Test Type: 14-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/F 344/N

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: 3.0.2.3_002

PWG Approval Date: NONE

P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL

Cobalt

CAS Number: 7440-48-4

Date Report Requested: 09/13/2016 Time Report Requested: 11:25:33 First Dose M/F: 08/02/04 / 08/02/04

Lab: BNW

Test Type: 14-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/F 344/N

P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL

Cobalt

CAS Number: 7440-48-4

Date Report Requested: 09/13/2016 Time Report Requested: 11:25:33 First Dose M/F: 08/02/04 / 08/02/04

Lab: BNW

DAY ON T	TEST	0 0 1	0 0 1	0 0 1	0 0 1	0 0 1		
		6	6	6	6	6		
CONTROL	۸۱ ID	0	0	0	0	0		
AINIIVIA	ALID	0	0	0	0	0		
		1	2	3	4	5	* TOTALS	
ALIMENTARY SYSTEM								
Liver		+	+	+	+	+	5	
CARDIOVASCULAR SYSTEM								
NONE								
ENDOCRINE SYSTEM	_							
Thyroid Gland		+	+	+	+	+	5	
GENERAL BODY SYSTEM								
NONE								
GENITAL SYSTEM								
NONE								
HEMATOPOIETIC SYSTEM								
Lymph Node, Mediastinal				+	+		2	
INTEGUMENTARY SYSTEM								
NONE								
MUSCULOSKELETAL SYSTEM								
NONE								

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

X .. Lesion present

I .. Insufficient tissue

NONE

M .. Missing tissue

A .. Autolysis precludes evaluation

BLANK .. Not examined microscopically

1-4 .. Lesion qualified as:

1) Minimal 3) Moderate

2) Mild 4) I

^{+ ..} Tissue examined microscopically

Test Type: 14-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/F 344/N

P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL

Cobalt

CAS Number: 7440-48-4

Date Report Requested: 09/13/2016 Time Report Requested: 11:25:33 First Dose M/F: 08/02/04 / 08/02/04

Lab: BNW

DAY ON TEST	0 0 1 6	0 0 1 6	0 0 1 6	0 0 1 6	0 0 1 6	
CONTROL ANIMAL ID	0 0 0 0 1	0 0 0 0 0 2	0 0 0 0 3	0 0 0 0 4	0 0 0 0 5	* TOTALS
NERVOUS SYSTEM					-	
Brain	+	+	+	+	+	5
RESPIRATORY SYSTEM						
Lung	+	+	+	+	+	5
Nose	+	+	+	+	+	5
SPECIAL SENSES SYSTEM						
NONE			_			
URINARY SYSTEM						
Kidney	+	+	+	+	+	5
Urinary Bladder	+	+	+	+	+	5

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

^{+ ..} Tissue examined microscopically

X .. Lesion present

I .. Insufficient tissue

A .. Autolysis precludes evaluation

BLANK .. Not examined microscopically

¹⁾ Minimal 3) Moderate

²⁾ Mild

P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL

Cobalt

CAS Number: 7440-48-4

Date Report Requested: 09/13/2016 Time Report Requested: 11:25:33

First Dose M/F: 08/02/04 / 08/02/04

Lab: BNW

Test Type: 14-DAY **Route:** RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/F 344/N

DAY ON TEST	0 0 1 6	0	0	0 0 1 6	0 0 1 6
G/M3 ANIMAL ID	0 0 2 0	0	0 0 2	0 0 2 0	0 0 2 0
	1	2	ો વ	4	5

ALIMENTARY SYSTEM

NONE

CARDIOVASCULAR SYSTEM

NONE

ENDOCRINE SYSTEM

NONE

GENERAL BODY SYSTEM

NONE

GENITAL SYSTEM

NONE

HEMATOPOIETIC SYSTEM

NONE

INTEGUMENTARY SYSTEM

NONE

MUSCULOSKELETAL SYSTEM

NONE

M .. Missing tissue

X .. Lesion presentI .. Insufficient tissue

A .. Autolysis precludes evaluation

BLANK .. Not examined microscopically

1-4 .. Lesion qualified as:

1) Minimal 3) Moderate

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

^{+ ..} Tissue examined microscopically

Test Type: 14-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/F 344/N

P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL

Cobalt

CAS Number: 7440-48-4

Date Report Requested: 09/13/2016 Time Report Requested: 11:25:33 First Dose M/F: 08/02/04 / 08/02/04

Lab: BNW

DAY ON TEST FISCHER 344 RATS MALE	0 0 1 6	0 0 1 6	0 0 1 6	0 0 1 6	0 0 1 6	
2.5 MG/M3 ANIMAL ID	0 0 2 0 1	0 0 2 0 2	0 0 2 0 3	0 0 2 0 4	0 0 2 0 5	* TOTALS

NERVOUS SYSTEM

NONE

RESPIRATORY SYSTEM

Lung Bronchiole, Epithelium, Vacuolization Cytoplasmic				+ 1		5	5	1.2
Nose	+	+	+	+	+	5		
Inflammation, Acute				1			1	1.0
Olfactory Epithelium, Atrophy	1	1	2	2	2		5	1.6
Olfactory Epithelium, Necrosis	1		1	1			3	1.0

SPECIAL SENSES SYSTEM

NONE

URINARY SYSTEM

NONE

I .. Insufficient tissue

M .. Missing tissue

A .. Autolysis precludes evaluation

BLANK .. Not examined microscopically

1-4 .. Lesion qualified as:

1) Minimal 3) Moderate

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

^{+ ..} Tissue examined microscopically

X .. Lesion present

P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL

Cobalt

CAS Number: 7440-48-4

Date Report Requested: 09/13/2016 Time Report Requested: 11:25:33

First Dose M/F: 08/02/04 / 08/02/04

Lab: BNW

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/F 344/N

Test Type: 14-DAY

ALIMENTARY SYSTEM

NONE

CARDIOVASCULAR SYSTEM

NONE

ENDOCRINE SYSTEM

NONE

GENERAL BODY SYSTEM

NONE

GENITAL SYSTEM

NONE

HEMATOPOIETIC SYSTEM

NONE

INTEGUMENTARY SYSTEM

NONE

MUSCULOSKELETAL SYSTEM

NONE

BLANK .. Not examined microscopically

1-4 .. Lesion qualified as:

1) Minimal 3) Moderate

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

^{+ ..} Tissue examined microscopically

M .. Missing tissue

A .. Autolysis precludes evaluation

X .. Lesion presentI .. Insufficient tissue

Test Type: 14-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/F 344/N

P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL

Cobalt

CAS Number: 7440-48-4

Date Report Requested: 09/13/2016 Time Report Requested: 11:25:33 First Dose M/F: 08/02/04 / 08/02/04

Lab: BNW

DAY ON TEST FISCHER 344 RATS MALE	0 0 1 6	0 0 1 6	0 0 1 6	0 0 1 6	0 0 1 6	
5 MG/M3 ANIMAL ID	0 0 4 0 1	0 0 4 0 2	0 0 4 0 3	0 0 4 0 4	0 0 4 0 5	* TOTALS

NERVOUS SYSTEM

NONE

RESPIRATORY SYSTEM

Lung Alveolus, Infiltration Cellular, Histiocyte Bronchiole, Epithelium, Vacuolization	1	1	1	+	1	5 4 1.0 5 1.6
Cytoplasmic Nose				+		5
Olfactory Epithelium, Atrophy Olfactory Epithelium, Necrosis	2 1	2	_	1 2	=	5 1.8 4 1.3

SPECIAL SENSES SYSTEM

NONE

URINARY SYSTEM

NONE

I .. Insufficient tissue

A .. Autolysis precludes evaluation

BLANK .. Not examined microscopically

1-4 .. Lesion qualified as:

1) Minimal 3) Moderate

4) Marked 2) Mild

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

^{+ ..} Tissue examined microscopically

X .. Lesion present

P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL

CAS Number: 7440-48-4

Cobalt

Date Report Requested: 09/13/2016 Time Report Requested: 11:25:33

First Dose M/F: 08/02/04 / 08/02/04

Lab: BNW

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/F 344/N

Test Type: 14-DAY

FISCHER 344 RATS MALE
10 MG/M3 ANIMAL ID

ALIMENTARY SYSTEM

NONE

CARDIOVASCULAR SYSTEM

NONE

ENDOCRINE SYSTEM

NONE

GENERAL BODY SYSTEM

NONE

GENITAL SYSTEM

NONE

HEMATOPOIETIC SYSTEM

Lymph Node, Mediastinal

2

INTEGUMENTARY SYSTEM

NONE

MUSCULOSKELETAL SYSTEM

NONE

M .. Missing tissue

X .. Lesion present

I .. Insufficient tissue

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

2) Mild

1) Minimal 3) Moderate

1-4 .. Lesion qualified as:

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

^{+ ..} Tissue examined microscopically

Cobalt

CAS Number: 7440-48-4

Date Report Requested: 09/13/2016 Time Report Requested: 11:25:33 First Dose M/F: 08/02/04 / 08/02/04

Lab: BNW

DAY ON TEST	0 0 1 6	0 0 1 6	0 0 1 6	1	0 0 1 6		
10 MG/M3 ANIMAL ID	0 0 6 0 1	0 0 6 0 2	0 0 6 0 3	0 6 0	0 0 6 0 5	*	TOTALS
NERVOUS SYSTEM					-		
Brain	+	+	+	+	+	5	
RESPIRATORY SYSTEM							
Lung Hemorrhage	+	+	+	+	+	5	1 1.0
Alveolus, Infiltration Cellular, Histiocyte Bronchiole, Epithelium, Vacuolization Cytoplasmic	2	1 2	2	2	1 2		3 1.3 5 2.0
Interstitium, Fibrosis	1	1	2	1	1		5 1.2
Nose Foreign Body Inflammation, Acute	+	+	+	+ X	+ 1	5	1 1 1.0
Olfactory Epithelium, Atrophy Olfactory Epithelium, Necrosis Respiratory Epithelium, Metaplasia, Squamous	3	3 1	2 1	2 1	2 1 1		5 2.4 4 1.0 1 1.0
Respiratory Epithelium, Necrosis					1		1 1.0
SPECIAL SENSES SYSTEM	-		-		-		
NONE							
URINARY SYSTEM					•		
Urinary Bladder	+	+	+	+	+	5	

Experiment Number: 60311 - 01

Species/Strain: RATS/F 344/N

Route: RESPIRATORY EXPOSURE WHOLE BODY

Test Type: 14-DAY

M .. Missing tissue

A .. Autolysis precludes evaluation

BLANK .. Not examined microscopically

1-4 .. Lesion qualified as:

1) Minimal 3) Moderate

2) Mild

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

^{+ ..} Tissue examined microscopically

X .. Lesion present

I .. Insufficient tissue

Test Type: 14-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/F 344/N

P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL

Cobalt

CAS Number: 7440-48-4

Date Report Requested: 09/13/2016 Time Report Requested: 11:25:33 First Dose M/F: 08/02/04 / 08/02/04

Lab: BNW

DAY ON T	ESI (0 0 0 0 0 0 5 5	0 0 0 9	0 0 0 5	0 0 1 3	
20 MG/M3 ANIMA	rr ID 6	0 0 0 8 8 0 0 1	0 0 8 0 3	0 0 8 0 4	0 0 8 0 5	* TOTALS
ALIMENTARY SYSTEM	·	·				
Liver	-	+ +	+	+	+	5
CARDIOVASCULAR SYSTEM						
NONE						
ENDOCRINE SYSTEM						
Thyroid Gland	-	+ +	+	+	+	5
GENERAL BODY SYSTEM						
NONE						
GENITAL SYSTEM						
NONE						
HEMATOPOIETIC SYSTEM						
NONE						
INTEGUMENTARY SYSTEM						
NONE						
MUSCULOSKELETAL SYSTEM		-				

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

X .. Lesion present

I .. Insufficient tissue

NONE

M .. Missing tissue

A .. Autolysis precludes evaluation

BLANK .. Not examined microscopically

1-4 .. Lesion qualified as:

1) Minimal 3) Moderate

^{+ ..} Tissue examined microscopically

Cobalt

CAS Number: 7440-48-4

Date Report Requested: 09/13/2016 Time Report Requested: 11:25:33 First Dose M/F: 08/02/04 / 08/02/04

Lab: BNW

DAY ON TEST FISCHER 344 RATS MALE	0 0 0 5	0 0 0 5	0 0 0 9	0 0 0 5	0 0 1 3						
20 MG/M3 ANIMAL ID	0 0 8 0 1	0 0 8 0 2	0 0 8 0 3	0 0 8 0 4	0 0 8 0 5	,	* TOTALS				
NERVOUS SYSTEM			-	-							
Brain	+	+	+	+	+		5				
RESPIRATORY SYSTEM											
Lung Hemorrhage Inflammation, Acute Alveolar Epithelium, Hyperplasia Alveolus, Infiltration Cellular, Histiocyte Bronchiole, Epithelium, Necrosis Bronchiole, Epithelium, Vacuolization Cytoplasmic Interstitium, Fibrosis Nose Olfactory Epithelium, Atrophy Olfactory Epithelium, Necrosis Respiratory Epithelium, Metaplasia, Squamous Respiratory Epithelium, Necrosis	+ 1 2 2 1 1 1	+ 1 1 1 1 1 1 1 1 3	+ 2 1 2 3 2 + 1 3 1 1	+ 1 1 3 3 + 3 2	+ 1 2 2 4 + 3 2 1		5	5 1.2 4 1.3 3 1.7 5 2.0 2 1.0 1 2.0 2 3.0 3 1.7 4 2.8 2 1.0 3 1.3			
SPECIAL SENSES SYSTEM											
NONE											
URINARY SYSTEM											
Kidney	+	+	+	+	+		5				
Urinary Bladder	+	+	+	+	+		5				

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

Experiment Number: 60311 - 01

Species/Strain: RATS/F 344/N

Route: RESPIRATORY EXPOSURE WHOLE BODY

Test Type: 14-DAY

M .. Missing tissue

A .. Autolysis precludes evaluation

BLANK .. Not examined microscopically

1-4 .. Lesion qualified as:

1) Minimal 3) Moderate

^{+ ..} Tissue examined microscopically

X .. Lesion present

I .. Insufficient tissue

Test Type: 14-DAY

P09:

3

P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL

CAS Number: 7440-48-4

Cobalt

Date Report Requested: 09/13/2016 **Time Report Requested:** 11:25:33

First Dose M/F: 08/02/04 / 08/02/04

1 3.0

Lab: BNW

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/F 344/N

Muscularis, Serosa, Edema

DAY ON TEST FISCHER 344 RATS MALE	0 0 0 5	0 0 0 5	0 0 0 9	0 0 0 5	0 0 1 3	
20 MG/M3 ANIMAL ID	0 0 8 0 1	0 0 8 0 2	0 0 8 0 3	0 0 8 0 4	0 0 8 0 5	* TOTALS

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

^{+ ..} Tissue examined microscopically

X .. Lesion present

I .. Insufficient tissue

M .. Missing tissue

A .. Autolysis precludes evaluation

Test Type: 14-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/F 344/N

P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL

Cobalt

CAS Number: 7440-48-4

Date Report Requested: 09/13/2016 Time Report Requested: 11:25:33 First Dose M/F: 08/02/04 / 08/02/04

Lab: BNW

DAY ON TES	T 0 0 0 0 5	0 0 0 7	0 0 0 6	0 0 0 6	0 0 0 7	
40 MG/M3 ANIMAL I	D 0 1 0 0 0 0 1	0 1 0 0 2	0 1 0 0 3	0 1 0 0 4	0 1 0 0 5	* TOTALS
ALIMENTARY SYSTEM	·					
Liver	+	+	+	+	+	5
CARDIOVASCULAR SYSTEM						
NONE						
ENDOCRINE SYSTEM						
Thyroid Gland	+	+	+	+	+	5
GENERAL BODY SYSTEM						
NONE						
GENITAL SYSTEM						
Testes					+	1
HEMATOPOIETIC SYSTEM						
Lymph Node				+		1
Lymph Node, Bronchial	+					1
INTEGUMENTARY SYSTEM						
NONE						

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

MUSCULOSKELETAL SYSTEM

X .. Lesion present

I .. Insufficient tissue

M .. Missing tissue

A .. Autolysis precludes evaluation

BLANK .. Not examined microscopically

1-4 .. Lesion qualified as:

1) Minimal 3) Moderate

2) Mild

^{+ ..} Tissue examined microscopically

Cobalt CAS Number: 7440-48-4

Date Report Requested: 09/13/2016 Time Report Requested: 11:25:33 First Dose M/F: 08/02/04 / 08/02/04

Lab: BNW

			1	_			
DAY ON TEST	0	0	0	0	0		
FISCHER 344 RATS MALE	0 5	0 7	0 6	0 6	0 7		
40 MG/M3					0		
40 MG/M3 ANIMAL ID	0	0	0	0	1		
A CHINA LE 15	0	0	0	0	0		
	1	2	3	4	5	* TOTALS	<u>; </u>
NONE							
NERVOUS SYSTEM							
Brain	+	+	+	+	+	5	
Hemorrhage	-	-		-	1	1 1.0	.0
RESPIRATORY SYSTEM							
Lung	+	+	+	+	+	5	
Hemorrhage	3	4	2	3	3	5 3.0	
Inflammation, Acute	2	2	2	2	2	5 2.0	
Alveolar Epithelium, Hyperplasia	1	3 1	1	1	1	5 1.4	
Alveolus, Infiltration Cellular, Histiocyte Bronchiole, Epithelium, Necrosis	1	1	2 1	1	1	5 1.2 3 1.0	
Nose	+	+	+	+	+	5	
Olfactory Epithelium, Atrophy	1	2		-	2	3 1.7	7
Olfactory Epithelium, Necrosis	3	3	3	3	3	5 3.0	
Respiratory Epithelium, Metaplasia, Squamous			_		1	1 1.0	
Respiratory Epithelium, Necrosis	1	2	1	1	2	5 1.4	.4
SPECIAL SENSES SYSTEM							
NONE							
URINARY SYSTEM							
Kidney	+	+	+	+	+	5	

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

Experiment Number: 60311 - 01

Species/Strain: RATS/F 344/N

Route: RESPIRATORY EXPOSURE WHOLE BODY

Test Type: 14-DAY

M .. Missing tissue
A .. Autolysis precludes evaluation

BLANK .. Not examined microscopically

^{+ ..} Tissue examined microscopically

X .. Lesion present
I .. Insufficient tissue

^{1-4 ..} Lesion qualified as:

¹⁾ Minimal 3) Moderate

Test Type: 14-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/F 344/N

P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL

Cobalt

CAS Number: 7440-48-4

Date Report Requested: 09/13/2016 Time Report Requested: 11:25:33 First Dose M/F: 08/02/04 / 08/02/04

Lab: BNW

DAY ON TEST FISCHER 344 RATS MALE	0 0 0 5	0 0 0 7	0 0 0 6	0 0 0 6	
40 MG/M3 ANIMAL ID	0 1 0 0 1	0 1 0 0 2	0 1 0 0 3	0 1 0 0 4	* TOTALS
Urinary Bladder	+	+	+	+	5

*** END OF MALE DATA ***

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

^{+ ..} Tissue examined microscopically

X .. Lesion present

I .. Insufficient tissue

A .. Autolysis precludes evaluation

BLANK .. Not examined microscopically

²⁾ Mild 4) Marked

Test Type: 14-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/F 344/N

P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL

Cobalt

CAS Number: 7440-48-4

Date Report Requested: 09/13/2016 Time Report Requested: 11:25:33 First Dose M/F: 08/02/04 / 08/02/04

Lab: BNW

DAY ON TE	ST 0 0 1 6	0 0 1 6	0 0 1 6	0 0 1 6	0 0 1 6	
CONTROL	ID 0 0 1 0 1 1 0 1 1	0 0 1 0 2	0 0 1 0 3	0 0 1 0 4	0 0 1 0 5	* TOTALS
ALIMENTARY SYSTEM		'				
Liver	+	+	+	+	+	5
CARDIOVASCULAR SYSTEM						
NONE						
ENDOCRINE SYSTEM						
Thyroid Gland	+	+	+	+	+	5
GENERAL BODY SYSTEM						
NONE						
GENITAL SYSTEM						
NONE						
HEMATOPOIETIC SYSTEM						
NONE						
INTEGUMENTARY SYSTEM						
NONE						
MUSCULOSKELETAL SYSTEM						
NONE						

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

X .. Lesion present

I .. Insufficient tissue

M .. Missing tissue

A .. Autolysis precludes evaluation

BLANK .. Not examined microscopically

1-4 .. Lesion qualified as:

1) Minimal 3) Moderate

^{+ ..} Tissue examined microscopically

Test Type: 14-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/F 344/N

P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL

Cobalt

CAS Number: 7440-48-4

Date Report Requested: 09/13/2016 Time Report Requested: 11:25:33 First Dose M/F: 08/02/04 / 08/02/04

Lab: BNW

DAY ON TEST FISCHER 344 RATS FEMALE	0 0 1 6	0 0 1 6	0 0 1 6	0 0 1 6	0 0 1 6	
CONTROL ANIMAL ID	0 0 1 0 1	0 0 1 0 2	0 0 1 0 3	0 0 1 0 4	0 0 1 0 5	* TOTAL
NERVOUS SYSTEM						
Brain	+	+	+	+	+	5
RESPIRATORY SYSTEM						
Lung	+	+	+	+	+	5
Nose	+	+	+	+	+	5
SPECIAL SENSES SYSTEM						
NONE						
URINARY SYSTEM						
Kidney	+	+	+	+	+	5

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

^{+ ..} Tissue examined microscopically

X .. Lesion present

I .. Insufficient tissue

M .. Missing tissue

A .. Autolysis precludes evaluation

BLANK .. Not examined microscopically

¹⁾ Minimal 3) Moderate

²⁾ Mild

Species/Strain: RATS/F 344/N

Route: RESPIRATORY EXPOSURE WHOLE BODY

Test Type: 14-DAY

P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL

Cobalt

CAS Number: 7440-48-4

Date Report Requested: 09/13/2016 Time Report Requested: 11:25:33 First Dose M/F: 08/02/04 / 08/02/04

Lab: BNW

DAYON TECT	0	0	0	0	0	
DAY ON TEST	0	0	0	0	0	
FISCHER 344 RATS FEMALE	1	1	1	1	1	
1.001.2.(01.1.(.(01.2	6	6	6	6	6	
2.5 MG/M3	0	۸	١	٨	0	
	Λ.	lñ	1 0	١٨	ő	
ANIMAL ID	3	3	3	3	3	
	0	0	0	l ñ	ő	
	1	2	3	4	5	
	1 '	~	3	-	٦	

ALIMENTARY SYSTEM

NONE

CARDIOVASCULAR SYSTEM

NONE

ENDOCRINE SYSTEM

NONE

GENERAL BODY SYSTEM

NONE

GENITAL SYSTEM

NONE

HEMATOPOIETIC SYSTEM

NONE

INTEGUMENTARY SYSTEM

NONE

MUSCULOSKELETAL SYSTEM

NONE

M .. Missing tissue

X .. Lesion present

A .. Autolysis precludes evaluation

I .. Insufficient tissue

BLANK .. Not examined microscopically

1-4 .. Lesion qualified as:

1) Minimal 3) Moderate

2) Mild 4) M

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

^{+ ..} Tissue examined microscopically

Test Type: 14-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/F 344/N

P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL

Cobalt

CAS Number: 7440-48-4

Date Report Requested: 09/13/2016 Time Report Requested: 11:25:33 First Dose M/F: 08/02/04 / 08/02/04

Lab: BNW

DAY ON TEST FISCHER 344 RATS FEMALE	0 0 1 6	0 0 1 6	0 0 1 6	0 0 1 6	0 0 1 6	
2.5 MG/M3 ANIMAL ID	0 0 3 0 1	0 0 3 0 2	0 0 3 0 3	0 0 3 0 4	0 0 3 0 5	* TOTALS

NERVOUS SYSTEM

NONE

RESPIRATORY SYSTEM

Lung Bronchiole, Epithelium, Necrosis Bronchiole, Epithelium, Vacuolization Cytoplasmic	+	+ 1	+ 1	+	+ 1	5		1.0 1.0
Nose Olfactory Epithelium, Atrophy Olfactory Epithelium, Necrosis				+ 2 1		5	_	1.8 1.0
Offactory Epithelium, Necrosis	1	1	1	Т	I		Э	1.0

SPECIAL SENSES SYSTEM

NONE

URINARY SYSTEM

NONE

I .. Insufficient tissue

A .. Autolysis precludes evaluation

BLANK .. Not examined microscopically

1) Minimal 3) Moderate

2) Mild

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

^{+ ..} Tissue examined microscopically

X .. Lesion present

Test Type: 14-DAY

P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL

Cobalt

CAS Number: 7440-48-4

Date Report Requested: 09/13/2016 Time Report Requested: 11:25:33 First Dose M/F: 08/02/04 / 08/02/04

Lab: BNW

Species/Strain: RATS/F 344/N

Route: RESPIRATORY EXPOSURE WHOLE BODY

FISCHER 344 RATS	DAY ON TEST	0 0 1 6	0 0 1 6	0 0 1 6	0 0 1 6	0 0 1 6	_
5 MG/M3	ANIMAL ID	0 0 5 0 1	0 0 5 0 2	0 0 5 0 3	0 0 5 0 4	0 0 5 0 5	* TOTALS
ALIMENTARY SYSTE	ΞM						
NONE							
CARDIOVASCULAR	SYSTEM				•		
NONE							
ENDOCRINE SYSTEM	М						
NONE							
GENERAL BODY SY	STEM						
NONE							
GENITAL SYSTEM							
NONE						_	
HEMATOPOIETIC SY	'STEM						

INTEGUMENTARY SYSTEM

NONE

Lymph Node

MUSCULOSKELETAL SYSTEM

NONE

M .. Missing tissue

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

1-4 .. Lesion qualified as:

1) Minimal 3) Moderate

2) Mild 4)

4) Marked

1

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

^{+ ..} Tissue examined microscopically

X .. Lesion present
I .. Insufficient tissue

Test Type: 14-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/F 344/N

P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL

Cobalt

CAS Number: 7440-48-4

Date Report Requested: 09/13/2016 Time Report Requested: 11:25:33 First Dose M/F: 08/02/04 / 08/02/04

Lab: BNW

DAY ON TEST FISCHER 344 RATS FEMALE	0 0 1 6	0 0 1 6	0 0 1 6	0 0 1 6	0 0 1 6	
5 MG/M3 ANIMAL ID	0 0 5 0 1	0 0 5 0 2	0 0 5 0 3	0 0 5 0 4	00505	* TOTALS

NERVOUS SYSTEM

NONE

RESPIRATORY SYSTEM

Lung	+	+	+	+	- -	5	
Bronchiole, Epithelium, Necrosis		1				1 1.0	0
Bronchiole, Epithelium, Vacuolization Cytoplasmic	1	1	1	1		5 1.0	0
Nose	+	+	+	+	-	5	
Olfactory Epithelium, Atrophy	2	2	2	2	<u>) </u>	5 2.0	0
Olfactory Epithelium, Necrosis	1	1	1			3 1.0	0
Respiratory Epithelium, Atrophy			2			1 2.0	0

SPECIAL SENSES SYSTEM

NONE

URINARY SYSTEM

NONE

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

^{+ ..} Tissue examined microscopically

X .. Lesion present

I .. Insufficient tissue

M .. Missing tissue

A .. Autolysis precludes evaluation

BLANK .. Not examined microscopically

²⁾ Mild

Species/Strain: RATS/F 344/N

Test Type: 14-DAY

P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL

Cobalt

Coh

Route: RESPIRATORY EXPOSURE WHOLE BODY

CAS Number: 7440-48-4

Date Report Requested: 09/13/2016 Time Report Requested: 11:25:33 First Dose M/F: 08/02/04 / 08/02/04

Lab: BNW

ALIMENTARY SYSTEM

NONE

CARDIOVASCULAR SYSTEM

NONE

ENDOCRINE SYSTEM

NONE

GENERAL BODY SYSTEM

NONE

GENITAL SYSTEM

NONE

HEMATOPOIETIC SYSTEM

NONE

INTEGUMENTARY SYSTEM

NONE

MUSCULOSKELETAL SYSTEM

NONE

M .. Missing tissue

X .. Lesion present

A .. Autolysis precludes evaluation

I .. Insufficient tissue

BLANK .. Not examined microscopically

1-4 .. Lesion qualified as:

1) Minimal 3) Moderate

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

^{+ ..} Tissue examined microscopically

Cobalt

CAS Number: 7440-48-4

Date Report Requested: 09/13/2016 Time Report Requested: 11:25:33 First Dose M/F: 08/02/04 / 08/02/04

Lab: BNW

DAY ON TEST FISCHER 344 RATS FEMALE	0 0 1 6	0 0 1 6	0 0 1 6	0 0 1 6	0 0 1 6	
10 MG/M3 ANIMAL ID	0 0 7 0 1	0 0 7 0 2	0 7 0	0 0 7 0 4	0 0 7 0 5	* TOTALS
NERVOUS SYSTEM						
Brain	+	+	+	+	+	5
RESPIRATORY SYSTEM						
Lung Bronchiole, Epithelium, Necrosis	+	+	+	+	+	5 4 1.0
Bronchiole, Epithelium, Vacuolization Cytoplasmic	2	1	2	2	2	5 1.8
Interstitium, Fibrosis	_1	1	1	1		4 1.0
Nose	+	+	+	+	+	5
Olfactory Epithelium, Atrophy	2	2	2	2	2	5 2.0
Olfactory Epithelium, Necrosis	1	1	1	1	1	5 1.0
Respiratory Epithelium, Atrophy	2		2			2 2.0

SPECIAL SENSES SYSTEM

Experiment Number: 60311 - 01

Species/Strain: RATS/F 344/N

Route: RESPIRATORY EXPOSURE WHOLE BODY

Test Type: 14-DAY

NONE

URINARY SYSTEM

NONE

M .. Missing tissue

A .. Autolysis precludes evaluation

BLANK .. Not examined microscopically

1-4 .. Lesion qualified as:

1) Minimal 3) Moderate

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

^{+ ..} Tissue examined microscopically

X .. Lesion present

I .. Insufficient tissue

Test Type: 14-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/F 344/N

P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL

Cobalt

CAS Number: 7440-48-4

Date Report Requested: 09/13/2016 Time Report Requested: 11:25:33 First Dose M/F: 08/02/04 / 08/02/04

Lab: BNW

DAY ON TEST	ST 0 0 0 5	0 0 1 6	0 0 1 6	0 0 0 7	0 0 1 3	
20 MG/M3 ANIMAL	ID 0 0 9 0 1	0 0 9 0 2	0 0 9 0 3	0 0 9 0 4	0 0 9 0 5	* TOTALS
ALIMENTARY SYSTEM	l		1	l	1	TO TALLS
Liver	+	+	+	+	+	5
CARDIOVASCULAR SYSTEM						
NONE						
ENDOCRINE SYSTEM						
Thyroid Gland	+	+	+	+	+	5
GENERAL BODY SYSTEM						
NONE						
GENITAL SYSTEM						
NONE						
HEMATOPOIETIC SYSTEM						
NONE		,			_	
INTEGUMENTARY SYSTEM						
NONE						
MUSCULOSKELETAL SYSTEM						
NONE						

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

X .. Lesion present

I .. Insufficient tissue

M .. Missing tissue

A .. Autolysis precludes evaluation

BLANK .. Not examined microscopically

1-4 .. Lesion qualified as:

1) Minimal 3) Moderate

^{+ ..} Tissue examined microscopically

Cobalt

CAS Number: 7440-48-4

Date Report Requested: 09/13/2016 Time Report Requested: 11:25:33 First Dose M/F: 08/02/04 / 08/02/04

Lab: BNW

DAY ON TEST FISCHER 344 RATS FEMALE	0 0 0 5	0 0 1 6	0 0 1 6	0 0 0 7	0 0 1 3		
20 MG/M3 ANIMAL ID	0 0 9 0 1	0 0 9 0 2	0 0 9 0 3	0 0 9 0 4	0 0 9 0 5	**	TOTALS
NERVOUS SYSTEM					_		
Brain Hemorrhage	+ 3	+	+	+	+ 1	5	2 2.
RESPIRATORY SYSTEM							
Lung	+	+	+	+	+	5	
Hemorrhage	2			3	1		3 2.
Inflammation, Acute	1			1			2 1.
Alveolar Epithelium, Hyperplasia	1	_	_	1	_		2 1.
Alveolus, Infiltration Cellular, Histiocyte	2	2 1	2	2	2		5 2.
Bronchiole, Epithelium, Necrosis Bronchiole, Epithelium, Vacuolization Cytoplasmic	ı	2	2	ı	1		3 1. 3 1.
Interstitium, Fibrosis		3	3		3		3 3.
Nose	+	+	+	+	+	5	
Foreign Body		Χ					1
Olfactory Epithelium, Atrophy	2	3	3		3		4 2.
Olfactory Epithelium, Metaplasia, Squamous			1				1 1.
Olfactory Epithelium, Necrosis	3	1	2	3	1		5 2.
Respiratory Epithelium, Atrophy			3				1 3.
Respiratory Epithelium, Metaplasia, Squamous	_	1		_			1 1.
Respiratory Epithelium, Necrosis	2	1	1	2	1		5 1.

SPECIAL SENSES SYSTEM

Experiment Number: 60311 - 01

Species/Strain: RATS/F 344/N

Route: RESPIRATORY EXPOSURE WHOLE BODY

Test Type: 14-DAY

NONE

X .. Lesion present

I .. Insufficient tissue

A .. Autolysis precludes evaluation

BLANK .. Not examined microscopically

1-4 .. Lesion qualified as:

1) Minimal 3) Moderate

2) Mild 4)

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

^{+ ..} Tissue examined microscopically

M .. Missing tissue

Test Type: 14-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/F 344/N

P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL

Cobalt

CAS Number: 7440-48-4

Date Report Requested: 09/13/2016 Time Report Requested: 11:25:33 First Dose M/F: 08/02/04 / 08/02/04

Lab: BNW

DAY ON TEST FISCHER 344 RATS FEMALE	0 0 0 5	0 1	0 0	0 0 0 0 1 7 3	
20 MG/M3 ANIMAL ID	0 0 9 0 1	0 0 9 9 0 2	0 0) j	* TOTALS
URINARY SYSTEM Kidney			L 4	+ +	5

I .. Insufficient tissue

M .. Missing tissue

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

1-4 .. Lesion qualified as:

1) Minimal 3) Moderate

2) Mild

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

^{+ ..} Tissue examined microscopically

X .. Lesion present

Test Type: 14-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/F 344/N

P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL

Cobalt

CAS Number: 7440-48-4

Date Report Requested: 09/13/2016 Time Report Requested: 11:25:33 First Dose M/F: 08/02/04 / 08/02/04

Lab: BNW

DAY ON TES	TEST 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	
40 MG/M3 ANIMAL	0 0 0 0 0 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1	* TOTALS
ALIMENTARY SYSTEM		TOTALO
Liver	+ + + + +	5
CARDIOVASCULAR SYSTEM		
NONE		
ENDOCRINE SYSTEM		
Thyroid Gland	+ + + M +	4
GENERAL BODY SYSTEM		
NONE		
GENITAL SYSTEM		
NONE		
HEMATOPOIETIC SYSTEM		
NONE		
INTEGUMENTARY SYSTEM		
NONE		
MUSCULOSKELETAL SYSTEM		
NONE		

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

X .. Lesion present

I .. Insufficient tissue

M .. Missing tissue

A .. Autolysis precludes evaluation

BLANK .. Not examined microscopically

1-4 .. Lesion qualified as:

1) Minimal 3) Moderate

^{+ ..} Tissue examined microscopically

Cobalt

CAS Number: 7440-48-4

Date Report Requested: 09/13/2016 Time Report Requested: 11:25:33 First Dose M/F: 08/02/04 / 08/02/04

Lab: BNW

DAY ON TEST	0 0 0 6	0 0 0 5	0 0 0 6	0 0 0 6	0 0 0 7		
40 MG/M3 ANIMAL ID	0 1 1 0 1				* TC	* TOTALS	
NERVOUS SYSTEM							
Brain Hemorrhage	+ 2	+	+	+	+ 2	5	2 2.0
RESPIRATORY SYSTEM							
Lung Hemorrhage Inflammation, Acute Alveolar Epithelium, Hyperplasia Alveolus, Infiltration Cellular, Histiocyte Bronchiole, Epithelium, Necrosis	+ 3 2 1 2	+ 2 1 1	+ 3 1 1	+ 3 2 2 1	+ 3 1	5	5 2.8 5 1.4 2 1.0 5 1.8 3 1.0
Nose Inflammation, Acute Olfactory Epithelium, Atrophy Olfactory Epithelium, Metaplasia, Squamous Olfactory Epithelium, Necrosis Respiratory Epithelium, Necrosis	+ 3 1	+ 3 1	+ 1 3 1	+ 3 2	+ 2 1 3 2	5	1 1.0 1 2.0 1 1.0 5 3.0 5 1.4
Trachea			+		+	2	
SPECIAL SENSES SYSTEM							
NONE							
URINARY SYSTEM							
Kidney	+	+	+	+	+	5	

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

Experiment Number: 60311 - 01

Species/Strain: RATS/F 344/N

Route: RESPIRATORY EXPOSURE WHOLE BODY

Test Type: 14-DAY

M .. Missing tissue

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

2) Mild

^{+ ..} Tissue examined microscopically

X .. Lesion present
I .. Insufficient tissue

^{1-4 ..} Lesion qualified as:1) Minimal 3) Moderate

Test Type: 14-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/F 344/N

P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL

Cobalt

CAS Number: 7440-48-4

Date Report Requested: 09/13/2016 Time Report Requested: 11:25:33 First Dose M/F: 08/02/04 / 08/02/04

Lab: BNW

DAY ON TEST FISCHER 344 RATS FEMALE	0 0 0 6	0 0 0 5	0 0 0 6	0 0 0 6	0 0 0 7	_
40 MG/M3 ANIMAL ID	0 1 1 0 1	0 1 1 0 2	0 1 1 0 3	0 1 1 0 4	0 1 1 0 5	* TOTALS
Urinary Bladder			+	+		2

*** END OF REPORT ***

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

^{+ ..} Tissue examined microscopically

X .. Lesion present

I .. Insufficient tissue

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