(B6C3F1)  
 TERMINAL SACRIFICE AT 14 WEEKS**

DOSE	Females					
	CONTROL	6.25 ppm	12.5 ppm	25 ppm	50 ppm	100 ppm
<b>Eye: Cornea, Epithelium Cellular Alteration Focal</b>						
<b>LESION RATES</b>						
OVERALL (a)	0/10 (0%)	0/0 (0%)	0/0 (0%)	0/0 (0%)	0/0 (0%)	1/10 (10%)
POLY-3 RATE (b)	0/10.00	0/0.00	0/0.00	0/0.00	0/0.00	1/10.00
POLY-3 PERCENT (g)	0%	0%	0%	0%	0%	10%
TERMINAL (d)	0/10 (0%)	0/0 (0%)	0/0 (0%)	0/0 (0%)	0/0 (0%)	1/10 (10%)
FIRST INCIDENCE	---	---	---	---	---	96 (T)
<b>STATISTICAL TESTS</b>						
POLY 3	(e)	(e)	(e)	(e)	(e)	P=0.500
POLY 1.5	(e)	(e)	(e)	(e)	(e)	P=0.500
POLY 6	(e)	(e)	(e)	(e)	(e)	P=0.500
COCH-ARM / FISHERS	P=0.304	(e)	(e)	(e)	(e)	P=0.500
MAX-ISO-POLY-3	(e)	(e)	(e)	(e)	(e)	P=0.158

Experiment Number: 20725 - 02

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: MICE/B6C3F1

P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS

2,3-Butanedione

CAS Number: 431-03-8

Date Report Requested: 04/29/2016

Time Report Requested: 14:39:21

First Dose M/F: 07/28/08 / 07/28/08

Lab: BNW

STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN MICE(B6C3F1)  
TERMINAL SACRIFICE AT 14 WEEKS

DOSE	Females					
	CONTROL	6.25 ppm	12.5 ppm	25 ppm	50 ppm	100 ppm
<b>Gallbladder Inflammation</b>						
<b>LESION RATES</b>						
OVERALL (a)	1/9 (11%)	0/0 (0%)	0/0 (0%)	0/0 (0%)	0/0 (0%)	0/6 (0%)
POLY-3 RATE (b)	1/9.00	0/0.00	0/0.00	0/0.00	0/0.00	0/6.00
POLY-3 PERCENT (g)	11.1%	0%	0%	0%	0%	0%
TERMINAL (d)	1/9 (11%)	0/0 (0%)	0/0 (0%)	0/0 (0%)	0/0 (0%)	0/6 (0%)
FIRST INCIDENCE	96 (T)	---	---	---	---	---
<b>STATISTICAL TESTS</b>						
POLY 3	(e)	(e)	(e)	(e)	(e)	P=0.580N
POLY 1.5	(e)	(e)	(e)	(e)	(e)	P=0.580N
POLY 6	(e)	(e)	(e)	(e)	(e)	P=0.580N
COCH-ARM / FISHERS	P=0.376N	(e)	(e)	(e)	(e)	P=0.600N
MAX-ISO-POLY-3	(e)	(e)	(e)	(e)	(e)	P=0.230N

Experiment Number: 20725 - 02  
 Test Type: 90-DAY  
 Route: RESPIRATORY EXPOSURE WHOLE BODY  
 Species/Strain: MICE/B6C3F1

P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS  
 2,3-Butanedione  
 CAS Number: 431-03-8

Date Report Requested: 04/29/2016  
 Time Report Requested: 14:39:21  
 First Dose M/F: 07/28/08 / 07/28/08  
 Lab: BNW

**STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN MICE(B6C3F1)  
 TERMINAL SACRIFICE AT 14 WEEKS**

DOSE	Females					
	CONTROL	6.25 ppm	12.5 ppm	25 ppm	50 ppm	100 ppm
<b>Intestine Small, Jejunum Diverticulum</b>						
<b>LESION RATES</b>						
OVERALL (a)	0/10 (0%)	0/0 (0%)	0/0 (0%)	1/1 (100%)	0/0 (0%)	0/10 (0%)
POLY-3 RATE (b)	0/10.00	0/0.00	0/0.00	1/1.00	0/0.00	0/10.00
POLY-3 PERCENT (g)	0%	0%	0%	100%	0%	0%
TERMINAL (d)	0/10 (0%)	0/0 (0%)	0/0 (0%)	1/1 (100%)	0/0 (0%)	0/10 (0%)
FIRST INCIDENCE	---	---	---	96 (T)	---	---
<b>STATISTICAL TESTS</b>						
POLY 3	(e)	(e)	(e)	P=0.091	(e)	(e)
POLY 1.5	(e)	(e)	(e)	P=0.091	(e)	(e)
POLY 6	(e)	(e)	(e)	P=0.091	(e)	(e)
COCH-ARM / FISHERS	P=0.510N	(e)	(e)	P=0.091	(e)	(e)
MAX-ISO-POLY-3	(e)	(e)	(e)	P<0.001**	(e)	(e)

Experiment Number: 20725 - 02  
 Test Type: 90-DAY  
 Route: RESPIRATORY EXPOSURE WHOLE BODY  
 Species/Strain: MICE/B6C3F1

P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS  
 2,3-Butanedione  
 CAS Number: 431-03-8

Date Report Requested: 04/29/2016  
 Time Report Requested: 14:39:21  
 First Dose M/F: 07/28/08 / 07/28/08  
 Lab: BNW

**STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN MICE(B6C3F1)  
 TERMINAL SACRIFICE AT 14 WEEKS**

DOSE	Females					
	CONTROL	6.25 ppm	12.5 ppm	25 ppm	50 ppm	100 ppm
<b>Kidney: Renal Tubule Casts Protein</b>						
<b>LESION RATES</b>						
OVERALL (a)	0/10 (0%)	0/0 (0%)	0/0 (0%)	0/0 (0%)	0/0 (0%)	1/10 (10%)
POLY-3 RATE (b)	0/10.00	0/0.00	0/0.00	0/0.00	0/0.00	1/10.00
POLY-3 PERCENT (g)	0%	0%	0%	0%	0%	10%
TERMINAL (d)	0/10 (0%)	0/0 (0%)	0/0 (0%)	0/0 (0%)	0/0 (0%)	1/10 (10%)
FIRST INCIDENCE	---	---	---	---	---	96 (T)
<b>STATISTICAL TESTS</b>						
POLY 3	(e)	(e)	(e)	(e)	(e)	P=0.500
POLY 1.5	(e)	(e)	(e)	(e)	(e)	P=0.500
POLY 6	(e)	(e)	(e)	(e)	(e)	P=0.500
COCH-ARM / FISHERS	P=0.304	(e)	(e)	(e)	(e)	P=0.500
MAX-ISO-POLY-3	(e)	(e)	(e)	(e)	(e)	P=0.158

Experiment Number: 20725 - 02

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: MICE/B6C3F1

P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS

2,3-Butanedione

CAS Number: 431-03-8

Date Report Requested: 04/29/2016

Time Report Requested: 14:39:21

First Dose M/F: 07/28/08 / 07/28/08

Lab: BNW

STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN MICE(B6C3F1)  
TERMINAL SACRIFICE AT 14 WEEKS

DOSE	Females					
	CONTROL	6.25 ppm	12.5 ppm	25 ppm	50 ppm	100 ppm
<b>Kidney: Renal Tubule Regeneration</b>						
<b>LESION RATES</b>						
OVERALL (a)	0/10 (0%)	0/0 (0%)	0/0 (0%)	0/0 (0%)	0/0 (0%)	0/10 (0%)
POLY-3 RATE (b)	0/10.00	0/0.00	0/0.00	0/0.00	0/0.00	0/10.00
POLY-3 PERCENT (g)	0%	0%	0%	0%	0%	0%
TERMINAL (d)	0/10 (0%)	0/0 (0%)	0/0 (0%)	0/0 (0%)	0/0 (0%)	0/10 (0%)
FIRST INCIDENCE	---	---	---	---	---	---
<b>STATISTICAL TESTS</b>						
POLY 3	(n)	(n)	(n)	(n)	(n)	(n)
POLY 1.5	(n)	(n)	(n)	(n)	(n)	(n)
POLY 6	(n)	(n)	(n)	(n)	(n)	(n)
COCH-ARM / FISHERS	(n)	(n)	(n)	(n)	(n)	(n)
MAX-ISO-POLY-3	(n)	(n)	(n)	(n)	(n)	(n)

Experiment Number: 20725 - 02  
 Test Type: 90-DAY  
 Route: RESPIRATORY EXPOSURE WHOLE BODY  
 Species/Strain: MICE/B6C3F1

P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS  
 2,3-Butanedione  
 CAS Number: 431-03-8

Date Report Requested: 04/29/2016  
 Time Report Requested: 14:39:21  
 First Dose M/F: 07/28/08 / 07/28/08  
 Lab: BNW

**STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN MICE(B6C3F1)  
 TERMINAL SACRIFICE AT 14 WEEKS**

DOSE	Females					
	CONTROL	6.25 ppm	12.5 ppm	25 ppm	50 ppm	100 ppm
<b>Larynx Inflammation Chronic</b>						
<b>LESION RATES</b>						
OVERALL (a)	0/10 (0%)	3/10 (30%)	1/10 (10%)	4/10 (40%)	4/9 (44%)	10/10 (100%)
POLY-3 RATE (b)	0/10.00	3/10.00	1/10.00	4/10.00	4/9.00	10/10.00
POLY-3 PERCENT (g)	0%	30%	10%	40%	44.4%	100%
TERMINAL (d)	0/10 (0%)	3/10 (30%)	1/10 (10%)	4/10 (40%)	4/9 (44%)	10/10 (100%)
FIRST INCIDENCE	---	96 (T)	96 (T)	96 (T)	96 (T)	96 (T)
<b>STATISTICAL TESTS</b>						
POLY 3	P<0.001**	P=0.095	P=0.500	P=0.033*	P=0.021*	P<0.001**
POLY 1.5	P<0.001**	P=0.095	P=0.500	P=0.033*	P=0.021*	P<0.001**
POLY 6	P<0.001**	P=0.095	P=0.500	P=0.033*	P=0.021*	P<0.001**
COCH-ARM / FISHERS	P<0.001**	P=0.105	P=0.500	P=0.043*	P=0.033*	P<0.001**
MAX-ISO-POLY-3	P<0.001**	P=0.025*	P=0.158	P=0.007**	P=0.004**	(e)



Experiment Number: 20725 - 02  
 Test Type: 90-DAY  
 Route: RESPIRATORY EXPOSURE WHOLE BODY  
 Species/Strain: MICE/B6C3F1

P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS  
 2,3-Butanedione  
 CAS Number: 431-03-8

Date Report Requested: 04/29/2016  
 Time Report Requested: 14:39:21  
 First Dose M/F: 07/28/08 / 07/28/08  
 Lab: BNW

**STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN MICE(B6C3F1)  
 TERMINAL SACRIFICE AT 14 WEEKS**

DOSE	Females					
	CONTROL	6.25 ppm	12.5 ppm	25 ppm	50 ppm	100 ppm
<b>Larynx: Epithelium Necrosis</b>						
<b>LESION RATES</b>						
OVERALL (a)	0/10 (0%)	0/10 (0%)	0/10 (0%)	1/10 (10%)	5/9 (56%)	9/10 (90%)
POLY-3 RATE (b)	0/10.00	0/10.00	0/10.00	1/10.00	5/9.00	9/10.00
POLY-3 PERCENT (g)	0%	0%	0%	10%	55.6%	90%
TERMINAL (d)	0/10 (0%)	0/10 (0%)	0/10 (0%)	1/10 (10%)	5/9 (56%)	9/10 (90%)
FIRST INCIDENCE	---	---	---	96 (T)	96 (T)	96 (T)
<b>STATISTICAL TESTS</b>						
POLY 3	P<0.001**	(e)	(e)	P=0.500	P=0.003**	P<0.001**
POLY 1.5	P<0.001**	(e)	(e)	P=0.500	P=0.003**	P<0.001**
POLY 6	P<0.001**	(e)	(e)	P=0.500	P=0.003**	P<0.001**
COCH-ARM / FISHERS	P<0.001**	(e)	(e)	P=0.500	P=0.011*	P<0.001**
MAX-ISO-POLY-3	P<0.001**	(e)	(e)	P=0.158	P<0.001**	P<0.001**

Experiment Number: 20725 - 02

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: MICE/B6C3F1

## P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS

2,3-Butanedione

CAS Number: 431-03-8

Date Report Requested: 04/29/2016

Time Report Requested: 14:39:21

First Dose M/F: 07/28/08 / 07/28/08

Lab: BNW

**STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN MICE(B6C3F1)  
TERMINAL SACRIFICE AT 14 WEEKS**

DOSE	Females					
	CONTROL	6.25 ppm	12.5 ppm	25 ppm	50 ppm	100 ppm
<b>Larynx: Respiratory Epithelium Hyperplasia</b>						
<b>LESION RATES</b>						
OVERALL (a)	0/10 (0%)	0/10 (0%)	0/10 (0%)	4/10 (40%)	8/9 (89%)	9/10 (90%)
POLY-3 RATE (b)	0/10.00	0/10.00	0/10.00	4/10.00	8/9.00	9/10.00
POLY-3 PERCENT (g)	0%	0%	0%	40%	88.9%	90%
TERMINAL (d)	0/10 (0%)	0/10 (0%)	0/10 (0%)	4/10 (40%)	8/9 (89%)	9/10 (90%)
FIRST INCIDENCE	---	---	---	96 (T)	96 (T)	96 (T)
<b>STATISTICAL TESTS</b>						
POLY 3	P<0.001**	(e)	(e)	P=0.033*	P<0.001**	P<0.001**
POLY 1.5	P<0.001**	(e)	(e)	P=0.033*	P<0.001**	P<0.001**
POLY 6	P<0.001**	(e)	(e)	P=0.033*	P<0.001**	P<0.001**
COCH-ARM / FISHERS	P<0.001**	(e)	(e)	P=0.043*	P<0.001**	P<0.001**
MAX-ISO-POLY-3	P<0.001**	(e)	(e)	P=0.007**	P<0.001**	P<0.001**

Experiment Number: 20725 - 02

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: MICE/B6C3F1

P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS

2,3-Butanedione

CAS Number: 431-03-8

Date Report Requested: 04/29/2016

Time Report Requested: 14:39:21

First Dose M/F: 07/28/08 / 07/28/08

Lab: BNW

STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN MICE(B6C3F1)  
TERMINAL SACRIFICE AT 14 WEEKS

DOSE	Females					
	CONTROL	6.25 ppm	12.5 ppm	25 ppm	50 ppm	100 ppm
Larynx: Respiratory Epithelium Hyperplasia Atypical						
<b>LESION RATES</b>						
OVERALL (a)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/9 (0%)	0/10 (0%)
POLY-3 RATE (b)	0/10.00	0/10.00	0/10.00	0/10.00	0/9.00	0/10.00
POLY-3 PERCENT (g)	0%	0%	0%	0%	0%	0%
TERMINAL (d)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/9 (0%)	0/10 (0%)
FIRST INCIDENCE	---	---	---	---	---	---
<b>STATISTICAL TESTS</b>						
POLY 3	(n)	(n)	(n)	(n)	(n)	(n)
POLY 1.5	(n)	(n)	(n)	(n)	(n)	(n)
POLY 6	(n)	(n)	(n)	(n)	(n)	(n)
COCH-ARM / FISHERS	(n)	(n)	(n)	(n)	(n)	(n)
MAX-ISO-POLY-3	(n)	(n)	(n)	(n)	(n)	(n)

Experiment Number: 20725 - 02  
 Test Type: 90-DAY  
 Route: RESPIRATORY EXPOSURE WHOLE BODY  
 Species/Strain: MICE/B6C3F1

P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS  
 2,3-Butanedione  
 CAS Number: 431-03-8

Date Report Requested: 04/29/2016  
 Time Report Requested: 14:39:21  
 First Dose M/F: 07/28/08 / 07/28/08  
 Lab: BNW

**STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN MICE(B6C3F1)  
 TERMINAL SACRIFICE AT 14 WEEKS**

DOSE	Females					
	CONTROL	6.25 ppm	12.5 ppm	25 ppm	50 ppm	100 ppm
<b>Larynx: Respiratory Epithelium Metaplasia</b>						
<b>LESION RATES</b>						
OVERALL (a)	0/10 (0%)	0/10 (0%)	0/10 (0%)	1/10 (10%)	9/9 (100%)	0/10 (0%)
POLY-3 RATE (b)	0/10.00	0/10.00	0/10.00	1/10.00	9/9.00	0/10.00
POLY-3 PERCENT (g)	0%	0%	0%	10%	100%	0%
TERMINAL (d)	0/10 (0%)	0/10 (0%)	0/10 (0%)	1/10 (10%)	9/9 (100%)	0/10 (0%)
FIRST INCIDENCE	---	---	---	96 (T)	96 (T)	---
<b>STATISTICAL TESTS</b>						
POLY 3	P<0.001**	(e)	(e)	P=0.500	P<0.001**	(e)
POLY 1.5	P<0.001**	(e)	(e)	P=0.500	P<0.001**	(e)
POLY 6	P<0.001**	(e)	(e)	P=0.500	P<0.001**	(e)
COCH-ARM / FISHERS	P=0.096	(e)	(e)	P=0.500	P<0.001**	(e)
MAX-ISO-POLY-3	P<0.001**	(e)	(e)	P=0.158	P<0.001**	(e)

Experiment Number: 20725 - 02  
 Test Type: 90-DAY  
 Route: RESPIRATORY EXPOSURE WHOLE BODY  
 Species/Strain: MICE/B6C3F1

P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS  
 2,3-Butanedione  
 CAS Number: 431-03-8

Date Report Requested: 04/29/2016  
 Time Report Requested: 14:39:21  
 First Dose M/F: 07/28/08 / 07/28/08  
 Lab: BNW

**STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN MICE(B6C3F1)  
 TERMINAL SACRIFICE AT 14 WEEKS**

DOSE	Females					
	CONTROL	6.25 ppm	12.5 ppm	25 ppm	50 ppm	100 ppm
<b>Larynx: Respiratory Epithelium Metaplasia Atypical Squamous</b>						
<b>LESION RATES</b>						
OVERALL (a)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/9 (0%)	10/10 (100%)
POLY-3 RATE (b)	0/10.00	0/10.00	0/10.00	0/10.00	0/9.00	10/10.00
POLY-3 PERCENT (g)	0%	0%	0%	0%	0%	100%
TERMINAL (d)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/9 (0%)	10/10 (100%)
FIRST INCIDENCE	---	---	---	---	---	96 (T)
<b>STATISTICAL TESTS</b>						
POLY 3	P<0.001**	(e)	(e)	(e)	(e)	P<0.001**
POLY 1.5	P<0.001**	(e)	(e)	(e)	(e)	P<0.001**
POLY 6	P<0.001**	(e)	(e)	(e)	(e)	P<0.001**
COCH-ARM / FISHERS	P<0.001**	(e)	(e)	(e)	(e)	P<0.001**
MAX-ISO-POLY-3	P<0.001**	(e)	(e)	(e)	(e)	(e)

Experiment Number: 20725 - 02

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: MICE/B6C3F1

P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS

2,3-Butanedione

CAS Number: 431-03-8

Date Report Requested: 04/29/2016

Time Report Requested: 14:39:21

First Dose M/F: 07/28/08 / 07/28/08

Lab: BNW

STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN MICE(B6C3F1)  
TERMINAL SACRIFICE AT 14 WEEKS

DOSE	Females					
	CONTROL	6.25 ppm	12.5 ppm	25 ppm	50 ppm	100 ppm
<b>Larynx: Respiratory Epithelium Regeneration</b>						
<b>LESION RATES</b>						
OVERALL (a)	0/10 (0%)	0/10 (0%)	0/10 (0%)	2/10 (20%)	8/9 (89%)	0/10 (0%)
POLY-3 RATE (b)	0/10.00	0/10.00	0/10.00	2/10.00	8/9.00	0/10.00
POLY-3 PERCENT (g)	0%	0%	0%	20%	88.9%	0%
TERMINAL (d)	0/10 (0%)	0/10 (0%)	0/10 (0%)	2/10 (20%)	8/9 (89%)	0/10 (0%)
FIRST INCIDENCE	---	---	---	96 (T)	96 (T)	---
<b>STATISTICAL TESTS</b>						
POLY 3	P=0.034*	(e)	(e)	P=0.227	P<0.001**	(e)
POLY 1.5	P=0.034*	(e)	(e)	P=0.227	P<0.001**	(e)
POLY 6	P=0.034*	(e)	(e)	P=0.227	P<0.001**	(e)
COCH-ARM / FISHERS	P=0.146	(e)	(e)	P=0.237	P<0.001**	(e)
MAX-ISO-POLY-3	P<0.001**	(e)	(e)	P=0.066	P<0.001**	(e)

Experiment Number: 20725 - 02

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: MICE/B6C3F1

P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS

2,3-Butanedione

CAS Number: 431-03-8

Date Report Requested: 04/29/2016

Time Report Requested: 14:39:21

First Dose M/F: 07/28/08 / 07/28/08

Lab: BNW

STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN MICE(B6C3F1)  
TERMINAL SACRIFICE AT 14 WEEKS

DOSE	Females					
	CONTROL	6.25 ppm	12.5 ppm	25 ppm	50 ppm	100 ppm
<b>Larynx: Squamous Epithelium Hyperplasia</b>						
<b>LESION RATES</b>						
OVERALL (a)	0/10 (0%)	0/10 (0%)	0/10 (0%)	2/10 (20%)	4/9 (44%)	1/10 (10%)
POLY-3 RATE (b)	0/10.00	0/10.00	0/10.00	2/10.00	4/9.00	1/10.00
POLY-3 PERCENT (g)	0%	0%	0%	20%	44.4%	10%
TERMINAL (d)	0/10 (0%)	0/10 (0%)	0/10 (0%)	2/10 (20%)	4/9 (44%)	1/10 (10%)
FIRST INCIDENCE	---	---	---	96 (T)	96 (T)	96 (T)
<b>STATISTICAL TESTS</b>						
POLY 3	P=0.101	(e)	(e)	P=0.227	P=0.021*	P=0.500
POLY 1.5	P=0.101	(e)	(e)	P=0.227	P=0.021*	P=0.500
POLY 6	P=0.101	(e)	(e)	P=0.227	P=0.021*	P=0.500
COCH-ARM / FISHERS	P=0.120	(e)	(e)	P=0.237	P=0.033*	P=0.500
MAX-ISO-POLY-3	P=0.024*	(e)	(e)	P=0.066	P=0.004**	P=0.158

Experiment Number: 20725 - 02  
 Test Type: 90-DAY  
 Route: RESPIRATORY EXPOSURE WHOLE BODY  
 Species/Strain: MICE/B6C3F1

P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS  
 2,3-Butanedione  
 CAS Number: 431-03-8

Date Report Requested: 04/29/2016  
 Time Report Requested: 14:39:21  
 First Dose M/F: 07/28/08 / 07/28/08  
 Lab: BNW

**STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN MICE(B6C3F1)  
 TERMINAL SACRIFICE AT 14 WEEKS**

DOSE	Females					
	CONTROL	6.25 ppm	12.5 ppm	25 ppm	50 ppm	100 ppm
<b>Larynx: Squamous Epithelium Hyperplasia Atypical</b>						
<b>LESION RATES</b>						
OVERALL (a)	0/10 (0%)	0/10 (0%)	0/10 (0%)	2/10 (20%)	3/9 (33%)	9/10 (90%)
POLY-3 RATE (b)	0/10.00	0/10.00	0/10.00	2/10.00	3/9.00	9/10.00
POLY-3 PERCENT (g)	0%	0%	0%	20%	33.3%	90%
TERMINAL (d)	0/10 (0%)	0/10 (0%)	0/10 (0%)	2/10 (20%)	3/9 (33%)	9/10 (90%)
FIRST INCIDENCE	---	---	---	96 (T)	96 (T)	96 (T)
<b>STATISTICAL TESTS</b>						
POLY 3	P<0.001**	(e)	(e)	P=0.227	P=0.074	P<0.001**
POLY 1.5	P<0.001**	(e)	(e)	P=0.227	P=0.074	P<0.001**
POLY 6	P<0.001**	(e)	(e)	P=0.227	P=0.074	P<0.001**
COCH-ARM / FISHERS	P<0.001**	(e)	(e)	P=0.237	P=0.087	P<0.001**
MAX-ISO-POLY-3	P<0.001**	(e)	(e)	P=0.066	P=0.019*	P<0.001**



Experiment Number: 20725 - 02

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: MICE/B6C3F1

P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS

2,3-Butanedione

CAS Number: 431-03-8

Date Report Requested: 04/29/2016

Time Report Requested: 14:39:21

First Dose M/F: 07/28/08 / 07/28/08

Lab: BNW

STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN MICE(B6C3F1)  
TERMINAL SACRIFICE AT 14 WEEKS

DOSE	Females					
	CONTROL	6.25 ppm	12.5 ppm	25 ppm	50 ppm	100 ppm
<b>Liver</b>						
<b>Inflammation Chronic</b>						
<b>LESION RATES</b>						
OVERALL (a)	5/10 (50%)	0/0 (0%)	0/0 (0%)	0/0 (0%)	0/0 (0%)	8/10 (80%)
POLY-3 RATE (b)	5/10.00	0/0.00	0/0.00	0/0.00	0/0.00	8/10.00
POLY-3 PERCENT (g)	50%	0%	0%	0%	0%	80%
TERMINAL (d)	5/10 (50%)	0/0 (0%)	0/0 (0%)	0/0 (0%)	0/0 (0%)	8/10 (80%)
FIRST INCIDENCE	96 (T)	---	---	---	---	96 (T)
<b>STATISTICAL TESTS</b>						
POLY 3	(e)	(e)	(e)	(e)	(e)	P=0.174
POLY 1.5	(e)	(e)	(e)	(e)	(e)	P=0.174
POLY 6	(e)	(e)	(e)	(e)	(e)	P=0.174
COCH-ARM / FISHERS	P=0.121	(e)	(e)	(e)	(e)	P=0.175
MAX-ISO-POLY-3	(e)	(e)	(e)	(e)	(e)	P=0.079

Experiment Number: 20725 - 02  
 Test Type: 90-DAY  
 Route: RESPIRATORY EXPOSURE WHOLE BODY  
 Species/Strain: MICE/B6C3F1

P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS  
 2,3-Butanedione  
 CAS Number: 431-03-8

Date Report Requested: 04/29/2016  
 Time Report Requested: 14:39:21  
 First Dose M/F: 07/28/08 / 07/28/08  
 Lab: BNW

**STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN MICE(B6C3F1)  
 TERMINAL SACRIFICE AT 14 WEEKS**

DOSE	Females					
	CONTROL	6.25 ppm	12.5 ppm	25 ppm	50 ppm	100 ppm
<b>Lung</b>						
<b>Metaplasia Osseous</b>						
<b>LESION RATES</b>						
OVERALL (a)	0/10 (0%)	0/10 (0%)	0/10 (0%)	1/10 (10%)	0/10 (0%)	0/10 (0%)
POLY-3 RATE (b)	0/10.00	0/10.00	0/10.00	1/10.00	0/10.00	0/10.00
POLY-3 PERCENT (g)	0%	0%	0%	10%	0%	0%
TERMINAL (d)	0/10 (0%)	0/10 (0%)	0/10 (0%)	1/10 (10%)	0/10 (0%)	0/10 (0%)
FIRST INCIDENCE	---	---	---	96 (T)	---	---
<b>STATISTICAL TESTS</b>						
POLY 3	P=0.697N	(e)	(e)	P=0.500	(e)	(e)
POLY 1.5	P=0.697N	(e)	(e)	P=0.500	(e)	(e)
POLY 6	P=0.697N	(e)	(e)	P=0.500	(e)	(e)
COCH-ARM / FISHERS	P=0.698N	(e)	(e)	P=0.500	(e)	(e)
MAX-ISO-POLY-3	P=0.282	(e)	(e)	P=0.158	(e)	(e)

Experiment Number: 20725 - 02

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: MICE/B6C3F1

P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS

2,3-Butanedione

CAS Number: 431-03-8

Date Report Requested: 04/29/2016

Time Report Requested: 14:39:21

First Dose M/F: 07/28/08 / 07/28/08

Lab: BNW

STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN MICE(B6C3F1)  
TERMINAL SACRIFICE AT 14 WEEKS

DOSE	Females					
	CONTROL	6.25 ppm	12.5 ppm	25 ppm	50 ppm	100 ppm
<b>Lung: Bronchus</b>						
<b>Infiltration Cellular Polymorphonuclear</b>						
<b>LESION RATES</b>						
OVERALL (a)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	8/10 (80%)
POLY-3 RATE (b)	0/10.00	0/10.00	0/10.00	0/10.00	0/10.00	8/10.00
POLY-3 PERCENT (g)	0%	0%	0%	0%	0%	80%
TERMINAL (d)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	8/10 (80%)
FIRST INCIDENCE	---	---	---	---	---	96 (T)
<b>STATISTICAL TESTS</b>						
POLY 3	P<0.001**	(e)	(e)	(e)	(e)	P<0.001**
POLY 1.5	P<0.001**	(e)	(e)	(e)	(e)	P<0.001**
POLY 6	P<0.001**	(e)	(e)	(e)	(e)	P<0.001**
COCH-ARM / FISHERS	P<0.001**	(e)	(e)	(e)	(e)	P<0.001**
MAX-ISO-POLY-3	P<0.001**	(e)	(e)	(e)	(e)	P<0.001**

Experiment Number: 20725 - 02

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: MICE/B6C3F1

## P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS

2,3-Butanedione

CAS Number: 431-03-8

Date Report Requested: 04/29/2016

Time Report Requested: 14:39:21

First Dose M/F: 07/28/08 / 07/28/08

Lab: BNW

**STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN MICE(B6C3F1)  
TERMINAL SACRIFICE AT 14 WEEKS**

DOSE	Females					
	CONTROL	6.25 ppm	12.5 ppm	25 ppm	50 ppm	100 ppm
<b>Lung: Bronchus Inflammation Chronic</b>						
<b>LESION RATES</b>						
OVERALL (a)	1/10 (10%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	5/10 (50%)	8/10 (80%)
POLY-3 RATE (b)	1/10.00	0/10.00	0/10.00	0/10.00	5/10.00	8/10.00
POLY-3 PERCENT (g)	10%	0%	0%	0%	50%	80%
TERMINAL (d)	1/10 (10%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	5/10 (50%)	8/10 (80%)
FIRST INCIDENCE	96 (T)	---	---	---	96 (T)	96 (T)
<b>STATISTICAL TESTS</b>						
POLY 3	P<0.001**	P=0.500N	P=0.500N	P=0.500N	P=0.061	P<0.001**
POLY 1.5	P<0.001**	P=0.500N	P=0.500N	P=0.500N	P=0.061	P<0.001**
POLY 6	P<0.001**	P=0.500N	P=0.500N	P=0.500N	P=0.061	P<0.001**
COCH-ARM / FISHERS	P<0.001**	P=0.500N	P=0.500N	P=0.500N	P=0.070	P=0.003**
MAX-ISO-POLY-3	P<0.001**	P=0.158N	P=0.158N	P=0.158N	P=0.020*	P<0.001**

Experiment Number: 20725 - 02  
 Test Type: 90-DAY  
 Route: RESPIRATORY EXPOSURE WHOLE BODY  
 Species/Strain: MICE/B6C3F1

P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS  
 2,3-Butanedione  
 CAS Number: 431-03-8

Date Report Requested: 04/29/2016  
 Time Report Requested: 14:39:21  
 First Dose M/F: 07/28/08 / 07/28/08  
 Lab: BNW

**STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN MICE(B6C3F1)  
 TERMINAL SACRIFICE AT 14 WEEKS**

DOSE	Females					
	CONTROL	6.25 ppm	12.5 ppm	25 ppm	50 ppm	100 ppm
<b>Lung: Bronchus, Epithelium Degeneration</b>						
<b>LESION RATES</b>						
OVERALL (a)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)
POLY-3 RATE (b)	0/10.00	0/10.00	0/10.00	0/10.00	0/10.00	0/10.00
POLY-3 PERCENT (g)	0%	0%	0%	0%	0%	0%
TERMINAL (d)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)
FIRST INCIDENCE	---	---	---	---	---	---
<b>STATISTICAL TESTS</b>						
POLY 3	(n)	(n)	(n)	(n)	(n)	(n)
POLY 1.5	(n)	(n)	(n)	(n)	(n)	(n)
POLY 6	(n)	(n)	(n)	(n)	(n)	(n)
COCH-ARM / FISHERS	(n)	(n)	(n)	(n)	(n)	(n)
MAX-ISO-POLY-3	(n)	(n)	(n)	(n)	(n)	(n)

Experiment Number: 20725 - 02  
 Test Type: 90-DAY  
 Route: RESPIRATORY EXPOSURE WHOLE BODY  
 Species/Strain: MICE/B6C3F1

P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS  
 2,3-Butanedione  
 CAS Number: 431-03-8

Date Report Requested: 04/29/2016  
 Time Report Requested: 14:39:21  
 First Dose M/F: 07/28/08 / 07/28/08  
 Lab: BNW

**STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN MICE(B6C3F1)  
 TERMINAL SACRIFICE AT 14 WEEKS**

DOSE	Females					
	CONTROL	6.25 ppm	12.5 ppm	25 ppm	50 ppm	100 ppm
<b>Lung: Bronchus, Epithelium Hyperplasia</b>						
<b>LESION RATES</b>						
OVERALL (a)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)
POLY-3 RATE (b)	0/10.00	0/10.00	0/10.00	0/10.00	0/10.00	0/10.00
POLY-3 PERCENT (g)	0%	0%	0%	0%	0%	0%
TERMINAL (d)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)
FIRST INCIDENCE	---	---	---	---	---	---
<b>STATISTICAL TESTS</b>						
POLY 3	(n)	(n)	(n)	(n)	(n)	(n)
POLY 1.5	(n)	(n)	(n)	(n)	(n)	(n)
POLY 6	(n)	(n)	(n)	(n)	(n)	(n)
COCH-ARM / FISHERS	(n)	(n)	(n)	(n)	(n)	(n)
MAX-ISO-POLY-3	(n)	(n)	(n)	(n)	(n)	(n)

Experiment Number: 20725 - 02  
 Test Type: 90-DAY  
 Route: RESPIRATORY EXPOSURE WHOLE BODY  
 Species/Strain: MICE/B6C3F1

P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS  
 2,3-Butanedione  
 CAS Number: 431-03-8

Date Report Requested: 04/29/2016  
 Time Report Requested: 14:39:21  
 First Dose M/F: 07/28/08 / 07/28/08  
 Lab: BNW

**STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN MICE(B6C3F1)  
 TERMINAL SACRIFICE AT 14 WEEKS**

DOSE	Females					
	CONTROL	6.25 ppm	12.5 ppm	25 ppm	50 ppm	100 ppm
<b>Lung: Bronchus, Epithelium Hyperplasia Atypical</b>						
<b>LESION RATES</b>						
OVERALL (a)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	7/10 (70%)
POLY-3 RATE (b)	0/10.00	0/10.00	0/10.00	0/10.00	0/10.00	7/10.00
POLY-3 PERCENT (g)	0%	0%	0%	0%	0%	70%
TERMINAL (d)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	7/10 (70%)
FIRST INCIDENCE	---	---	---	---	---	96 (T)
<b>STATISTICAL TESTS</b>						
POLY 3	P<0.001**	(e)	(e)	(e)	(e)	P<0.001**
POLY 1.5	P<0.001**	(e)	(e)	(e)	(e)	P<0.001**
POLY 6	P<0.001**	(e)	(e)	(e)	(e)	P<0.001**
COCH-ARM / FISHERS	P<0.001**	(e)	(e)	(e)	(e)	P=0.002**
MAX-ISO-POLY-3	P<0.001**	(e)	(e)	(e)	(e)	P<0.001**

Experiment Number: 20725 - 02  
 Test Type: 90-DAY  
 Route: RESPIRATORY EXPOSURE WHOLE BODY  
 Species/Strain: MICE/B6C3F1

P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS  
 2,3-Butanedione  
 CAS Number: 431-03-8

Date Report Requested: 04/29/2016  
 Time Report Requested: 14:39:21  
 First Dose M/F: 07/28/08 / 07/28/08  
 Lab: BNW

**STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN MICE(B6C3F1)  
 TERMINAL SACRIFICE AT 14 WEEKS**

DOSE	Females					
	CONTROL	6.25 ppm	12.5 ppm	25 ppm	50 ppm	100 ppm
<b>Lung: Bronchus, Epithelium Metaplasia Atypical Squamous</b>						
<b>LESION RATES</b>						
OVERALL (a)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	7/10 (70%)
POLY-3 RATE (b)	0/10.00	0/10.00	0/10.00	0/10.00	0/10.00	7/10.00
POLY-3 PERCENT (g)	0%	0%	0%	0%	0%	70%
TERMINAL (d)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	7/10 (70%)
FIRST INCIDENCE	---	---	---	---	---	96 (T)
<b>STATISTICAL TESTS</b>						
POLY 3	P<0.001**	(e)	(e)	(e)	(e)	P<0.001**
POLY 1.5	P<0.001**	(e)	(e)	(e)	(e)	P<0.001**
POLY 6	P<0.001**	(e)	(e)	(e)	(e)	P<0.001**
COCH-ARM / FISHERS	P<0.001**	(e)	(e)	(e)	(e)	P=0.002**
MAX-ISO-POLY-3	P<0.001**	(e)	(e)	(e)	(e)	P<0.001**



Experiment Number: 20725 - 02  
 Test Type: 90-DAY  
 Route: RESPIRATORY EXPOSURE WHOLE BODY  
 Species/Strain: MICE/B6C3F1

P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS  
 2,3-Butanedione  
 CAS Number: 431-03-8

Date Report Requested: 04/29/2016  
 Time Report Requested: 14:39:21  
 First Dose M/F: 07/28/08 / 07/28/08  
 Lab: BNW

**STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN MICE(B6C3F1)  
 TERMINAL SACRIFICE AT 14 WEEKS**

DOSE	Females					
	CONTROL	6.25 ppm	12.5 ppm	25 ppm	50 ppm	100 ppm
<b>Lung: Bronchus, Epithelium Regeneration</b>						
<b>LESION RATES</b>						
OVERALL (a)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	6/10 (60%)	7/10 (70%)
POLY-3 RATE (b)	0/10.00	0/10.00	0/10.00	0/10.00	6/10.00	7/10.00
POLY-3 PERCENT (g)	0%	0%	0%	0%	60%	70%
TERMINAL (d)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	6/10 (60%)	7/10 (70%)
FIRST INCIDENCE	---	---	---	---	96 (T)	96 (T)
<b>STATISTICAL TESTS</b>						
POLY 3	P<0.001**	(e)	(e)	(e)	P<0.001**	P<0.001**
POLY 1.5	P<0.001**	(e)	(e)	(e)	P<0.001**	P<0.001**
POLY 6	P<0.001**	(e)	(e)	(e)	P<0.001**	P<0.001**
COCH-ARM / FISHERS	P<0.001**	(e)	(e)	(e)	P=0.005**	P=0.002**
MAX-ISO-POLY-3	P<0.001**	(e)	(e)	(e)	P<0.001**	P<0.001**

Experiment Number: 20725 - 02

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: MICE/B6C3F1

P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS

2,3-Butanedione

CAS Number: 431-03-8

Date Report Requested: 04/29/2016

Time Report Requested: 14:39:21

First Dose M/F: 07/28/08 / 07/28/08

Lab: BNW

STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN MICE(B6C3F1)  
TERMINAL SACRIFICE AT 14 WEEKS

DOSE	Females					
	CONTROL	6.25 ppm	12.5 ppm	25 ppm	50 ppm	100 ppm
<b>Nose Inflammation</b>						
<b>LESION RATES</b>						
OVERALL (a)	0/10 (0%)	0/10 (0%)	0/10 (0%)	1/10 (10%)	10/10 (100%)	10/10 (100%)
POLY-3 RATE (b)	0/10.00	0/10.00	0/10.00	1/10.00	10/10.00	10/10.00
POLY-3 PERCENT (g)	0%	0%	0%	10%	100%	100%
TERMINAL (d)	0/10 (0%)	0/10 (0%)	0/10 (0%)	1/10 (10%)	10/10 (100%)	10/10 (100%)
FIRST INCIDENCE	---	---	---	96 (T)	96 (T)	96 (T)
<b>STATISTICAL TESTS</b>						
POLY 3	P<0.001**	(e)	(e)	P=0.500	P<0.001**	P<0.001**
POLY 1.5	P<0.001**	(e)	(e)	P=0.500	P<0.001**	P<0.001**
POLY 6	P<0.001**	(e)	(e)	P=0.500	P<0.001**	P<0.001**
COCH-ARM / FISHERS	P<0.001**	(e)	(e)	P=0.500	P<0.001**	P<0.001**
MAX-ISO-POLY-3	P<0.001**	(e)	(e)	P=0.158	(e)	(e)

Experiment Number: 20725 - 02

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: MICE/B6C3F1

P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS

2,3-Butanedione

CAS Number: 431-03-8

Date Report Requested: 04/29/2016

Time Report Requested: 14:39:21

First Dose M/F: 07/28/08 / 07/28/08

Lab: BNW

STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN MICE(B6C3F1)  
TERMINAL SACRIFICE AT 14 WEEKS

DOSE	Females					
	CONTROL	6.25 ppm	12.5 ppm	25 ppm	50 ppm	100 ppm
<b>Nose</b>						
<b>Inflammation Chronic</b>						
<b>LESION RATES</b>						
OVERALL (a)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)
POLY-3 RATE (b)	0/10.00	0/10.00	0/10.00	0/10.00	0/10.00	0/10.00
POLY-3 PERCENT (g)	0%	0%	0%	0%	0%	0%
TERMINAL (d)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)
FIRST INCIDENCE	---	---	---	---	---	---
<b>STATISTICAL TESTS</b>						
POLY 3	(n)	(n)	(n)	(n)	(n)	(n)
POLY 1.5	(n)	(n)	(n)	(n)	(n)	(n)
POLY 6	(n)	(n)	(n)	(n)	(n)	(n)
COCH-ARM / FISHERS	(n)	(n)	(n)	(n)	(n)	(n)
MAX-ISO-POLY-3	(n)	(n)	(n)	(n)	(n)	(n)

Experiment Number: 20725 - 02

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: MICE/B6C3F1

P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS

2,3-Butanedione

CAS Number: 431-03-8

Date Report Requested: 04/29/2016

Time Report Requested: 14:39:21

First Dose M/F: 07/28/08 / 07/28/08

Lab: BNW

STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN MICE(B6C3F1)  
TERMINAL SACRIFICE AT 14 WEEKS

DOSE	Females					
	CONTROL	6.25 ppm	12.5 ppm	25 ppm	50 ppm	100 ppm
<b>Nose: Olfactory Epithelium Accumulation, Hyaline Droplet</b>						
<b>LESION RATES</b>						
OVERALL (a)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	1/10 (10%)	1/10 (10%)
POLY-3 RATE (b)	0/10.00	0/10.00	0/10.00	0/10.00	1/10.00	1/10.00
POLY-3 PERCENT (g)	0%	0%	0%	0%	10%	10%
TERMINAL (d)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	1/10 (10%)	1/10 (10%)
FIRST INCIDENCE	---	---	---	---	96 (T)	96 (T)
<b>STATISTICAL TESTS</b>						
POLY 3	P=0.107	(e)	(e)	(e)	P=0.500	P=0.500
POLY 1.5	P=0.107	(e)	(e)	(e)	P=0.500	P=0.500
POLY 6	P=0.107	(e)	(e)	(e)	P=0.500	P=0.500
COCH-ARM / FISHERS	P=0.103	(e)	(e)	(e)	P=0.500	P=0.500
MAX-ISO-POLY-3	P=0.106	(e)	(e)	(e)	P=0.158	P=0.158

Experiment Number: 20725 - 02

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: MICE/B6C3F1

P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS

2,3-Butanedione

CAS Number: 431-03-8

Date Report Requested: 04/29/2016

Time Report Requested: 14:39:21

First Dose M/F: 07/28/08 / 07/28/08

Lab: BNW

STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN MICE(B6C3F1)  
TERMINAL SACRIFICE AT 14 WEEKS

DOSE	Females					
	CONTROL	6.25 ppm	12.5 ppm	25 ppm	50 ppm	100 ppm
<b>Nose: Olfactory Epithelium Atrophy</b>						
<b>LESION RATES</b>						
OVERALL (a)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	10/10 (100%)	10/10 (100%)
POLY-3 RATE (b)	0/10.00	0/10.00	0/10.00	0/10.00	10/10.00	10/10.00
POLY-3 PERCENT (g)	0%	0%	0%	0%	100%	100%
TERMINAL (d)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	10/10 (100%)	10/10 (100%)
FIRST INCIDENCE	---	---	---	---	96 (T)	96 (T)
<b>STATISTICAL TESTS</b>						
POLY 3	P<0.001**	(e)	(e)	(e)	P<0.001**	P<0.001**
POLY 1.5	P<0.001**	(e)	(e)	(e)	P<0.001**	P<0.001**
POLY 6	P<0.001**	(e)	(e)	(e)	P<0.001**	P<0.001**
COCH-ARM / FISHERS	P<0.001**	(e)	(e)	(e)	P<0.001**	P<0.001**
MAX-ISO-POLY-3	P<0.001**	(e)	(e)	(e)	(e)	(e)

Experiment Number: 20725 - 02  
 Test Type: 90-DAY  
 Route: RESPIRATORY EXPOSURE WHOLE BODY  
 Species/Strain: MICE/B6C3F1

P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS  
 2,3-Butanedione  
 CAS Number: 431-03-8

Date Report Requested: 04/29/2016  
 Time Report Requested: 14:39:21  
 First Dose M/F: 07/28/08 / 07/28/08  
 Lab: BNW

**STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN MICE(B6C3F1)  
 TERMINAL SACRIFICE AT 14 WEEKS**

DOSE	Females					
	CONTROL	6.25 ppm	12.5 ppm	25 ppm	50 ppm	100 ppm
<b>Nose: Olfactory Epithelium Metaplasia Respiratory</b>						
<b>LESION RATES</b>						
OVERALL (a)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	8/10 (80%)	9/10 (90%)
POLY-3 RATE (b)	0/10.00	0/10.00	0/10.00	0/10.00	8/10.00	9/10.00
POLY-3 PERCENT (g)	0%	0%	0%	0%	80%	90%
TERMINAL (d)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	8/10 (80%)	9/10 (90%)
FIRST INCIDENCE	---	---	---	---	96 (T)	96 (T)
<b>STATISTICAL TESTS</b>						
POLY 3	P<0.001**	(e)	(e)	(e)	P<0.001**	P<0.001**
POLY 1.5	P<0.001**	(e)	(e)	(e)	P<0.001**	P<0.001**
POLY 6	P<0.001**	(e)	(e)	(e)	P<0.001**	P<0.001**
COCH-ARM / FISHERS	P<0.001**	(e)	(e)	(e)	P<0.001**	P<0.001**
MAX-ISO-POLY-3	P<0.001**	(e)	(e)	(e)	P<0.001**	P<0.001**

Experiment Number: 20725 - 02

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: MICE/B6C3F1

P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS

2,3-Butanedione

CAS Number: 431-03-8

Date Report Requested: 04/29/2016

Time Report Requested: 14:39:21

First Dose M/F: 07/28/08 / 07/28/08

Lab: BNW

STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN MICE(B6C3F1)  
TERMINAL SACRIFICE AT 14 WEEKS

DOSE	Females					
	CONTROL	6.25 ppm	12.5 ppm	25 ppm	50 ppm	100 ppm
<b>Nose: Olfactory Epithelium</b>						
<b>Necrosis</b>						
<b>LESION RATES</b>						
OVERALL (a)	0/10 (0%)	0/10 (0%)	0/10 (0%)	1/10 (10%)	0/10 (0%)	0/10 (0%)
POLY-3 RATE (b)	0/10.00	0/10.00	0/10.00	1/10.00	0/10.00	0/10.00
POLY-3 PERCENT (g)	0%	0%	0%	10%	0%	0%
TERMINAL (d)	0/10 (0%)	0/10 (0%)	0/10 (0%)	1/10 (10%)	0/10 (0%)	0/10 (0%)
FIRST INCIDENCE	---	---	---	96 (T)	---	---
<b>STATISTICAL TESTS</b>						
POLY 3	P=0.697N	(e)	(e)	P=0.500	(e)	(e)
POLY 1.5	P=0.697N	(e)	(e)	P=0.500	(e)	(e)
POLY 6	P=0.697N	(e)	(e)	P=0.500	(e)	(e)
COCH-ARM / FISHERS	P=0.698N	(e)	(e)	P=0.500	(e)	(e)
MAX-ISO-POLY-3	P=0.282	(e)	(e)	P=0.158	(e)	(e)

Experiment Number: 20725 - 02

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: MICE/B6C3F1

P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS

2,3-Butanedione

CAS Number: 431-03-8

Date Report Requested: 04/29/2016

Time Report Requested: 14:39:21

First Dose M/F: 07/28/08 / 07/28/08

Lab: BNW

STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN MICE(B6C3F1)  
TERMINAL SACRIFICE AT 14 WEEKS

DOSE	Females					
	CONTROL	6.25 ppm	12.5 ppm	25 ppm	50 ppm	100 ppm
<b>Nose: Respiratory Epithelium Accumulation, Hyaline Droplet</b>						
<b>LESION RATES</b>						
OVERALL (a)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	2/10 (20%)
POLY-3 RATE (b)	0/10.00	0/10.00	0/10.00	0/10.00	0/10.00	2/10.00
POLY-3 PERCENT (g)	0%	0%	0%	0%	0%	20%
TERMINAL (d)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	2/10 (20%)
FIRST INCIDENCE	---	---	---	---	---	96 (T)
<b>STATISTICAL TESTS</b>						
POLY 3	P=0.008**	(e)	(e)	(e)	(e)	P=0.227
POLY 1.5	P=0.008**	(e)	(e)	(e)	(e)	P=0.227
POLY 6	P=0.008**	(e)	(e)	(e)	(e)	P=0.227
COCH-ARM / FISHERS	P=0.010**	(e)	(e)	(e)	(e)	P=0.237
MAX-ISO-POLY-3	P=0.005**	(e)	(e)	(e)	(e)	P=0.066



Experiment Number: 20725 - 02

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: MICE/B6C3F1

P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS

2,3-Butanedione

CAS Number: 431-03-8

Date Report Requested: 04/29/2016

Time Report Requested: 14:39:21

First Dose M/F: 07/28/08 / 07/28/08

Lab: BNW

STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN MICE(B6C3F1)  
TERMINAL SACRIFICE AT 14 WEEKS

DOSE	Females					
	CONTROL	6.25 ppm	12.5 ppm	25 ppm	50 ppm	100 ppm
<b>Nose: Respiratory Epithelium Degeneration</b>						
<b>LESION RATES</b>						
OVERALL (a)	0/10 (0%)	0/10 (0%)	0/10 (0%)	2/10 (20%)	0/10 (0%)	0/10 (0%)
POLY-3 RATE (b)	0/10.00	0/10.00	0/10.00	2/10.00	0/10.00	0/10.00
POLY-3 PERCENT (g)	0%	0%	0%	20%	0%	0%
TERMINAL (d)	0/10 (0%)	0/10 (0%)	0/10 (0%)	2/10 (20%)	0/10 (0%)	0/10 (0%)
FIRST INCIDENCE	---	---	---	96 (T)	---	---
<b>STATISTICAL TESTS</b>						
POLY 3	P=0.589N	(e)	(e)	P=0.227	(e)	(e)
POLY 1.5	P=0.589N	(e)	(e)	P=0.227	(e)	(e)
POLY 6	P=0.589N	(e)	(e)	P=0.227	(e)	(e)
COCH-ARM / FISHERS	P=0.586N	(e)	(e)	P=0.237	(e)	(e)
MAX-ISO-POLY-3	P=0.193	(e)	(e)	P=0.066	(e)	(e)

Experiment Number: 20725 - 02  
 Test Type: 90-DAY  
 Route: RESPIRATORY EXPOSURE WHOLE BODY  
 Species/Strain: MICE/B6C3F1

P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS  
 2,3-Butanedione  
 CAS Number: 431-03-8

Date Report Requested: 04/29/2016  
 Time Report Requested: 14:39:21  
 First Dose M/F: 07/28/08 / 07/28/08  
 Lab: BNW

**STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN MICE(B6C3F1)  
 TERMINAL SACRIFICE AT 14 WEEKS**

DOSE	Females					
	CONTROL	6.25 ppm	12.5 ppm	25 ppm	50 ppm	100 ppm
<b>Nose: Respiratory Epithelium Metaplasia</b>						
<b>LESION RATES</b>						
OVERALL (a)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	10/10 (100%)	10/10 (100%)
POLY-3 RATE (b)	0/10.00	0/10.00	0/10.00	0/10.00	10/10.00	10/10.00
POLY-3 PERCENT (g)	0%	0%	0%	0%	100%	100%
TERMINAL (d)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	10/10 (100%)	10/10 (100%)
FIRST INCIDENCE	---	---	---	---	96 (T)	96 (T)
<b>STATISTICAL TESTS</b>						
POLY 3	P<0.001**	(e)	(e)	(e)	P<0.001**	P<0.001**
POLY 1.5	P<0.001**	(e)	(e)	(e)	P<0.001**	P<0.001**
POLY 6	P<0.001**	(e)	(e)	(e)	P<0.001**	P<0.001**
COCH-ARM / FISHERS	P<0.001**	(e)	(e)	(e)	P<0.001**	P<0.001**
MAX-ISO-POLY-3	P<0.001**	(e)	(e)	(e)	(e)	(e)

Experiment Number: 20725 - 02

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: MICE/B6C3F1

## P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS

2,3-Butanedione

CAS Number: 431-03-8

Date Report Requested: 04/29/2016

Time Report Requested: 14:39:21

First Dose M/F: 07/28/08 / 07/28/08

Lab: BNW

**STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN MICE(B6C3F1)  
TERMINAL SACRIFICE AT 14 WEEKS**

DOSE	Females					
	CONTROL	6.25 ppm	12.5 ppm	25 ppm	50 ppm	100 ppm
<b>Nose: Respiratory Epithelium Necrosis</b>						
<b>LESION RATES</b>						
OVERALL (a)	0/10 (0%)	0/10 (0%)	0/10 (0%)	4/10 (40%)	10/10 (100%)	10/10 (100%)
POLY-3 RATE (b)	0/10.00	0/10.00	0/10.00	4/10.00	10/10.00	10/10.00
POLY-3 PERCENT (g)	0%	0%	0%	40%	100%	100%
TERMINAL (d)	0/10 (0%)	0/10 (0%)	0/10 (0%)	4/10 (40%)	10/10 (100%)	10/10 (100%)
FIRST INCIDENCE	---	---	---	96 (T)	96 (T)	96 (T)
<b>STATISTICAL TESTS</b>						
POLY 3	P<0.001**	(e)	(e)	P=0.033*	P<0.001**	P<0.001**
POLY 1.5	P<0.001**	(e)	(e)	P=0.033*	P<0.001**	P<0.001**
POLY 6	P<0.001**	(e)	(e)	P=0.033*	P<0.001**	P<0.001**
COCH-ARM / FISHERS	P<0.001**	(e)	(e)	P=0.043*	P<0.001**	P<0.001**
MAX-ISO-POLY-3	P<0.001**	(e)	(e)	P=0.007**	(e)	(e)

Experiment Number: 20725 - 02  
 Test Type: 90-DAY  
 Route: RESPIRATORY EXPOSURE WHOLE BODY  
 Species/Strain: MICE/B6C3F1

P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS  
 2,3-Butanedione  
 CAS Number: 431-03-8

Date Report Requested: 04/29/2016  
 Time Report Requested: 14:39:21  
 First Dose M/F: 07/28/08 / 07/28/08  
 Lab: BNW

**STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN MICE(B6C3F1)  
 TERMINAL SACRIFICE AT 14 WEEKS**

DOSE	Females					
	CONTROL	6.25 ppm	12.5 ppm	25 ppm	50 ppm	100 ppm
<b>Nose: Respiratory Epithelium Regeneration</b>						
<b>LESION RATES</b>						
OVERALL (a)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	9/10 (90%)	10/10 (100%)
POLY-3 RATE (b)	0/10.00	0/10.00	0/10.00	0/10.00	9/10.00	10/10.00
POLY-3 PERCENT (g)	0%	0%	0%	0%	90%	100%
TERMINAL (d)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	9/10 (90%)	10/10 (100%)
FIRST INCIDENCE	---	---	---	---	96 (T)	96 (T)
<b>STATISTICAL TESTS</b>						
POLY 3	P<0.001**	(e)	(e)	(e)	P<0.001**	P<0.001**
POLY 1.5	P<0.001**	(e)	(e)	(e)	P<0.001**	P<0.001**
POLY 6	P<0.001**	(e)	(e)	(e)	P<0.001**	P<0.001**
COCH-ARM / FISHERS	P<0.001**	(e)	(e)	(e)	P<0.001**	P<0.001**
MAX-ISO-POLY-3	P<0.001**	(e)	(e)	(e)	P<0.001**	(e)

Experiment Number: 20725 - 02  
 Test Type: 90-DAY  
 Route: RESPIRATORY EXPOSURE WHOLE BODY  
 Species/Strain: MICE/B6C3F1

P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS  
 2,3-Butanedione  
 CAS Number: 431-03-8

Date Report Requested: 04/29/2016  
 Time Report Requested: 14:39:21  
 First Dose M/F: 07/28/08 / 07/28/08  
 Lab: BNW

**STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN MICE(B6C3F1)  
 TERMINAL SACRIFICE AT 14 WEEKS**

DOSE	Females					
	CONTROL	6.25 ppm	12.5 ppm	25 ppm	50 ppm	100 ppm
<b>Nose: Septum Necrosis</b>						
<b>LESION RATES</b>						
OVERALL (a)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	1/10 (10%)
POLY-3 RATE (b)	0/10.00	0/10.00	0/10.00	0/10.00	0/10.00	1/10.00
POLY-3 PERCENT (g)	0%	0%	0%	0%	0%	10%
TERMINAL (d)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	1/10 (10%)
FIRST INCIDENCE	---	---	---	---	---	96 (T)
<b>STATISTICAL TESTS</b>						
POLY 3	P=0.107	(e)	(e)	(e)	(e)	P=0.500
POLY 1.5	P=0.107	(e)	(e)	(e)	(e)	P=0.500
POLY 6	P=0.107	(e)	(e)	(e)	(e)	P=0.500
COCH-ARM / FISHERS	P=0.105	(e)	(e)	(e)	(e)	P=0.500
MAX-ISO-POLY-3	P=0.041*	(e)	(e)	(e)	(e)	P=0.158

Experiment Number: 20725 - 02

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: MICE/B6C3F1

P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS

2,3-Butanedione

CAS Number: 431-03-8

Date Report Requested: 04/29/2016

Time Report Requested: 14:39:21

First Dose M/F: 07/28/08 / 07/28/08

Lab: BNW

STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN MICE(B6C3F1)  
TERMINAL SACRIFICE AT 14 WEEKS

DOSE	Females					
	CONTROL	6.25 ppm	12.5 ppm	25 ppm	50 ppm	100 ppm
<b>Nose: Septum Perforation</b>						
<b>LESION RATES</b>						
OVERALL (a)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)
POLY-3 RATE (b)	0/10.00	0/10.00	0/10.00	0/10.00	0/10.00	0/10.00
POLY-3 PERCENT (g)	0%	0%	0%	0%	0%	0%
TERMINAL (d)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)
FIRST INCIDENCE	---	---	---	---	---	---
<b>STATISTICAL TESTS</b>						
POLY 3	(n)	(n)	(n)	(n)	(n)	(n)
POLY 1.5	(n)	(n)	(n)	(n)	(n)	(n)
POLY 6	(n)	(n)	(n)	(n)	(n)	(n)
COCH-ARM / FISHERS	(n)	(n)	(n)	(n)	(n)	(n)
MAX-ISO-POLY-3	(n)	(n)	(n)	(n)	(n)	(n)

Experiment Number: 20725 - 02  
 Test Type: 90-DAY  
 Route: RESPIRATORY EXPOSURE WHOLE BODY  
 Species/Strain: MICE/B6C3F1

P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS  
 2,3-Butanedione  
 CAS Number: 431-03-8

Date Report Requested: 04/29/2016  
 Time Report Requested: 14:39:21  
 First Dose M/F: 07/28/08 / 07/28/08  
 Lab: BNW

**STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN MICE(B6C3F1)  
 TERMINAL SACRIFICE AT 14 WEEKS**

DOSE	Females					
	CONTROL	6.25 ppm	12.5 ppm	25 ppm	50 ppm	100 ppm
<b>Nose: Turbinate Atrophy</b>						
<b>LESION RATES</b>						
OVERALL (a)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	10/10 (100%)	10/10 (100%)
POLY-3 RATE (b)	0/10.00	0/10.00	0/10.00	0/10.00	10/10.00	10/10.00
POLY-3 PERCENT (g)	0%	0%	0%	0%	100%	100%
TERMINAL (d)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	10/10 (100%)	10/10 (100%)
FIRST INCIDENCE	---	---	---	---	96 (T)	96 (T)
<b>STATISTICAL TESTS</b>						
POLY 3	P<0.001**	(e)	(e)	(e)	P<0.001**	P<0.001**
POLY 1.5	P<0.001**	(e)	(e)	(e)	P<0.001**	P<0.001**
POLY 6	P<0.001**	(e)	(e)	(e)	P<0.001**	P<0.001**
COCH-ARM / FISHERS	P<0.001**	(e)	(e)	(e)	P<0.001**	P<0.001**
MAX-ISO-POLY-3	P<0.001**	(e)	(e)	(e)	(e)	(e)

Experiment Number: 20725 - 02  
 Test Type: 90-DAY  
 Route: RESPIRATORY EXPOSURE WHOLE BODY  
 Species/Strain: MICE/B6C3F1

P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS  
 2,3-Butanedione  
 CAS Number: 431-03-8

Date Report Requested: 04/29/2016  
 Time Report Requested: 14:39:21  
 First Dose M/F: 07/28/08 / 07/28/08  
 Lab: BNW

**STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN MICE(B6C3F1)  
 TERMINAL SACRIFICE AT 14 WEEKS**

DOSE	Females					
	CONTROL	6.25 ppm	12.5 ppm	25 ppm	50 ppm	100 ppm
<b>Nose: Turbinate Necrosis</b>						
<b>LESION RATES</b>						
OVERALL (a)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	4/10 (40%)	8/10 (80%)
POLY-3 RATE (b)	0/10.00	0/10.00	0/10.00	0/10.00	4/10.00	8/10.00
POLY-3 PERCENT (g)	0%	0%	0%	0%	40%	80%
TERMINAL (d)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	4/10 (40%)	8/10 (80%)
FIRST INCIDENCE	---	---	---	---	96 (T)	96 (T)
<b>STATISTICAL TESTS</b>						
POLY 3	P<0.001**	(e)	(e)	(e)	P=0.033*	P<0.001**
POLY 1.5	P<0.001**	(e)	(e)	(e)	P=0.033*	P<0.001**
POLY 6	P<0.001**	(e)	(e)	(e)	P=0.033*	P<0.001**
COCH-ARM / FISHERS	P<0.001**	(e)	(e)	(e)	P=0.043*	P<0.001**
MAX-ISO-POLY-3	P<0.001**	(e)	(e)	(e)	P=0.007**	P<0.001**



Experiment Number: 20725 - 02  
 Test Type: 90-DAY  
 Route: RESPIRATORY EXPOSURE WHOLE BODY  
 Species/Strain: MICE/B6C3F1

P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS  
 2,3-Butanedione  
 CAS Number: 431-03-8

Date Report Requested: 04/29/2016  
 Time Report Requested: 14:39:21  
 First Dose M/F: 07/28/08 / 07/28/08  
 Lab: BNW

**STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN MICE(B6C3F1)  
 TERMINAL SACRIFICE AT 14 WEEKS**

DOSE	Females					
	CONTROL	6.25 ppm	12.5 ppm	25 ppm	50 ppm	100 ppm
<b>Trachea Inflammation Chronic</b>						
<b>LESION RATES</b>						
OVERALL (a)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	7/10 (70%)
POLY-3 RATE (b)	0/10.00	0/10.00	0/10.00	0/10.00	0/10.00	7/10.00
POLY-3 PERCENT (g)	0%	0%	0%	0%	0%	70%
TERMINAL (d)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	7/10 (70%)
FIRST INCIDENCE	---	---	---	---	---	96 (T)
<b>STATISTICAL TESTS</b>						
POLY 3	P<0.001**	(e)	(e)	(e)	(e)	P<0.001**
POLY 1.5	P<0.001**	(e)	(e)	(e)	(e)	P<0.001**
POLY 6	P<0.001**	(e)	(e)	(e)	(e)	P<0.001**
COCH-ARM / FISHERS	P<0.001**	(e)	(e)	(e)	(e)	P=0.002**
MAX-ISO-POLY-3	P<0.001**	(e)	(e)	(e)	(e)	P<0.001**

Experiment Number: 20725 - 02  
 Test Type: 90-DAY  
 Route: RESPIRATORY EXPOSURE WHOLE BODY  
 Species/Strain: MICE/B6C3F1

P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS  
 2,3-Butanedione  
 CAS Number: 431-03-8

Date Report Requested: 04/29/2016  
 Time Report Requested: 14:39:21  
 First Dose M/F: 07/28/08 / 07/28/08  
 Lab: BNW

**STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN MICE(B6C3F1)  
 TERMINAL SACRIFICE AT 14 WEEKS**

DOSE	Females					
	CONTROL	6.25 ppm	12.5 ppm	25 ppm	50 ppm	100 ppm
<b>Trachea: Epithelium Degeneration</b>						
<b>LESION RATES</b>						
OVERALL (a)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	3/10 (30%)	8/10 (80%)
POLY-3 RATE (b)	0/10.00	0/10.00	0/10.00	0/10.00	3/10.00	8/10.00
POLY-3 PERCENT (g)	0%	0%	0%	0%	30%	80%
TERMINAL (d)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	3/10 (30%)	8/10 (80%)
FIRST INCIDENCE	---	---	---	---	96 (T)	96 (T)
<b>STATISTICAL TESTS</b>						
POLY 3	P<0.001**	(e)	(e)	(e)	P=0.095	P<0.001**
POLY 1.5	P<0.001**	(e)	(e)	(e)	P=0.095	P<0.001**
POLY 6	P<0.001**	(e)	(e)	(e)	P=0.095	P<0.001**
COCH-ARM / FISHERS	P<0.001**	(e)	(e)	(e)	P=0.105	P<0.001**
MAX-ISO-POLY-3	P<0.001**	(e)	(e)	(e)	P=0.025*	P<0.001**

Experiment Number: 20725 - 02  
 Test Type: 90-DAY  
 Route: RESPIRATORY EXPOSURE WHOLE BODY  
 Species/Strain: MICE/B6C3F1

P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS  
 2,3-Butanedione  
 CAS Number: 431-03-8

Date Report Requested: 04/29/2016  
 Time Report Requested: 14:39:21  
 First Dose M/F: 07/28/08 / 07/28/08  
 Lab: BNW

**STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN MICE(B6C3F1)  
 TERMINAL SACRIFICE AT 14 WEEKS**

DOSE	Females					
	CONTROL	6.25 ppm	12.5 ppm	25 ppm	50 ppm	100 ppm
Trachea: Epithelium Hyperplasia						
<b>LESION RATES</b>						
OVERALL (a)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	2/10 (20%)	9/10 (90%)
POLY-3 RATE (b)	0/10.00	0/10.00	0/10.00	0/10.00	2/10.00	9/10.00
POLY-3 PERCENT (g)	0%	0%	0%	0%	20%	90%
TERMINAL (d)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	2/10 (20%)	9/10 (90%)
FIRST INCIDENCE	---	---	---	---	96 (T)	96 (T)
<b>STATISTICAL TESTS</b>						
POLY 3	P<0.001**	(e)	(e)	(e)	P=0.227	P<0.001**
POLY 1.5	P<0.001**	(e)	(e)	(e)	P=0.227	P<0.001**
POLY 6	P<0.001**	(e)	(e)	(e)	P=0.227	P<0.001**
COCH-ARM / FISHERS	P<0.001**	(e)	(e)	(e)	P=0.237	P<0.001**
MAX-ISO-POLY-3	P<0.001**	(e)	(e)	(e)	P=0.066	P<0.001**

Experiment Number: 20725 - 02  
 Test Type: 90-DAY  
 Route: RESPIRATORY EXPOSURE WHOLE BODY  
 Species/Strain: MICE/B6C3F1

P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS  
 2,3-Butanedione  
 CAS Number: 431-03-8

Date Report Requested: 04/29/2016  
 Time Report Requested: 14:39:21  
 First Dose M/F: 07/28/08 / 07/28/08  
 Lab: BNW

**STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN MICE(B6C3F1)  
 TERMINAL SACRIFICE AT 14 WEEKS**

DOSE	Females					
	CONTROL	6.25 ppm	12.5 ppm	25 ppm	50 ppm	100 ppm
<b>Trachea: Epithelium</b>						
<b>Metaplasia Atypical Squamous</b>						
<b>LESION RATES</b>						
OVERALL (a)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	10/10 (100%)
POLY-3 RATE (b)	0/10.00	0/10.00	0/10.00	0/10.00	0/10.00	10/10.00
POLY-3 PERCENT (g)	0%	0%	0%	0%	0%	100%
TERMINAL (d)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	10/10 (100%)
FIRST INCIDENCE	---	---	---	---	---	96 (T)
<b>STATISTICAL TESTS</b>						
POLY 3	P<0.001**	(e)	(e)	(e)	(e)	P<0.001**
POLY 1.5	P<0.001**	(e)	(e)	(e)	(e)	P<0.001**
POLY 6	P<0.001**	(e)	(e)	(e)	(e)	P<0.001**
COCH-ARM / FISHERS	P<0.001**	(e)	(e)	(e)	(e)	P<0.001**
MAX-ISO-POLY-3	P<0.001**	(e)	(e)	(e)	(e)	(e)

Experiment Number: 20725 - 02  
 Test Type: 90-DAY  
 Route: RESPIRATORY EXPOSURE WHOLE BODY  
 Species/Strain: MICE/B6C3F1

P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS  
 2,3-Butanedione  
 CAS Number: 431-03-8

Date Report Requested: 04/29/2016  
 Time Report Requested: 14:39:21  
 First Dose M/F: 07/28/08 / 07/28/08  
 Lab: BNW

**STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN MICE(B6C3F1)  
 TERMINAL SACRIFICE AT 14 WEEKS**

DOSE	Females					
	CONTROL	6.25 ppm	12.5 ppm	25 ppm	50 ppm	100 ppm
<b>Trachea: Epithelium Regeneration</b>						
<b>LESION RATES</b>						
OVERALL (a)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	7/10 (70%)	0/10 (0%)
POLY-3 RATE (b)	0/10.00	0/10.00	0/10.00	0/10.00	7/10.00	0/10.00
POLY-3 PERCENT (g)	0%	0%	0%	0%	70%	0%
TERMINAL (d)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	7/10 (70%)	0/10 (0%)
FIRST INCIDENCE	---	---	---	---	96 (T)	---
<b>STATISTICAL TESTS</b>						
POLY 3	P=0.030*	(e)	(e)	(e)	P<0.001**	(e)
POLY 1.5	P=0.030*	(e)	(e)	(e)	P<0.001**	(e)
POLY 6	P=0.030*	(e)	(e)	(e)	P<0.001**	(e)
COCH-ARM / FISHERS	P=0.124	(e)	(e)	(e)	P=0.002**	(e)
MAX-ISO-POLY-3	P<0.001**	(e)	(e)	(e)	P<0.001**	(e)

**Experiment Number:** 20725 - 02  
**Test Type:** 90-DAY  
**Route:** RESPIRATORY EXPOSURE WHOLE BODY  
**Species/Strain:** MICE/B6C3F1

**P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS**  
2,3-Butanedione  
**CAS Number:** 431-03-8

**Date Report Requested:** 04/29/2016  
**Time Report Requested:** 14:39:21  
**First Dose M/F:** 07/28/08 / 07/28/08  
**Lab:** BNW

## **LEGEND**

- (a) Number of tumor-bearing animals/number of animals examined at site.
  - (b) Number of tumor-bearing animals/Poly-3 number
  - (d) Observed incidence at terminal kill.
  - (e) Value of statistic cannot be computed.
  - (f) Beneath the control incidence are the P-values associated with the trend test. Beneath the dosed group incidence are the P-values corresponding to pairwise comparisons between the controls and that dosed group.
  - (g) Poly-3 adjusted lifetime tumor incidence.
  - (n) No statistics are calculated if all dose groups have fewer than two tumors.
  - (I) Interim sacrifice
  - (T) Terminal sacrifice
  - # Tumor rates based on numbers of animals necropsied.
  - \* To the right of any statistical result, indicates significance at ( $P \leq 0.05$ ).
  - \*\* To the right of any statistical result, indicates significance at ( $P \leq 0.01$ ).
  - N Indicates a negative trend for all tests
- The Cochran-Armitage and Fishers exact tests compare directly the overall incidence rates.

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