

Experiment Number: 60311 - 03
Test Type: 90-DAY
Route: RESPIRATORY EXPOSURE WHOLE BODY
Species/Strain: RATS/F 344/N

P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS

Cobalt
CAS Number: 7440-48-4

Date Report Requested: 08/16/2012
Time Report Requested: 08:59:19
First Dose M/F: 03/08/05 / 03/07/05
Lab: BNW

F2_R2

NTP Study Number: C60311
Lock Date: 11/29/2005
Cage Range: ALL
Date Range: ALL
Reasons For Removal: ALL
Removal Date Range: ALL
Treatment Groups: Include ALL
Study Gender: Both
TDMSE Version: 2.6.0.0_007
PWG Approval Date: NONE

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SUMMARY OF STATISTICALLY SIGNIFICANT ($P \leq .05$) RESULTS IN THE ANALYSIS OF COBALT

MALE RATS

Organ

Kidney

Liver

Lung

Lung: Alveolar Epithelium

Lung: Alveolus

Lung: Bronchiole, Epithelium

Nose: Olfactory Epithelium

Nose: Respiratory Epithelium

Nose: Turbinate

FEMALE RATS

Organ

Liver

Lung

Lung: Alveolus

Lung: Bronchiole, Epithelium

Nose: Olfactory Epithelium

Nose: Respiratory Epithelium

Nose: Turbinate

Ovary

Morphology

Nephropathy

Hepatodiaphragmatic Nodule

Inflammation Chronic

Hyperplasia

Hemorrhage

Proteinosis

Hyperplasia

Degeneration

Hyperplasia

Hyperplasia

Atrophy

Morphology

Hepatodiaphragmatic Nodule

Inflammation Chronic

Hemorrhage

Proteinosis

Hyperplasia

Degeneration

Hyperplasia

Hyperplasia

Atrophy

Cyst

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STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN RATS(F 344/N)
TERMINAL SACRIFICE AT 14 WEEKS

DOSE	Males				
	control	0.625 MG/M3	1.25 MG/M3	2.5 MG/M3	5.0 MG/M3
Eye: Retina					
Atrophy					
LESION RATES					
OVERALL (a)	1/10 (10%)	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	0/10.00
POLY-3 PERCENT (g)	10%	0%	0%	0%	0%
TERMINAL (d)	1/10 (10%)	0/0 (0%)	0/0 (0%)	0/0 (0%)	0/10 (0%)
FIRST INCIDENCE	93 (T)	---	---	---	---
STATISTICAL TESTS					
POLY 3	(e)	(e)	(e)	(e)	P=0.500N
POLY 1.5	(e)	(e)	(e)	(e)	P=0.500N
POLY 6	(e)	(e)	(e)	(e)	P=0.500N
COCH-ARM / FISHERS	P=0.304N	(e)	(e)	(e)	P=0.500N
MAX-ISO-POLY-3	(e)	(e)	(e)	(e)	P=0.158N

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STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN RATS(F 344/N)
TERMINAL SACRIFICE AT 14 WEEKS

DOSE	Males				
	control	0.625 MG/M3	1.25 MG/M3	2.5 MG/M3	5.0 MG/M3
Harderian Gland Inflammation Chronic					
LESION RATES					
OVERALL (a)	1/10 (10%)	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	0/10.00
POLY-3 PERCENT (g)	10%	0%	0%	0%	0%
TERMINAL (d)	1/10 (10%)	0/0 (0%)	0/0 (0%)	0/0 (0%)	0/10 (0%)
FIRST INCIDENCE	93 (T)	---	---	---	---
STATISTICAL TESTS					
POLY 3	(e)	(e)	(e)	(e)	P=0.500N
POLY 1.5	(e)	(e)	(e)	(e)	P=0.500N
POLY 6	(e)	(e)	(e)	(e)	P=0.500N
COCH-ARM / FISHERS	P=0.304N	(e)	(e)	(e)	P=0.500N
MAX-ISO-POLY-3	(e)	(e)	(e)	(e)	P=0.158N

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STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN RATS(F 344/N)
TERMINAL SACRIFICE AT 14 WEEKS

DOSE	Males				
	control	0.625 MG/M3	1.25 MG/M3	2.5 MG/M3	5.0 MG/M3
Heart					
Cardiomyopathy					
LESION RATES					
OVERALL (a)	8/10 (80%)	0/0 (0%)	0/0 (0%)	0/0 (0%)	5/10 (50%)
POLY-3 RATE (b)	8/10.00	0/0.00	0/0.00	0/0.00	5/10.00
POLY-3 PERCENT (g)	80%	0%	0%	0%	50%
TERMINAL (d)	8/10 (80%)	0/0 (0%)	0/0 (0%)	0/0 (0%)	5/10 (50%)
FIRST INCIDENCE	93 (T)	---	---	---	93 (T)
STATISTICAL TESTS					
POLY 3	(e)	(e)	(e)	(e)	P=0.174N
POLY 1.5	(e)	(e)	(e)	(e)	P=0.174N
POLY 6	(e)	(e)	(e)	(e)	P=0.174N
COCH-ARM / FISHERS	P=0.121N	(e)	(e)	(e)	P=0.175N
MAX-ISO-POLY-3	(e)	(e)	(e)	(e)	P=0.079N

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**STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN RATS(F 344/N)
 TERMINAL SACRIFICE AT 14 WEEKS**

DOSE	Males				
	control	0.625 MG/M3	1.25 MG/M3	2.5 MG/M3	5.0 MG/M3
Kidney					
Nephropathy					
LESION RATES					
OVERALL (a)	4/9 (44%)	0/0 (0%)	0/0 (0%)	0/0 (0%)	1/10 (10%)
POLY-3 RATE (b)	4/9.00	0/0.00	0/0.00	0/0.00	1/10.00
POLY-3 PERCENT (g)	44.4%	0%	0%	0%	10%
TERMINAL (d)	4/9 (44%)	0/0 (0%)	0/0 (0%)	0/0 (0%)	1/10 (10%)
FIRST INCIDENCE	93 (T)	---	---	---	93 (T)
STATISTICAL TESTS					
POLY 3	(e)	(e)	(e)	(e)	P=0.113N
POLY 1.5	(e)	(e)	(e)	(e)	P=0.113N
POLY 6	(e)	(e)	(e)	(e)	P=0.113N
COCH-ARM / FISHERS	P=0.075N	(e)	(e)	(e)	P=0.119N
MAX-ISO-POLY-3	(e)	(e)	(e)	(e)	P=0.044N*

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STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN RATS(F 344/N)
TERMINAL SACRIFICE AT 14 WEEKS

DOSE	Males				
	control	0.625 MG/M3	1.25 MG/M3	2.5 MG/M3	5.0 MG/M3
Liver					
Hepatodiaphragmatic Nodule					
LESION RATES					
OVERALL (a)	1/10 (10%)	0/0 (0%)	0/0 (0%)	1/1 (100%)	0/10 (0%)
POLY-3 RATE (b)	1/10.00	0/0.00	0/0.00	1/1.00	0/10.00
POLY-3 PERCENT (g)	10%	0%	0%	100%	0%
TERMINAL (d)	1/10 (10%)	0/0 (0%)	0/0 (0%)	1/1 (100%)	0/10 (0%)
FIRST INCIDENCE	93 (T)	---	---	93 (T)	---
STATISTICAL TESTS					
POLY 3	(e)	(e)	(e)	P=0.146	P=0.500N
POLY 1.5	(e)	(e)	(e)	P=0.146	P=0.500N
POLY 6	(e)	(e)	(e)	P=0.146	P=0.500N
COCH-ARM / FISHERS	P=0.352N	(e)	(e)	P=0.182	P=0.500N
MAX-ISO-POLY-3	(e)	(e)	(e)	P=0.022*	P=0.158N

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STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN RATS(F 344/N)
TERMINAL SACRIFICE AT 14 WEEKS

DOSE	Males				
	control	0.625 MG/M3	1.25 MG/M3	2.5 MG/M3	5.0 MG/M3
Lung					
Inflammation Chronic					
LESION RATES					
OVERALL (a)	0/10 (0%)	10/10 (100%)	10/10 (100%)	10/10 (100%)	10/10 (100%)
POLY-3 RATE (b)	0/10.00	10/10.00	10/10.00	10/10.00	10/10.00
POLY-3 PERCENT (g)	0%	100%	100%	100%	100%
TERMINAL (d)	0/10 (0%)	10/10 (100%)	10/10 (100%)	10/10 (100%)	10/10 (100%)
FIRST INCIDENCE	---	93 (T)	93 (T)	93 (T)	93 (T)
STATISTICAL TESTS					
POLY 3	P<0.001**	P<0.001**	P<0.001**	P<0.001**	P<0.001**
POLY 1.5	P<0.001**	P<0.001**	P<0.001**	P<0.001**	P<0.001**
POLY 6	P<0.001**	P<0.001**	P<0.001**	P<0.001**	P<0.001**
COCH-ARM / FISHERS	P<0.001**	P<0.001**	P<0.001**	P<0.001**	P<0.001**
MAX-ISO-POLY-3	P<0.001**	(e)	(e)	(e)	(e)

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**STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN RATS(F 344/N)
TERMINAL SACRIFICE AT 14 WEEKS**

DOSE	Males				
	control	0.625 MG/M3	1.25 MG/M3	2.5 MG/M3	5.0 MG/M3
Lung: Alveolar Epithelium Hyperplasia					
LESION RATES					
OVERALL (a)	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	2/10.00
POLY-3 PERCENT (g)	0%	0%	0%	0%	20%
TERMINAL (d)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	2/10 (20%)
FIRST INCIDENCE	---	---	---	---	93 (T)
STATISTICAL TESTS					
POLY 3	P=0.017*	(e)	(e)	(e)	P=0.227
POLY 1.5	P=0.017*	(e)	(e)	(e)	P=0.227
POLY 6	P=0.017*	(e)	(e)	(e)	P=0.227
COCH-ARM / FISHERS	P=0.021*	(e)	(e)	(e)	P=0.237
MAX-ISO-POLY-3	P=0.009**	(e)	(e)	(e)	P=0.066

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STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN RATS(F 344/N)
TERMINAL SACRIFICE AT 14 WEEKS

DOSE	Males				
	control	0.625 MG/M3	1.25 MG/M3	2.5 MG/M3	5.0 MG/M3
Lung: Alveolus Hemorrhage					
LESION RATES					
OVERALL (a)	2/10 (20%)	0/10 (0%)	2/10 (20%)	4/10 (40%)	4/10 (40%)
POLY-3 RATE (b)	2/10.00	0/10.00	2/10.00	4/10.00	4/10.00
POLY-3 PERCENT (g)	20%	0%	20%	40%	40%
TERMINAL (d)	2/10 (20%)	0/10 (0%)	2/10 (20%)	4/10 (40%)	4/10 (40%)
FIRST INCIDENCE	93 (T)	---	93 (T)	93 (T)	93 (T)
STATISTICAL TESTS					
POLY 3	P=0.048*	P=0.227N	P=0.702	P=0.318	P=0.318
POLY 1.5	P=0.048*	P=0.227N	P=0.702	P=0.318	P=0.318
POLY 6	P=0.048*	P=0.227N	P=0.702	P=0.318	P=0.318
COCH-ARM / FISHERS	P=0.051	P=0.237N	P=0.709N	P=0.314	P=0.314
MAX-ISO-POLY-3	P=0.048*	P=0.066N	P=1.000	P=0.172	P=0.172

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**STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN RATS(F 344/N)
 TERMINAL SACRIFICE AT 14 WEEKS**

DOSE	Males				
	control	0.625 MG/M3	1.25 MG/M3	2.5 MG/M3	5.0 MG/M3
Lung: Alveolus Proteinosis					
LESION RATES					
OVERALL (a)	0/10 (0%)	10/10 (100%)	10/10 (100%)	10/10 (100%)	10/10 (100%)
POLY-3 RATE (b)	0/10.00	10/10.00	10/10.00	10/10.00	10/10.00
POLY-3 PERCENT (g)	0%	100%	100%	100%	100%
TERMINAL (d)	0/10 (0%)	10/10 (100%)	10/10 (100%)	10/10 (100%)	10/10 (100%)
FIRST INCIDENCE	---	93 (T)	93 (T)	93 (T)	93 (T)
STATISTICAL TESTS					
POLY 3	P<0.001**	P<0.001**	P<0.001**	P<0.001**	P<0.001**
POLY 1.5	P<0.001**	P<0.001**	P<0.001**	P<0.001**	P<0.001**
POLY 6	P<0.001**	P<0.001**	P<0.001**	P<0.001**	P<0.001**
COCH-ARM / FISHERS	P<0.001**	P<0.001**	P<0.001**	P<0.001**	P<0.001**
MAX-ISO-POLY-3	P<0.001**	(e)	(e)	(e)	(e)

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Species/Strain: RATS/F 344/N

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STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN RATS(F 344/N)
TERMINAL SACRIFICE AT 14 WEEKS

DOSE	Males				
	control	0.625 MG/M3	1.25 MG/M3	2.5 MG/M3	5.0 MG/M3
Lung: Bronchiole, Epithelium Hyperplasia					
LESION RATES					
OVERALL (a)	0/10 (0%)	0/10 (0%)	10/10 (100%)	10/10 (100%)	10/10 (100%)
POLY-3 RATE (b)	0/10.00	0/10.00	10/10.00	10/10.00	10/10.00
POLY-3 PERCENT (g)	0%	0%	100%	100%	100%
TERMINAL (d)	0/10 (0%)	0/10 (0%)	10/10 (100%)	10/10 (100%)	10/10 (100%)
FIRST INCIDENCE	---	---	93 (T)	93 (T)	93 (T)
STATISTICAL TESTS					
POLY 3	P<0.001**	(e)	P<0.001**	P<0.001**	P<0.001**
POLY 1.5	P<0.001**	(e)	P<0.001**	P<0.001**	P<0.001**
POLY 6	P<0.001**	(e)	P<0.001**	P<0.001**	P<0.001**
COCH-ARM / FISHERS	P<0.001**	(e)	P<0.001**	P<0.001**	P<0.001**
MAX-ISO-POLY-3	P<0.001**	(e)	(e)	(e)	(e)

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STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN RATS(F 344/N)
TERMINAL SACRIFICE AT 14 WEEKS

DOSE	Males				
	control	0.625 MG/M3	1.25 MG/M3	2.5 MG/M3	5.0 MG/M3
Lymph Node: Pancreatic Pigmentation					
LESION RATES					
OVERALL (a)	0/0 (0%)	0/0 (0%)	0/0 (0%)	0/0 (0%)	1/1 (100%)
POLY-3 RATE (b)	0/0.00	0/0.00	0/0.00	0/0.00	1/1.00
POLY-3 PERCENT (g)	0%	0%	0%	0%	100%
TERMINAL (d)	0/0 (0%)	0/0 (0%)	0/0 (0%)	0/0 (0%)	1/1 (100%)
FIRST INCIDENCE	---	---	---	---	93 (T)
STATISTICAL TESTS					
POLY 3	(e)	(e)	(e)	(e)	(e)
POLY 1.5	(e)	(e)	(e)	(e)	(e)
POLY 6	(e)	(e)	(e)	(e)	(e)
COCH-ARM / FISHERS	(e)	(e)	(e)	(e)	(e)
MAX-ISO-POLY-3	(e)	(e)	(e)	(e)	(e)

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STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN RATS(F 344/N)
TERMINAL SACRIFICE AT 14 WEEKS

DOSE	Males				
	control	0.625 MG/M3	1.25 MG/M3	2.5 MG/M3	5.0 MG/M3
Nose: Olfactory Epithelium Degeneration					
LESION RATES					
OVERALL (a)	0/10 (0%)	0/10 (0%)	2/10 (20%)	9/10 (90%)	10/10 (100%)
POLY-3 RATE (b)	0/10.00	0/10.00	2/10.00	9/10.00	10/10.00
POLY-3 PERCENT (g)	0%	0%	20%	90%	100%
TERMINAL (d)	0/10 (0%)	0/10 (0%)	2/10 (20%)	9/10 (90%)	10/10 (100%)
FIRST INCIDENCE	---	---	93 (T)	93 (T)	93 (T)
STATISTICAL TESTS					
POLY 3	P<0.001**	(e)	P=0.227	P<0.001**	P<0.001**
POLY 1.5	P<0.001**	(e)	P=0.227	P<0.001**	P<0.001**
POLY 6	P<0.001**	(e)	P=0.227	P<0.001**	P<0.001**
COCH-ARM / FISHERS	P<0.001**	(e)	P=0.237	P<0.001**	P<0.001**
MAX-ISO-POLY-3	P<0.001**	(e)	P=0.066	P<0.001**	(e)

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STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN RATS(F 344/N)
TERMINAL SACRIFICE AT 14 WEEKS

DOSE	Males				
	control	0.625 MG/M3	1.25 MG/M3	2.5 MG/M3	5.0 MG/M3
Nose: Olfactory Epithelium Hyperplasia					
LESION RATES					
OVERALL (a)	0/10 (0%)	0/10 (0%)	2/10 (20%)	6/10 (60%)	10/10 (100%)
POLY-3 RATE (b)	0/10.00	0/10.00	2/10.00	6/10.00	10/10.00
POLY-3 PERCENT (g)	0%	0%	20%	60%	100%
TERMINAL (d)	0/10 (0%)	0/10 (0%)	2/10 (20%)	6/10 (60%)	10/10 (100%)
FIRST INCIDENCE	---	---	93 (T)	93 (T)	93 (T)
STATISTICAL TESTS					
POLY 3	P<0.001**	(e)	P=0.227	P<0.001**	P<0.001**
POLY 1.5	P<0.001**	(e)	P=0.227	P<0.001**	P<0.001**
POLY 6	P<0.001**	(e)	P=0.227	P<0.001**	P<0.001**
COCH-ARM / FISHERS	P<0.001**	(e)	P=0.237	P=0.005**	P<0.001**
MAX-ISO-POLY-3	P<0.001**	(e)	P=0.066	P<0.001**	(e)

Experiment Number: 60311 - 03

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/F 344/N

P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS

Cobalt

CAS Number: 7440-48-4

Date Report Requested: 08/16/2012

Time Report Requested: 08:59:19

First Dose M/F: 03/08/05 / 03/07/05

Lab: BNW

**STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN RATS(F 344/N)
TERMINAL SACRIFICE AT 14 WEEKS**

DOSE	Males				
	control	0.625 MG/M3	1.25 MG/M3	2.5 MG/M3	5.0 MG/M3
Nose: Respiratory Epithelium Hyperplasia					
LESION RATES					
OVERALL (a)	0/10 (0%)	0/10 (0%)	3/10 (30%)	9/10 (90%)	10/10 (100%)
POLY-3 RATE (b)	0/10.00	0/10.00	3/10.00	9/10.00	10/10.00
POLY-3 PERCENT (g)	0%	0%	30%	90%	100%
TERMINAL (d)	0/10 (0%)	0/10 (0%)	3/10 (30%)	9/10 (90%)	10/10 (100%)
FIRST INCIDENCE	---	---	93 (T)	93 (T)	93 (T)
STATISTICAL TESTS					
POLY 3	P<0.001**	(e)	P=0.095	P<0.001**	P<0.001**
POLY 1.5	P<0.001**	(e)	P=0.095	P<0.001**	P<0.001**
POLY 6	P<0.001**	(e)	P=0.095	P<0.001**	P<0.001**
COCH-ARM / FISHERS	P<0.001**	(e)	P=0.105	P<0.001**	P<0.001**
MAX-ISO-POLY-3	P<0.001**	(e)	P=0.025*	P<0.001**	(e)

Experiment Number: 60311 - 03
 Test Type: 90-DAY
 Route: RESPIRATORY EXPOSURE WHOLE BODY
 Species/Strain: RATS/F 344/N

P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS
 Cobalt
 CAS Number: 7440-48-4

Date Report Requested: 08/16/2012
 Time Report Requested: 08:59:19
 First Dose M/F: 03/08/05 / 03/07/05
 Lab: BNW

**STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN RATS(F 344/N)
 TERMINAL SACRIFICE AT 14 WEEKS**

DOSE	Males				
	control	0.625 MG/M3	1.25 MG/M3	2.5 MG/M3	5.0 MG/M3
Nose: Respiratory Epithelium Metaplasia					
LESION RATES					
OVERALL (a)	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	1/10.00
POLY-3 PERCENT (g)	0%	0%	0%	0%	10%
TERMINAL (d)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	1/10 (10%)
FIRST INCIDENCE	---	---	---	---	93 (T)
STATISTICAL TESTS					
POLY 3	P=0.144	(e)	(e)	(e)	P=0.500
POLY 1.5	P=0.144	(e)	(e)	(e)	P=0.500
POLY 6	P=0.144	(e)	(e)	(e)	P=0.500
COCH-ARM / FISHERS	P=0.142	(e)	(e)	(e)	P=0.500
MAX-ISO-POLY-3	P=0.056	(e)	(e)	(e)	P=0.158

Experiment Number: 60311 - 03
 Test Type: 90-DAY
 Route: RESPIRATORY EXPOSURE WHOLE BODY
 Species/Strain: RATS/F 344/N

P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS
 Cobalt
 CAS Number: 7440-48-4

Date Report Requested: 08/16/2012
 Time Report Requested: 08:59:19
 First Dose M/F: 03/08/05 / 03/07/05
 Lab: BNW

**STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN RATS(F 344/N)
 TERMINAL SACRIFICE AT 14 WEEKS**

DOSE	Males				
	control	0.625 MG/M3	1.25 MG/M3	2.5 MG/M3	5.0 MG/M3
Nose: Respiratory Epithelium Necrosis					
LESION RATES					
OVERALL (a)	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
POLY-3 PERCENT (g)	0%	0%	0%	0%	0%
TERMINAL (d)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)
FIRST INCIDENCE	---	---	---	---	---
STATISTICAL TESTS					
POLY 3	(n)	(n)	(n)	(n)	(n)
POLY 1.5	(n)	(n)	(n)	(n)	(n)
POLY 6	(n)	(n)	(n)	(n)	(n)
COCH-ARM / FISHERS	(n)	(n)	(n)	(n)	(n)
MAX-ISO-POLY-3	(n)	(n)	(n)	(n)	(n)

Experiment Number: 60311 - 03
 Test Type: 90-DAY
 Route: RESPIRATORY EXPOSURE WHOLE BODY
 Species/Strain: RATS/F 344/N

P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS
 Cobalt
 CAS Number: 7440-48-4

Date Report Requested: 08/16/2012
 Time Report Requested: 08:59:19
 First Dose M/F: 03/08/05 / 03/07/05
 Lab: BNW

**STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN RATS(F 344/N)
 TERMINAL SACRIFICE AT 14 WEEKS**

DOSE	Males				
	control	0.625 MG/M3	1.25 MG/M3	2.5 MG/M3	5.0 MG/M3
Nose: Turbinate Atrophy					
LESION RATES					
OVERALL (a)	0/10 (0%)	0/10 (0%)	0/10 (0%)	3/10 (30%)	9/10 (90%)
POLY-3 RATE (b)	0/10.00	0/10.00	0/10.00	3/10.00	9/10.00
POLY-3 PERCENT (g)	0%	0%	0%	30%	90%
TERMINAL (d)	0/10 (0%)	0/10 (0%)	0/10 (0%)	3/10 (30%)	9/10 (90%)
FIRST INCIDENCE	---	---	---	93 (T)	93 (T)
STATISTICAL TESTS					
POLY 3	P<0.001**	(e)	(e)	P=0.095	P<0.001**
POLY 1.5	P<0.001**	(e)	(e)	P=0.095	P<0.001**
POLY 6	P<0.001**	(e)	(e)	P=0.095	P<0.001**
COCH-ARM / FISHERS	P<0.001**	(e)	(e)	P=0.105	P<0.001**
MAX-ISO-POLY-3	P<0.001**	(e)	(e)	P=0.025*	P<0.001**

Experiment Number: 60311 - 03
 Test Type: 90-DAY
 Route: RESPIRATORY EXPOSURE WHOLE BODY
 Species/Strain: RATS/F 344/N

P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS
 Cobalt
 CAS Number: 7440-48-4

Date Report Requested: 08/16/2012
 Time Report Requested: 08:59:19
 First Dose M/F: 03/08/05 / 03/07/05
 Lab: BNW

STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN RATS(F 344/N)
TERMINAL SACRIFICE AT 14 WEEKS

DOSE	Males				
	control	0.625 MG/M3	1.25 MG/M3	2.5 MG/M3	5.0 MG/M3
Pancreas: Duct Cyst					
LESION RATES					
OVERALL (a)	1/10 (10%)	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	0/10.00
POLY-3 PERCENT (g)	10%	0%	0%	0%	0%
TERMINAL (d)	1/10 (10%)	0/0 (0%)	0/0 (0%)	0/0 (0%)	0/10 (0%)
FIRST INCIDENCE	93 (T)	---	---	---	---
STATISTICAL TESTS					
POLY 3	(e)	(e)	(e)	(e)	P=0.500N
POLY 1.5	(e)	(e)	(e)	(e)	P=0.500N
POLY 6	(e)	(e)	(e)	(e)	P=0.500N
COCH-ARM / FISHERS	P=0.304N	(e)	(e)	(e)	P=0.500N
MAX-ISO-POLY-3	(e)	(e)	(e)	(e)	P=0.158N

Experiment Number: 60311 - 03
 Test Type: 90-DAY
 Route: RESPIRATORY EXPOSURE WHOLE BODY
 Species/Strain: RATS/F 344/N

P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS
 Cobalt
 CAS Number: 7440-48-4

Date Report Requested: 08/16/2012
 Time Report Requested: 08:59:19
 First Dose M/F: 03/08/05 / 03/07/05
 Lab: BNW

**STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN RATS(F 344/N)
 TERMINAL SACRIFICE AT 14 WEEKS**

DOSE	Males				
	control	0.625 MG/M3	1.25 MG/M3	2.5 MG/M3	5.0 MG/M3
Salivary Glands Inflammation Acute					
LESION RATES					
OVERALL (a)	0/10 (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	1/10.00
POLY-3 PERCENT (g)	0%	0%	0%	0%	10%
TERMINAL (d)	0/10 (0%)	0/0 (0%)	0/0 (0%)	0/0 (0%)	1/10 (10%)
FIRST INCIDENCE	---	---	---	---	93 (T)
STATISTICAL TESTS					
POLY 3	(e)	(e)	(e)	(e)	P=0.500
POLY 1.5	(e)	(e)	(e)	(e)	P=0.500
POLY 6	(e)	(e)	(e)	(e)	P=0.500
COCH-ARM / FISHERS	P=0.304	(e)	(e)	(e)	P=0.500
MAX-ISO-POLY-3	(e)	(e)	(e)	(e)	P=0.158

Experiment Number: 60311 - 03

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/F 344/N

P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS

Cobalt

CAS Number: 7440-48-4

Date Report Requested: 08/16/2012

Time Report Requested: 08:59:19

First Dose M/F: 03/08/05 / 03/07/05

Lab: BNW

**STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN RATS(F 344/N)
TERMINAL SACRIFICE AT 14 WEEKS**

DOSE	Males				
	control	0.625 MG/M3	1.25 MG/M3	2.5 MG/M3	5.0 MG/M3
Stomach, Forestomach Hyperplasia					
LESION RATES					
OVERALL (a)	1/10 (10%)	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	0/10.00
POLY-3 PERCENT (g)	10%	0%	0%	0%	0%
TERMINAL (d)	1/10 (10%)	0/0 (0%)	0/0 (0%)	0/0 (0%)	0/10 (0%)
FIRST INCIDENCE	93 (T)	---	---	---	---
STATISTICAL TESTS					
POLY 3	(e)	(e)	(e)	(e)	P=0.500N
POLY 1.5	(e)	(e)	(e)	(e)	P=0.500N
POLY 6	(e)	(e)	(e)	(e)	P=0.500N
COCH-ARM / FISHERS	P=0.304N	(e)	(e)	(e)	P=0.500N
MAX-ISO-POLY-3	(e)	(e)	(e)	(e)	P=0.158N

Experiment Number: 60311 - 03

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/F 344/N

P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS

Cobalt

CAS Number: 7440-48-4

Date Report Requested: 08/16/2012

Time Report Requested: 08:59:19

First Dose M/F: 03/08/05 / 03/07/05

Lab: BNW

**STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN RATS(F 344/N)
TERMINAL SACRIFICE AT 14 WEEKS**

DOSE	Females				
	control	0.625 MG/M3	1.25 MG/M3	2.5 MG/M3	5.0 MG/M3
<hr/>					
Eye: Retina					
Atrophy					
<hr/>					
LESION RATES					
OVERALL (a)	0/10 (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	0/10.00
POLY-3 PERCENT (g)	0%	0%	0%	0%	0%
TERMINAL (d)	0/10 (0%)	0/0 (0%)	0/0 (0%)	0/0 (0%)	0/10 (0%)
FIRST INCIDENCE	---	---	---	---	---
<hr/>					
STATISTICAL TESTS					
POLY 3	(n)	(n)	(n)	(n)	(n)
POLY 1.5	(n)	(n)	(n)	(n)	(n)
POLY 6	(n)	(n)	(n)	(n)	(n)
COCH-ARM / FISHERS	(n)	(n)	(n)	(n)	(n)
MAX-ISO-POLY-3	(n)	(n)	(n)	(n)	(n)

Experiment Number: 60311 - 03

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/F 344/N

P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS

Cobalt

CAS Number: 7440-48-4

Date Report Requested: 08/16/2012

Time Report Requested: 08:59:19

First Dose M/F: 03/08/05 / 03/07/05

Lab: BNW

**STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN RATS(F 344/N)
TERMINAL SACRIFICE AT 14 WEEKS**

DOSE	Females				
	control	0.625 MG/M3	1.25 MG/M3	2.5 MG/M3	5.0 MG/M3
Harderian Gland Inflammation Chronic					
LESION RATES					
OVERALL (a)	0/10 (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	0/10.00
POLY-3 PERCENT (g)	0%	0%	0%	0%	0%
TERMINAL (d)	0/10 (0%)	0/0 (0%)	0/0 (0%)	0/0 (0%)	0/10 (0%)
FIRST INCIDENCE	---	---	---	---	---
STATISTICAL TESTS					
POLY 3	(n)	(n)	(n)	(n)	(n)
POLY 1.5	(n)	(n)	(n)	(n)	(n)
POLY 6	(n)	(n)	(n)	(n)	(n)
COCH-ARM / FISHERS	(n)	(n)	(n)	(n)	(n)
MAX-ISO-POLY-3	(n)	(n)	(n)	(n)	(n)

Experiment Number: 60311 - 03

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/F 344/N

P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS

Cobalt

CAS Number: 7440-48-4

Date Report Requested: 08/16/2012

Time Report Requested: 08:59:19

First Dose M/F: 03/08/05 / 03/07/05

Lab: BNW

**STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN RATS(F 344/N)
TERMINAL SACRIFICE AT 14 WEEKS**

DOSE	Females				
	control	0.625 MG/M3	1.25 MG/M3	2.5 MG/M3	5.0 MG/M3
<hr/>					
Heart					
Cardiomyopathy					
<hr/>					
LESION RATES					
OVERALL (a)	2/10 (20%)	0/0 (0%)	0/0 (0%)	0/0 (0%)	3/10 (30%)
POLY-3 RATE (b)	2/10.00	0/0.00	0/0.00	0/0.00	3/10.00
POLY-3 PERCENT (g)	20%	0%	0%	0%	30%
TERMINAL (d)	2/10 (20%)	0/0 (0%)	0/0 (0%)	0/0 (0%)	3/10 (30%)
FIRST INCIDENCE	93 (T)	---	---	---	93 (T)
<hr/>					
STATISTICAL TESTS					
POLY 3	(e)	(e)	(e)	(e)	P=0.500
POLY 1.5	(e)	(e)	(e)	(e)	P=0.500
POLY 6	(e)	(e)	(e)	(e)	P=0.500
COCH-ARM / FISHERS	P=0.398	(e)	(e)	(e)	P=0.500
MAX-ISO-POLY-3	(e)	(e)	(e)	(e)	P=0.310

Experiment Number: 60311 - 03
 Test Type: 90-DAY
 Route: RESPIRATORY EXPOSURE WHOLE BODY
 Species/Strain: RATS/F 344/N

P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS
 Cobalt
 CAS Number: 7440-48-4

Date Report Requested: 08/16/2012
 Time Report Requested: 08:59:19
 First Dose M/F: 03/08/05 / 03/07/05
 Lab: BNW

STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN RATS(F 344/N)
TERMINAL SACRIFICE AT 14 WEEKS

DOSE	Females				
	control	0.625 MG/M3	1.25 MG/M3	2.5 MG/M3	5.0 MG/M3
Kidney Nephropathy					
LESION RATES					
OVERALL (a)	0/10 (0%)	0/0 (0%)	0/0 (0%)	0/0 (0%)	2/10 (20%)
POLY-3 RATE (b)	0/10.00	0/0.00	0/0.00	0/0.00	2/10.00
POLY-3 PERCENT (g)	0%	0%	0%	0%	20%
TERMINAL (d)	0/10 (0%)	0/0 (0%)	0/0 (0%)	0/0 (0%)	2/10 (20%)
FIRST INCIDENCE	---	---	---	---	93 (T)
STATISTICAL TESTS					
POLY 3	(e)	(e)	(e)	(e)	P=0.227
POLY 1.5	(e)	(e)	(e)	(e)	P=0.227
POLY 6	(e)	(e)	(e)	(e)	P=0.227
COCH-ARM / FISHERS	P=0.132	(e)	(e)	(e)	P=0.237
MAX-ISO-POLY-3	(e)	(e)	(e)	(e)	P=0.066

Experiment Number: 60311 - 03
 Test Type: 90-DAY
 Route: RESPIRATORY EXPOSURE WHOLE BODY
 Species/Strain: RATS/F 344/N

P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS
 Cobalt
 CAS Number: 7440-48-4

Date Report Requested: 08/16/2012
 Time Report Requested: 08:59:19
 First Dose M/F: 03/08/05 / 03/07/05
 Lab: BNW

STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN RATS(F 344/N)
TERMINAL SACRIFICE AT 14 WEEKS

DOSE	Females				
	control	0.625 MG/M3	1.25 MG/M3	2.5 MG/M3	5.0 MG/M3
Liver					
Hepatodiaphragmatic Nodule					
LESION RATES					
OVERALL (a)	0/10 (0%)	1/1 (100%)	0/0 (0%)	0/0 (0%)	1/10 (10%)
POLY-3 RATE (b)	0/10.00	1/1.00	0/0.00	0/0.00	1/10.00
POLY-3 PERCENT (g)	0%	100%	0%	0%	10%
TERMINAL (d)	0/10 (0%)	1/1 (100%)	0/0 (0%)	0/0 (0%)	1/10 (10%)
FIRST INCIDENCE	---	93 (T)	---	---	93 (T)
STATISTICAL TESTS					
POLY 3	(e)	P=0.091	(e)	(e)	P=0.500
POLY 1.5	(e)	P=0.091	(e)	(e)	P=0.500
POLY 6	(e)	P=0.091	(e)	(e)	P=0.500
COCH-ARM / FISHERS	P=0.553	P=0.091	(e)	(e)	P=0.500
MAX-ISO-POLY-3	(e)	P<0.001**	(e)	(e)	P=0.158

Experiment Number: 60311 - 03
 Test Type: 90-DAY
 Route: RESPIRATORY EXPOSURE WHOLE BODY
 Species/Strain: RATS/F 344/N

P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS
 Cobalt
 CAS Number: 7440-48-4

Date Report Requested: 08/16/2012
 Time Report Requested: 08:59:19
 First Dose M/F: 03/08/05 / 03/07/05
 Lab: BNW

**STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN RATS(F 344/N)
 TERMINAL SACRIFICE AT 14 WEEKS**

DOSE	Females				
	control	0.625 MG/M3	1.25 MG/M3	2.5 MG/M3	5.0 MG/M3
Lung Inflammation Chronic					
LESION RATES					
OVERALL (a)	2/10 (20%)	10/10 (100%)	10/10 (100%)	10/10 (100%)	10/10 (100%)
POLY-3 RATE (b)	2/10.00	10/10.00	10/10.00	10/10.00	10/10.00
POLY-3 PERCENT (g)	20%	100%	100%	100%	100%
TERMINAL (d)	2/10 (20%)	10/10 (100%)	10/10 (100%)	10/10 (100%)	10/10 (100%)
FIRST INCIDENCE	93 (T)	93 (T)	93 (T)	93 (T)	93 (T)
STATISTICAL TESTS					
POLY 3	P<0.001**	P<0.001**	P<0.001**	P<0.001**	P<0.001**
POLY 1.5	P<0.001**	P<0.001**	P<0.001**	P<0.001**	P<0.001**
POLY 6	P<0.001**	P<0.001**	P<0.001**	P<0.001**	P<0.001**
COCH-ARM / FISHERS	P<0.001**	P<0.001**	P<0.001**	P<0.001**	P<0.001**
MAX-ISO-POLY-3	P<0.001**	P<0.001**	P<0.001**	P<0.001**	P<0.001**

Experiment Number: 60311 - 03

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/F 344/N

P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS

Cobalt

CAS Number: 7440-48-4

Date Report Requested: 08/16/2012

Time Report Requested: 08:59:19

First Dose M/F: 03/08/05 / 03/07/05

Lab: BNW

**STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN RATS(F 344/N)
TERMINAL SACRIFICE AT 14 WEEKS**

DOSE	Females				
	control	0.625 MG/M3	1.25 MG/M3	2.5 MG/M3	5.0 MG/M3
Lung: Alveolar Epithelium Hyperplasia					
LESION RATES					
OVERALL (a)	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	1/10.00
POLY-3 PERCENT (g)	0%	0%	0%	0%	10%
TERMINAL (d)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	1/10 (10%)
FIRST INCIDENCE	---	---	---	---	93 (T)
STATISTICAL TESTS					
POLY 3	P=0.144	(e)	(e)	(e)	P=0.500
POLY 1.5	P=0.144	(e)	(e)	(e)	P=0.500
POLY 6	P=0.144	(e)	(e)	(e)	P=0.500
COCH-ARM / FISHERS	P=0.142	(e)	(e)	(e)	P=0.500
MAX-ISO-POLY-3	P=0.056	(e)	(e)	(e)	P=0.158

Experiment Number: 60311 - 03

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/F 344/N

P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS

Cobalt

CAS Number: 7440-48-4

Date Report Requested: 08/16/2012

Time Report Requested: 08:59:19

First Dose M/F: 03/08/05 / 03/07/05

Lab: BNW

STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN RATS(F 344/N)
TERMINAL SACRIFICE AT 14 WEEKS

DOSE	Females				
	control	0.625 MG/M3	1.25 MG/M3	2.5 MG/M3	5.0 MG/M3
Lung: Alveolus Hemorrhage					
LESION RATES					
OVERALL (a)	0/10 (0%)	0/10 (0%)	3/10 (30%)	1/10 (10%)	2/10 (20%)
POLY-3 RATE (b)	0/10.00	0/10.00	3/10.00	1/10.00	2/10.00
POLY-3 PERCENT (g)	0%	0%	30%	10%	20%
TERMINAL (d)	0/10 (0%)	0/10 (0%)	3/10 (30%)	1/10 (10%)	2/10 (20%)
FIRST INCIDENCE	---	---	93 (T)	93 (T)	93 (T)
STATISTICAL TESTS					
POLY 3	P=0.174	(e)	P=0.095	P=0.500	P=0.227
POLY 1.5	P=0.174	(e)	P=0.095	P=0.500	P=0.227
POLY 6	P=0.174	(e)	P=0.095	P=0.500	P=0.227
COCH-ARM / FISHERS	P=0.178	(e)	P=0.105	P=0.500	P=0.237
MAX-ISO-POLY-3	P=0.080	(e)	P=0.025*	P=0.158	P=0.066

Experiment Number: 60311 - 03
 Test Type: 90-DAY
 Route: RESPIRATORY EXPOSURE WHOLE BODY
 Species/Strain: RATS/F 344/N

P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS
 Cobalt
 CAS Number: 7440-48-4

Date Report Requested: 08/16/2012
 Time Report Requested: 08:59:19
 First Dose M/F: 03/08/05 / 03/07/05
 Lab: BNW

**STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN RATS(F 344/N)
 TERMINAL SACRIFICE AT 14 WEEKS**

DOSE	Females				
	control	0.625 MG/M3	1.25 MG/M3	2.5 MG/M3	5.0 MG/M3
Lung: Alveolus Proteinosis					
LESION RATES					
OVERALL (a)	0/10 (0%)	10/10 (100%)	10/10 (100%)	10/10 (100%)	10/10 (100%)
POLY-3 RATE (b)	0/10.00	10/10.00	10/10.00	10/10.00	10/10.00
POLY-3 PERCENT (g)	0%	100%	100%	100%	100%
TERMINAL (d)	0/10 (0%)	10/10 (100%)	10/10 (100%)	10/10 (100%)	10/10 (100%)
FIRST INCIDENCE	---	93 (T)	93 (T)	93 (T)	93 (T)
STATISTICAL TESTS					
POLY 3	P<0.001**	P<0.001**	P<0.001**	P<0.001**	P<0.001**
POLY 1.5	P<0.001**	P<0.001**	P<0.001**	P<0.001**	P<0.001**
POLY 6	P<0.001**	P<0.001**	P<0.001**	P<0.001**	P<0.001**
COCH-ARM / FISHERS	P<0.001**	P<0.001**	P<0.001**	P<0.001**	P<0.001**
MAX-ISO-POLY-3	P<0.001**	(e)	(e)	(e)	(e)

Experiment Number: 60311 - 03

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/F 344/N

P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS

Cobalt

CAS Number: 7440-48-4

Date Report Requested: 08/16/2012

Time Report Requested: 08:59:19

First Dose M/F: 03/08/05 / 03/07/05

Lab: BNW

STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN RATS(F 344/N)
TERMINAL SACRIFICE AT 14 WEEKS

DOSE	Females				
	control	0.625 MG/M3	1.25 MG/M3	2.5 MG/M3	5.0 MG/M3
Lung: Bronchiole, Epithelium Hyperplasia					
LESION RATES					
OVERALL (a)	0/10 (0%)	0/10 (0%)	10/10 (100%)	10/10 (100%)	10/10 (100%)
POLY-3 RATE (b)	0/10.00	0/10.00	10/10.00	10/10.00	10/10.00
POLY-3 PERCENT (g)	0%	0%	100%	100%	100%
TERMINAL (d)	0/10 (0%)	0/10 (0%)	10/10 (100%)	10/10 (100%)	10/10 (100%)
FIRST INCIDENCE	---	---	93 (T)	93 (T)	93 (T)
STATISTICAL TESTS					
POLY 3	P<0.001**	(e)	P<0.001**	P<0.001**	P<0.001**
POLY 1.5	P<0.001**	(e)	P<0.001**	P<0.001**	P<0.001**
POLY 6	P<0.001**	(e)	P<0.001**	P<0.001**	P<0.001**
COCH-ARM / FISHERS	P<0.001**	(e)	P<0.001**	P<0.001**	P<0.001**
MAX-ISO-POLY-3	P<0.001**	(e)	(e)	(e)	(e)

Experiment Number: 60311 - 03
 Test Type: 90-DAY
 Route: RESPIRATORY EXPOSURE WHOLE BODY
 Species/Strain: RATS/F 344/N

P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS
 Cobalt
 CAS Number: 7440-48-4

Date Report Requested: 08/16/2012
 Time Report Requested: 08:59:19
 First Dose M/F: 03/08/05 / 03/07/05
 Lab: BNW

**STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN RATS(F 344/N)
 TERMINAL SACRIFICE AT 14 WEEKS**

DOSE	Females				
	control	0.625 MG/M3	1.25 MG/M3	2.5 MG/M3	5.0 MG/M3
Lymph Node: Pancreatic Pigmentation					
LESION RATES					
OVERALL (a)	0/0 (0%)	0/0 (0%)	0/0 (0%)	0/0 (0%)	0/0 (0%)
POLY-3 RATE (b)	0/0.00	0/0.00	0/0.00	0/0.00	0/0.00
POLY-3 PERCENT (g)	0%	0%	0%	0%	0%
TERMINAL (d)	0/0 (0%)	0/0 (0%)	0/0 (0%)	0/0 (0%)	0/0 (0%)
FIRST INCIDENCE	---	---	---	---	---
STATISTICAL TESTS					
POLY 3	(n)	(n)	(n)	(n)	(n)
POLY 1.5	(n)	(n)	(n)	(n)	(n)
POLY 6	(n)	(n)	(n)	(n)	(n)
COCH-ARM / FISHERS	(n)	(n)	(n)	(n)	(n)
MAX-ISO-POLY-3	(n)	(n)	(n)	(n)	(n)

Experiment Number: 60311 - 03

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/F 344/N

P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS

Cobalt

CAS Number: 7440-48-4

Date Report Requested: 08/16/2012

Time Report Requested: 08:59:19

First Dose M/F: 03/08/05 / 03/07/05

Lab: BNW

**STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN RATS(F 344/N)
TERMINAL SACRIFICE AT 14 WEEKS**

DOSE	Females				
	control	0.625 MG/M3	1.25 MG/M3	2.5 MG/M3	5.0 MG/M3
Nose: Olfactory Epithelium Degeneration					
LESION RATES					
OVERALL (a)	0/10 (0%)	0/10 (0%)	5/10 (50%)	10/10 (100%)	10/10 (100%)
POLY-3 RATE (b)	0/10.00	0/10.00	5/10.00	10/10.00	10/10.00
POLY-3 PERCENT (g)	0%	0%	50%	100%	100%
TERMINAL (d)	0/10 (0%)	0/10 (0%)	5/10 (50%)	10/10 (100%)	10/10 (100%)
FIRST INCIDENCE	---	---	93 (T)	93 (T)	93 (T)
STATISTICAL TESTS					
POLY 3	P<0.001**	(e)	P=0.008**	P<0.001**	P<0.001**
POLY 1.5	P<0.001**	(e)	P=0.008**	P<0.001**	P<0.001**
POLY 6	P<0.001**	(e)	P=0.008**	P<0.001**	P<0.001**
COCH-ARM / FISHERS	P<0.001**	(e)	P=0.016*	P<0.001**	P<0.001**
MAX-ISO-POLY-3	P<0.001**	(e)	P<0.001**	(e)	(e)

Experiment Number: 60311 - 03

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/F 344/N

P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS

Cobalt

CAS Number: 7440-48-4

Date Report Requested: 08/16/2012

Time Report Requested: 08:59:19

First Dose M/F: 03/08/05 / 03/07/05

Lab: BNW

STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN RATS(F 344/N)
TERMINAL SACRIFICE AT 14 WEEKS

DOSE	Females				
	control	0.625 MG/M3	1.25 MG/M3	2.5 MG/M3	5.0 MG/M3
Nose: Olfactory Epithelium Hyperplasia					
LESION RATES					
OVERALL (a)	0/10 (0%)	0/10 (0%)	0/10 (0%)	3/10 (30%)	10/10 (100%)
POLY-3 RATE (b)	0/10.00	0/10.00	0/10.00	3/10.00	10/10.00
POLY-3 PERCENT (g)	0%	0%	0%	30%	100%
TERMINAL (d)	0/10 (0%)	0/10 (0%)	0/10 (0%)	3/10 (30%)	10/10 (100%)
FIRST INCIDENCE	---	---	---	93 (T)	93 (T)
STATISTICAL TESTS					
POLY 3	P<0.001**	(e)	(e)	P=0.095	P<0.001**
POLY 1.5	P<0.001**	(e)	(e)	P=0.095	P<0.001**
POLY 6	P<0.001**	(e)	(e)	P=0.095	P<0.001**
COCH-ARM / FISHERS	P<0.001**	(e)	(e)	P=0.105	P<0.001**
MAX-ISO-POLY-3	P<0.001**	(e)	(e)	P=0.025*	(e)

Experiment Number: 60311 - 03

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/F 344/N

P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS

Cobalt

CAS Number: 7440-48-4

Date Report Requested: 08/16/2012

Time Report Requested: 08:59:19

First Dose M/F: 03/08/05 / 03/07/05

Lab: BNW

STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN RATS(F 344/N)
TERMINAL SACRIFICE AT 14 WEEKS

DOSE	Females				
	control	0.625 MG/M3	1.25 MG/M3	2.5 MG/M3	5.0 MG/M3
Nose: Respiratory Epithelium Hyperplasia					
LESION RATES					
OVERALL (a)	0/10 (0%)	1/10 (10%)	0/10 (0%)	9/10 (90%)	10/10 (100%)
POLY-3 RATE (b)	0/10.00	1/10.00	0/10.00	9/10.00	10/10.00
POLY-3 PERCENT (g)	0%	10%	0%	90%	100%
TERMINAL (d)	0/10 (0%)	1/10 (10%)	0/10 (0%)	9/10 (90%)	10/10 (100%)
FIRST INCIDENCE	---	93 (T)	---	93 (T)	93 (T)
STATISTICAL TESTS					
POLY 3	P<0.001**	P=0.500	(e)	P<0.001**	P<0.001**
POLY 1.5	P<0.001**	P=0.500	(e)	P<0.001**	P<0.001**
POLY 6	P<0.001**	P=0.500	(e)	P<0.001**	P<0.001**
COCH-ARM / FISHERS	P<0.001**	P=0.500	(e)	P<0.001**	P<0.001**
MAX-ISO-POLY-3	P<0.001**	P=0.158	(e)	P<0.001**	(e)

Experiment Number: 60311 - 03

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/F 344/N

P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS

Cobalt

CAS Number: 7440-48-4

Date Report Requested: 08/16/2012

Time Report Requested: 08:59:19

First Dose M/F: 03/08/05 / 03/07/05

Lab: BNW

**STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN RATS(F 344/N)
TERMINAL SACRIFICE AT 14 WEEKS**

DOSE	Females				
	control	0.625 MG/M3	1.25 MG/M3	2.5 MG/M3	5.0 MG/M3
<hr/>					
Nose: Respiratory Epithelium Metaplasia					
<hr/>					
LESION RATES					
OVERALL (a)	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
POLY-3 PERCENT (g)	0%	0%	0%	0%	0%
TERMINAL (d)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)	0/10 (0%)
FIRST INCIDENCE	---	---	---	---	---
<hr/>					
STATISTICAL TESTS					
POLY 3	(n)	(n)	(n)	(n)	(n)
POLY 1.5	(n)	(n)	(n)	(n)	(n)
POLY 6	(n)	(n)	(n)	(n)	(n)
COCH-ARM / FISHERS	(n)	(n)	(n)	(n)	(n)
MAX-ISO-POLY-3	(n)	(n)	(n)	(n)	(n)

Experiment Number: 60311 - 03

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/F 344/N

P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS

Cobalt

CAS Number: 7440-48-4

Date Report Requested: 08/16/2012

Time Report Requested: 08:59:19

First Dose M/F: 03/08/05 / 03/07/05

Lab: BNW

STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN RATS(F 344/N)
TERMINAL SACRIFICE AT 14 WEEKS

DOSE	Females				
	control	0.625 MG/M3	1.25 MG/M3	2.5 MG/M3	5.0 MG/M3
Nose: Respiratory Epithelium Necrosis					
LESION RATES					
OVERALL (a)	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	1/10.00	0/10.00	0/10.00
POLY-3 PERCENT (g)	0%	0%	10%	0%	0%
TERMINAL (d)	0/10 (0%)	0/10 (0%)	1/10 (10%)	0/10 (0%)	0/10 (0%)
FIRST INCIDENCE	---	---	93 (T)	---	---
STATISTICAL TESTS					
POLY 3	P=0.638N	(e)	P=0.500	(e)	(e)
POLY 1.5	P=0.638N	(e)	P=0.500	(e)	(e)
POLY 6	P=0.638N	(e)	P=0.500	(e)	(e)
COCH-ARM / FISHERS	P=0.640N	(e)	P=0.500	(e)	(e)
MAX-ISO-POLY-3	P=0.298	(e)	P=0.158	(e)	(e)

Experiment Number: 60311 - 03
 Test Type: 90-DAY
 Route: RESPIRATORY EXPOSURE WHOLE BODY
 Species/Strain: RATS/F 344/N

P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS
 Cobalt
 CAS Number: 7440-48-4

Date Report Requested: 08/16/2012
 Time Report Requested: 08:59:19
 First Dose M/F: 03/08/05 / 03/07/05
 Lab: BNW

STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN RATS(F 344/N)
TERMINAL SACRIFICE AT 14 WEEKS

DOSE	Females				
	control	0.625 MG/M3	1.25 MG/M3	2.5 MG/M3	5.0 MG/M3
Nose: Turbinate Atrophy					
LESION RATES					
OVERALL (a)	0/10 (0%)	0/10 (0%)	0/10 (0%)	4/10 (40%)	6/10 (60%)
POLY-3 RATE (b)	0/10.00	0/10.00	0/10.00	4/10.00	6/10.00
POLY-3 PERCENT (g)	0%	0%	0%	40%	60%
TERMINAL (d)	0/10 (0%)	0/10 (0%)	0/10 (0%)	4/10 (40%)	6/10 (60%)
FIRST INCIDENCE	---	---	---	93 (T)	93 (T)
STATISTICAL TESTS					
POLY 3	P<0.001**	(e)	(e)	P=0.033*	P<0.001**
POLY 1.5	P<0.001**	(e)	(e)	P=0.033*	P<0.001**
POLY 6	P<0.001**	(e)	(e)	P=0.033*	P<0.001**
COCH-ARM / FISHERS	P<0.001**	(e)	(e)	P=0.043*	P=0.005**
MAX-ISO-POLY-3	P<0.001**	(e)	(e)	P=0.007**	P<0.001**

Experiment Number: 60311 - 03
 Test Type: 90-DAY
 Route: RESPIRATORY EXPOSURE WHOLE BODY
 Species/Strain: RATS/F 344/N

P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS
 Cobalt
 CAS Number: 7440-48-4

Date Report Requested: 08/16/2012
 Time Report Requested: 08:59:19
 First Dose M/F: 03/08/05 / 03/07/05
 Lab: BNW

STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN RATS(F 344/N)
TERMINAL SACRIFICE AT 14 WEEKS

DOSE	Females				
	control	0.625 MG/M3	1.25 MG/M3	2.5 MG/M3	5.0 MG/M3
Ovary Cyst					
LESION RATES					
OVERALL (a)	0/10 (0%)	0/0 (0%)	0/0 (0%)	1/1 (100%)	0/10 (0%)
POLY-3 RATE (b)	0/10.00	0/0.00	0/0.00	1/1.00	0/10.00
POLY-3 PERCENT (g)	0%	0%	0%	100%	0%
TERMINAL (d)	0/10 (0%)	0/0 (0%)	0/0 (0%)	1/1 (100%)	0/10 (0%)
FIRST INCIDENCE	---	---	---	93 (T)	---
STATISTICAL TESTS					
POLY 3	(e)	(e)	(e)	P=0.091	(e)
POLY 1.5	(e)	(e)	(e)	P=0.091	(e)
POLY 6	(e)	(e)	(e)	P=0.091	(e)
COCH-ARM / FISHERS	P=0.700	(e)	(e)	P=0.091	(e)
MAX-ISO-POLY-3	(e)	(e)	(e)	P<0.001**	(e)

Experiment Number: 60311 - 03

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/F 344/N

P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS

Cobalt

CAS Number: 7440-48-4

Date Report Requested: 08/16/2012

Time Report Requested: 08:59:19

First Dose M/F: 03/08/05 / 03/07/05

Lab: BNW

**STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN RATS(F 344/N)
TERMINAL SACRIFICE AT 14 WEEKS**

DOSE	Females				
	control	0.625 MG/M3	1.25 MG/M3	2.5 MG/M3	5.0 MG/M3
Pancreas: Duct Cyst					
LESION RATES					
OVERALL (a)	0/10 (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	0/10.00
POLY-3 PERCENT (g)	0%	0%	0%	0%	0%
TERMINAL (d)	0/10 (0%)	0/0 (0%)	0/0 (0%)	0/0 (0%)	0/10 (0%)
FIRST INCIDENCE	---	---	---	---	---
STATISTICAL TESTS					
POLY 3	(n)	(n)	(n)	(n)	(n)
POLY 1.5	(n)	(n)	(n)	(n)	(n)
POLY 6	(n)	(n)	(n)	(n)	(n)
COCH-ARM / FISHERS	(n)	(n)	(n)	(n)	(n)
MAX-ISO-POLY-3	(n)	(n)	(n)	(n)	(n)

Experiment Number: 60311 - 03

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/F 344/N

P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS

Cobalt

CAS Number: 7440-48-4

Date Report Requested: 08/16/2012

Time Report Requested: 08:59:19

First Dose M/F: 03/08/05 / 03/07/05

Lab: BNW

**STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN RATS(F 344/N)
TERMINAL SACRIFICE AT 14 WEEKS**

DOSE	Females				
	control	0.625 MG/M3	1.25 MG/M3	2.5 MG/M3	5.0 MG/M3
Salivary Glands					
Inflammation Acute					
<hr/>					
LESION RATES					
OVERALL (a)	0/10 (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	0/10.00
POLY-3 PERCENT (g)	0%	0%	0%	0%	0%
TERMINAL (d)	0/10 (0%)	0/0 (0%)	0/0 (0%)	0/0 (0%)	0/10 (0%)
FIRST INCIDENCE	---	---	---	---	---
<hr/>					
STATISTICAL TESTS					
POLY 3	(n)	(n)	(n)	(n)	(n)
POLY 1.5	(n)	(n)	(n)	(n)	(n)
POLY 6	(n)	(n)	(n)	(n)	(n)
COCH-ARM / FISHERS	(n)	(n)	(n)	(n)	(n)
MAX-ISO-POLY-3	(n)	(n)	(n)	(n)	(n)

Experiment Number: 60311 - 03

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/F 344/N

P10: STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS

Cobalt

CAS Number: 7440-48-4

Date Report Requested: 08/16/2012

Time Report Requested: 08:59:19

First Dose M/F: 03/08/05 / 03/07/05

Lab: BNW

**STATISTICAL ANALYSIS OF NON-NEOPLASTIC LESIONS IN RATS(F 344/N)
TERMINAL SACRIFICE AT 14 WEEKS**

DOSE	Females				
	control	0.625 MG/M3	1.25 MG/M3	2.5 MG/M3	5.0 MG/M3
Stomach, Forestomach Hyperplasia					
LESION RATES					
OVERALL (a)	0/10 (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	0/10.00
POLY-3 PERCENT (g)	0%	0%	0%	0%	0%
TERMINAL (d)	0/10 (0%)	0/0 (0%)	0/0 (0%)	0/0 (0%)	0/10 (0%)
FIRST INCIDENCE	---	---	---	---	---
STATISTICAL TESTS					
POLY 3	(n)	(n)	(n)	(n)	(n)
POLY 1.5	(n)	(n)	(n)	(n)	(n)
POLY 6	(n)	(n)	(n)	(n)	(n)
COCH-ARM / FISHERS	(n)	(n)	(n)	(n)	(n)
MAX-ISO-POLY-3	(n)	(n)	(n)	(n)	(n)

Experiment Number: 60311 - 03

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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 ***