

**TDMS No.** 60311 - 03

**Test Type:** 90-DAY

**Route:** RESPIRATORY EXPOSURE WHOLE BODY

**Species/Strain:** RATS/F 344

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

COBALT

**CAS Number:** 7440-48-4

F1\_R2

**Date Report Requested:** 06/18/2007

**Time Report Requested:** 13:39:05

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

**Lab:** BNW

**C 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  
**TDMSE Version:** 1.7.0

TDMS No. 60311 - 03

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Date Report Requested: 06/18/2007

Test Type: 90-DAY

COBALT

Time Report Requested: 13:39:05

Route: RESPIRATORY EXPOSURE WHOLE BODY

CAS Number: 7440-48-4

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

Species/Strain: RATS/F 344

Lab: BNW

ANIMAL NUM: 1 TMT: 1  
DOSE: control

SEX: Male  
DISP: Terminal Sacrifice

DAY ON TEST: 93  
HISTO: 53036

ORGAN AND ACCOUNTABLE SITE STATUS

**NORMAL**

- |                             |                          |                            |                           |
|-----------------------------|--------------------------|----------------------------|---------------------------|
| * Adrenal Cortex            | * Adrenal Medulla        | * Bone                     | * Bone Marrow             |
| * Brain                     | * Epididymis             | * Esophagus                | * Eye                     |
| * Harderian Gland           | * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum |
| * Intestine Small, Duodenum | * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      |
| * Kidney                    | * Larynx                 | * Liver                    | * Lung                    |
| * Lymph Node, Mediastinal   | * Lymph Node, Mesenteric | * Nose                     | * Pancreas                |
| * Parathyroid Gland         | * Pituitary Gland        | * Preputial Gland          | * Prostate                |
| * Salivary Glands           | * Seminal Vesicle        | * Skin                     | * Spleen                  |
| * Stomach, Forestomach      | * Stomach, Glandular     | * Testes                   | * Thymus                  |
| * Thyroid Gland             | * Trachea                | * Urinary Bladder          |                           |

**MISSING**

- |                         |                          |                 |
|-------------------------|--------------------------|-----------------|
| * Lymph Node, Bronchial | * Lymph Node, Mandibular | * Mammary Gland |
|-------------------------|--------------------------|-----------------|

**OBSERVATIONS**

- |         |                |         |
|---------|----------------|---------|
| * Heart | Cardiomyopathy | Minimal |
|---------|----------------|---------|

TDMS No. 60311 - 03

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/F 344

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

COBALT

CAS Number: 7440-48-4

Date Report Requested: 06/18/2007

Time Report Requested: 13:39:05

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

Lab: BNW

ANIMAL NUM: 2 TMT: 1 DOSE: control

SEX: Male DISP: Terminal Sacrifice

DAY ON TEST: 93 HISTO: 53037

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Cortex
- \* Brain
- \* Harderian Gland
- \* Intestine Small, Duodenum
- \* Larynx
- \* Nose
- \* Preputial Gland
- \* Skin
- \* Testes
- \* Urinary Bladder
- \* Adrenal Medulla
- \* Epididymis
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Lung
- \* Pancreas
- \* Prostate
- \* Spleen
- \* Thymus
- \* Bone
- \* Esophagus
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Lymph Node, Mediastinal
- \* Parathyroid Gland
- \* Salivary Glands
- \* Stomach, Forestomach
- \* Thyroid Gland
- \* Bone Marrow
- \* Eye
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Lymph Node, Mesenteric
- \* Pituitary Gland
- \* Seminal Vesicle
- \* Stomach, Glandular
- \* Trachea

MISSING

- \* Lymph Node, Bronchial
- \* Lymph Node, Mandibular
- \* Mammary Gland

OBSERVATIONS

- \* Heart
- \* Liver
- [ Hepatodiaphragmatic Nodule TGLs = 1-6 ]
- Cardiomyopathy
- Hepatodiaphragmatic Nodule
- Minimal

TDMS No. 60311 - 03

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/F 344

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

COBALT

CAS Number: 7440-48-4

Date Report Requested: 06/18/2007

Time Report Requested: 13:39:05

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

Lab: BNW

ANIMAL NUM: 3

TMT: 1  
DOSE: control

SEX: Male  
DISP: Terminal Sacrifice

DAY ON TEST: 93  
HISTO: 53038

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Cortex
- \* Brain
- \* Harderian Gland
- \* Intestine Small, Duodenum
- \* Kidney
- \* Lymph Node, Mesenteric
- \* Parathyroid Gland
- \* Salivary Glands
- \* Stomach, Forestomach
- \* Thyroid Gland
- \* Adrenal Medulla
- \* Epididymis
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Larynx
- \* Mammary Gland
- \* Pituitary Gland
- \* Seminal Vesicle
- \* Stomach, Glandular
- \* Trachea
- \* Bone
- \* Esophagus
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Liver
- \* Nose
- \* Preputial Gland
- \* Skin
- \* Testes
- \* Urinary Bladder
- \* Bone Marrow
- \* Eye
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Lymph Node, Mediastinal
- \* Pancreas
- \* Prostate
- \* Spleen
- \* Thymus

MISSING

- \* Lymph Node, Bronchial
- \* Lymph Node, Mandibular

OBSERVATIONS

- \* Heart
- \* Lung
- Alveolus
- Cardiomyopathy
- Hemorrhage
- Minimal
- Minimal

TDMS No. 60311 - 03

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Date Report Requested: 06/18/2007

Test Type: 90-DAY

COBALT

Time Report Requested: 13:39:05

Route: RESPIRATORY EXPOSURE WHOLE BODY

CAS Number: 7440-48-4

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

Species/Strain: RATS/F 344

Lab: BNW

ANIMAL NUM: 4 TMT: 1 DOSE: control

SEX: Male DISP: Terminal Sacrifice

DAY ON TEST: 93 HISTO: 53039

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                             |                          |                            |                           |
|-----------------------------|--------------------------|----------------------------|---------------------------|
| * Adrenal Cortex            | * Adrenal Medulla        | * Bone                     | * Bone Marrow             |
| * Brain                     | * Epididymis             | * Esophagus                | * Eye                     |
| * Harderian Gland           | * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum |
| * Intestine Small, Duodenum | * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      |
| * Kidney                    | * Larynx                 | * Liver                    | * Lung                    |
| * Lymph Node, Mediastinal   | * Lymph Node, Mesenteric | * Nose                     | * Pancreas                |
| * Parathyroid Gland         | * Pituitary Gland        | * Preputial Gland          | * Prostate                |
| * Salivary Glands           | * Seminal Vesicle        | * Skin                     | * Spleen                  |
| * Stomach, Forestomach      | * Stomach, Glandular     | * Testes                   | * Thymus                  |
| * Thyroid Gland             | * Trachea                | * Urinary Bladder          |                           |

MISSING

- |                         |                          |                 |
|-------------------------|--------------------------|-----------------|
| * Lymph Node, Bronchial | * Lymph Node, Mandibular | * Mammary Gland |
|-------------------------|--------------------------|-----------------|

OBSERVATIONS

* Heart	Cardiomyopathy	Minimal
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TDMS No. 60311 - 03

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Date Report Requested: 06/18/2007

Test Type: 90-DAY

COBALT

Time Report Requested: 13:39:05

Route: RESPIRATORY EXPOSURE WHOLE BODY

CAS Number: 7440-48-4

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

Species/Strain: RATS/F 344

Lab: BNW

ANIMAL NUM: 5      TMT: 1  
DOSE: control

SEX: Male  
DISP: Terminal Sacrifice

DAY ON TEST: 93  
HISTO: 53040

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

- |                             |                          |                            |                           |
|-----------------------------|--------------------------|----------------------------|---------------------------|
| * Adrenal Cortex            | * Adrenal Medulla        | * Bone                     | * Bone Marrow             |
| * Brain                     | * Epididymis             | * Esophagus                | * Eye                     |
| * Harderian Gland           | * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum |
| * Intestine Small, Duodenum | * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      |
| * Larynx                    | * Liver                  | * Lung                     | * Lymph Node, Mediastinal |
| * Lymph Node, Mesenteric    | * Mammary Gland          | * Nose                     | * Pancreas                |
| * Parathyroid Gland         | * Pituitary Gland        | * Preputial Gland          | * Prostate                |
| * Salivary Glands           | * Seminal Vesicle        | * Skin                     | * Spleen                  |
| * Stomach, Forestomach      | * Stomach, Glandular     | * Testes                   | * Thymus                  |
| * Thyroid Gland             | * Trachea                | * Urinary Bladder          |                           |

**MISSING**

- |                         |                          |
|-------------------------|--------------------------|
| * Lymph Node, Bronchial | * Lymph Node, Mandibular |
|-------------------------|--------------------------|

**OBSERVATIONS**

- |          |                |         |
|----------|----------------|---------|
| * Heart  | Cardiomyopathy | Minimal |
| * Kidney | Nephropathy    | Minimal |

TDMS No. 60311 - 03

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Date Report Requested: 06/18/2007

Test Type: 90-DAY

COBALT

Time Report Requested: 13:39:05

Route: RESPIRATORY EXPOSURE WHOLE BODY

CAS Number: 7440-48-4

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

Species/Strain: RATS/F 344

Lab: BNW

ANIMAL NUM: 6 TMT: 1  
DOSE: control

SEX: Male  
DISP: Terminal Sacrifice

DAY ON TEST: 93  
HISTO: 53041

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                             |                          |                            |                           |
|-----------------------------|--------------------------|----------------------------|---------------------------|
| * Adrenal Cortex            | * Adrenal Medulla        | * Bone                     | * Bone Marrow             |
| * Brain                     | * Epididymis             | * Esophagus                | * Eye                     |
| * Harderian Gland           | * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum |
| * Intestine Small, Duodenum | * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      |
| * Kidney                    | * Larynx                 | * Liver                    | * Lung                    |
| * Lymph Node, Mediastinal   | * Lymph Node, Mesenteric | * Mammary Gland            | * Nose                    |
| * Parathyroid Gland         | * Pituitary Gland        | * Preputial Gland          | * Prostate                |
| * Salivary Glands           | * Seminal Vesicle        | * Skin                     | * Spleen                  |
| * Stomach, Glandular        | * Testes                 | * Thymus                   | * Thyroid Gland           |
| * Trachea                   | * Urinary Bladder        |                            |                           |

MISSING

- |                         |                          |
|-------------------------|--------------------------|
| * Lymph Node, Bronchial | * Lymph Node, Mandibular |
|-------------------------|--------------------------|

OBSERVATIONS

- |  |                |                    |
|--|----------------|--------------------|
| * Heart  | Cardiomyopathy | Minimal            |
| * Pancreas [ Cyst TGLs = 1-14 ] Duct               | Cyst           | Moderate           |
| * Stomach, Forestomach [ Hyperplasia TGLs = 2-10 ] | Hyperplasia    | Squamous, Moderate |

TDMS No. 60311 - 03

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Date Report Requested: 06/18/2007

Test Type: 90-DAY

COBALT

Time Report Requested: 13:39:05

Route: RESPIRATORY EXPOSURE WHOLE BODY

CAS Number: 7440-48-4

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

Species/Strain: RATS/F 344

Lab: BNW

ANIMAL NUM: 7 TMT: 1  
DOSE: control

SEX: Male  
DISP: Terminal Sacrifice

DAY ON TEST: 93  
HISTO: 53042

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                             |                          |                            |                           |
|-----------------------------|--------------------------|----------------------------|---------------------------|
| * Adrenal Cortex            | * Adrenal Medulla        | * Bone                     | * Bone Marrow             |
| * Brain                     | * Epididymis             | * Esophagus                | * Harderian Gland         |
| * Heart                     | * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum |
| * Intestine Small, Duodenum | * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      |
| * Kidney                    | * Larynx                 | * Liver                    | * Lung                    |
| * Lymph Node, Mediastinal   | * Lymph Node, Mesenteric | * Mammary Gland            | * Nose                    |
| * Pancreas                  | * Parathyroid Gland      | * Pituitary Gland          | * Preputial Gland         |
| * Prostate                  | * Salivary Glands        | * Seminal Vesicle          | * Skin                    |
| * Spleen                    | * Stomach, Forestomach   | * Stomach, Glandular       | * Testes                  |
| * Thymus                    | * Thyroid Gland          | * Trachea                  | * Urinary Bladder         |

MISSING

- |                         |                          |
|-------------------------|--------------------------|
| * Lymph Node, Bronchial | * Lymph Node, Mandibular |
|-------------------------|--------------------------|

OBSERVATIONS

* Eye	Retina	Atrophy	Minimal
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TDMS No. 60311 - 03  
Test Type: 90-DAY  
Route: RESPIRATORY EXPOSURE WHOLE BODY  
Species/Strain: RATS/F 344

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA  
COBALT  
CAS Number: 7440-48-4

Date Report Requested: 06/18/2007  
Time Report Requested: 13:39:05  
First Dose M/F: 03/08/05 / 03/07/05  
Lab: BNW

ANIMAL NUM: 8 TMT: 1 SEX: Male DAY ON TEST: 93  
DOSE: control DISP: Terminal Sacrifice HISTO: 53043

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

* Adrenal Cortex	* Adrenal Medulla	* Bone	* Bone Marrow
* Brain	* Epididymis	* Esophagus	* Eye
* Harderian Gland	* Intestine Large, Cecum	* Intestine Large, Colon	* Intestine Large, Rectum
* Intestine Small, Duodenum	* Intestine Small, Ileum	* Intestine Small, Jejunum	* Islets, Pancreatic
* Larynx	* Liver	* Lung	* Lymph Node, Mesenteric
* Mammary Gland	* Nose	* Pancreas	* Parathyroid Gland
* Pituitary Gland	* Preputial Gland	* Prostate	* Salivary Glands
* Seminal Vesicle	* Skin	* Spleen	* Stomach, Forestomach
* Stomach, Glandular	* Testes	* Thymus	* Thyroid Gland
* Trachea	* Urinary Bladder		

MISSING

* Lymph Node, Bronchial	* Lymph Node, Mandibular	* Lymph Node, Mediastinal
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OBSERVATIONS

* Heart	Cardiomyopathy	Minimal
* Kidney	Nephropathy	Minimal

TDMS No. 60311 - 03

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/F 344

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

COBALT

CAS Number: 7440-48-4

Date Report Requested: 06/18/2007

Time Report Requested: 13:39:05

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

Lab: BNW

ANIMAL NUM: 9 TMT: 1  
DOSE: control

SEX: Male  
DISP: Terminal Sacrifice

DAY ON TEST: 93  
HISTO: 53044

ORGAN AND ACCOUNTABLE SITE STATUS

**NORMAL**

- |                          |                            |                           |                             |
|--------------------------|----------------------------|---------------------------|-----------------------------|
| * Adrenal Cortex         | * Adrenal Medulla          | * Bone                    | * Bone Marrow               |
| * Brain                  | * Epididymis               | * Esophagus               | * Eye                       |
| * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum | * Intestine Small, Duodenum |
| * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      | * Larynx                    |
| * Liver                  | * Lung                     | * Lymph Node, Mediastinal | * Lymph Node, Mesenteric    |
| * Mammary Gland          | * Nose                     | * Pancreas                | * Parathyroid Gland         |
| * Pituitary Gland        | * Preputial Gland          | * Prostate                | * Salivary Glands           |
| * Seminal Vesicle        | * Skin                     | * Spleen                  | * Stomach, Forestomach      |
| * Stomach, Glandular     | * Testes                   | * Thymus                  | * Thyroid Gland             |
| * Trachea                | * Urinary Bladder          |                           |                             |

**MISSING**

- |                         |                          |
|-------------------------|--------------------------|
| * Lymph Node, Bronchial | * Lymph Node, Mandibular |
|-------------------------|--------------------------|

**OBSERVATIONS**

- |                   |                |                          |
|-------------------|----------------|--------------------------|
| * Harderian Gland | Inflammation   | Chronic Active, Moderate |
| * Heart           | Cardiomyopathy | Minimal                  |
| * Kidney          | Nephropathy    | Minimal                  |

TDMS No. 60311 - 03

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/F 344

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

COBALT

CAS Number: 7440-48-4

Date Report Requested: 06/18/2007

Time Report Requested: 13:39:05

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

Lab: BNW

ANIMAL NUM: 10 TMT: 1 DOSE: control

SEX: Male DISP: Terminal Sacrifice

DAY ON TEST: 93 HISTO: 53045

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Cortex
- \* Brain
- \* Harderian Gland
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Lymph Node, Mesenteric
- \* Parathyroid Gland
- \* Salivary Glands
- \* Stomach, Forestomach
- \* Thyroid Gland
- \* Adrenal Medulla
- \* Epididymis
- \* Heart
- \* Intestine Small, Duodenum
- \* Larynx
- \* Mammary Gland
- \* Pituitary Gland
- \* Seminal Vesicle
- \* Stomach, Glandular
- \* Trachea
- \* Bone
- \* Esophagus
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Liver
- \* Nose
- \* Preputial Gland
- \* Skin
- \* Testes
- \* Urinary Bladder
- \* Bone Marrow
- \* Eye
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Lymph Node, Mediastinal
- \* Pancreas
- \* Prostate
- \* Spleen
- \* Thymus

MISSING

- \* Lymph Node, Bronchial
- \* Lymph Node, Mandibular

OBSERVATIONS

- \* Kidney
- \* Lung
- Alveolus
- Nephropathy
- Hemorrhage
- Minimal
- Minimal

TDMS No. 60311 - 03

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/F 344

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

COBALT

CAS Number: 7440-48-4

Date Report Requested: 06/18/2007

Time Report Requested: 13:39:05

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

Lab: BNW

<b>ANIMAL NUM:</b>	201	<b>TMT:</b>	3
		<b>DOSE:</b>	0.625 MG/M3

<b>SEX:</b>	Male
<b>DISP:</b>	Terminal Sacrifice

<b>DAY ON TEST:</b>	93
<b>HISTO:</b>	53116

ORGAN AND ACCOUNTABLE SITE STATUS

**NORMAL**

\* Nose

**OBSERVATIONS**

* Lung		Inflammation	Chronic Active, Mild
	Alveolus	Proteinosis	Minimal
[ Inflammation	TGLs = 1-4+5+14 ]		

TDMS No. 60311 - 03  
Test Type: 90-DAY  
Route: RESPIRATORY EXPOSURE WHOLE BODY  
Species/Strain: RATS/F 344

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA  
COBALT  
CAS Number: 7440-48-4

Date Report Requested: 06/18/2007  
Time Report Requested: 13:39:05  
First Dose M/F: 03/08/05 / 03/07/05  
Lab: BNW

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ANIMAL NUM: 202 TMT: 3  
DOSE: 0.625 MG/M3

SEX: Male  
DISP: Terminal Sacrifice

DAY ON TEST: 93  
HISTO: 53117

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ORGAN AND ACCOUNTABLE SITE STATUS

---

NORMAL

\* Nose

---

OBSERVATIONS

* Lung		Inflammation	Chronic Active, Mild
	Alveolus	Proteinosis	Mild
[ Inflammation	TGLs = 1-4+5 ]		

TDMS No. 60311 - 03

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/F 344

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

COBALT

CAS Number: 7440-48-4

Date Report Requested: 06/18/2007

Time Report Requested: 13:39:05

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

Lab: BNW

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<b>ANIMAL NUM:</b>	203	<b>TMT:</b>	3
		<b>DOSE:</b>	0.625 MG/M3

<b>SEX:</b>	Male
<b>DISP:</b>	Terminal Sacrifice

<b>DAY ON TEST:</b>	93
<b>HISTO:</b>	53118

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ORGAN AND ACCOUNTABLE SITE STATUS

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**NORMAL**

\* Nose

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**OBSERVATIONS**

* Lung			
	Alveolus	Inflammation	Chronic Active, Mild
	[ Inflammation TGLs = 1-4+5 ]	Proteinosis	Mild

TDMS No. 60311 - 03

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/F 344

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

COBALT

CAS Number: 7440-48-4

Date Report Requested: 06/18/2007

Time Report Requested: 13:39:05

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

Lab: BNW

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ANIMAL NUM: 204 TMT: 3  
DOSE: 0.625 MG/M3

SEX: Male  
DISP: Terminal Sacrifice

DAY ON TEST: 93  
HISTO: 53119

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ORGAN AND ACCOUNTABLE SITE STATUS

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NORMAL

\* Nose

---

OBSERVATIONS

\* Lung  
[ Inflammation Alveolus TGLs = 1-4+5 ]  
Inflammation Proteinosis  
Chronic Active, Mild Mild

TDMS No. 60311 - 03

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/F 344

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

COBALT

CAS Number: 7440-48-4

Date Report Requested: 06/18/2007

Time Report Requested: 13:39:05

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

Lab: BNW

---

ANIMAL NUM: 205 TMT: 3  
DOSE: 0.625 MG/M3

SEX: Male  
DISP: Terminal Sacrifice

DAY ON TEST: 93  
HISTO: 53120

---

**ORGAN AND ACCOUNTABLE SITE STATUS**

---

**NORMAL**

\* Nose

---

**OBSERVATIONS**

\* Lung  
[ Inflammation Alveolus TGLs = 1-4+5 ]  
Inflammation Proteinosis  
Chronic Active, Mild  
Mild



TDMS No. 60311 - 03

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/F 344

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

COBALT

CAS Number: 7440-48-4

Date Report Requested: 06/18/2007

Time Report Requested: 13:39:05

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

Lab: BNW

---

ANIMAL NUM: 206 TMT: 3  
DOSE: 0.625 MG/M3

SEX: Male  
DISP: Terminal Sacrifice

DAY ON TEST: 93  
HISTO: 53121

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ORGAN AND ACCOUNTABLE SITE STATUS

---

NORMAL

\* Nose

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OBSERVATIONS

\* Lung  
[ Inflammation Alveolus TGLs = 1-4+5 ]  
Inflammation Proteinosis  
Chronic Active, Mild  
Mild

**TDMS No.** 60311 - 03

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

**Date Report Reqsted:** 06/18/2007

**Test Type:** 90-DAY

COBALT

**Time Report Reqsted:** 13:39:05

**Route:** RESPIRATORY EXPOSURE WHOLE BODY

**CAS Number:** 7440-48-4

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

**Species/Strain:** RATS/F 344

**Lab:** BNW

**ANIMAL NUM:** 207    **TMT:** 3  
**DOSE:** 0.625 MG/M3

**SEX:** Male  
**DISP:** Terminal Sacrifice

**DAY ON TEST:** 93  
**HISTO:** 53122

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

\* Nose

**OBSERVATIONS**

* Lung			Inflammation	Chronic Active, Mild
		Alveolus	Proteinosis	Mild
	[ Inflammation	TGLs = 1-4+5 ]		

TDMS No. 60311 - 03

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

Date Report Requested: 06/18/2007

Test Type: 90-DAY

COBALT

Time Report Requested: 13:39:05

Route: RESPIRATORY EXPOSURE WHOLE BODY

CAS Number: 7440-48-4

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

Species/Strain: RATS/F 344

Lab: BNW

**ANIMAL NUM:** 208    **TMT:** 3  
**DOSE:** 0.625 MG/M3

**SEX:** Male  
**DISP:** Terminal Sacrifice

**DAY ON TEST:** 93  
**HISTO:** 53123

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

\* Nose

**OBSERVATIONS**

\* Lung

Alveolus  
[ Inflammation TGLs = 1-4+5 ]

Inflammation  
Proteinosis

Chronic Active, Minimal  
Minimal

TDMS No. 60311 - 03

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/F 344

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

COBALT

CAS Number: 7440-48-4

Date Report Requested: 06/18/2007

Time Report Requested: 13:39:05

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

Lab: BNW

---

ANIMAL NUM: 209 TMT: 3  
DOSE: 0.625 MG/M3

SEX: Male  
DISP: Terminal Sacrifice

DAY ON TEST: 93  
HISTO: 53124

---

ORGAN AND ACCOUNTABLE SITE STATUS

---

NORMAL

\* Nose

---

OBSERVATIONS

\* Lung  
[ Inflammation Alveolus TGLs = 1-4+5 ]  
Inflammation Proteinosis  
Chronic Active, Mild  
Mild

TDMS No. 60311 - 03

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/F 344

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

COBALT

CAS Number: 7440-48-4

Date Report Requested: 06/18/2007

Time Report Requested: 13:39:05

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

Lab: BNW

---

ANIMAL NUM: 210 TMT: 3  
DOSE: 0.625 MG/M3

SEX: Male  
DISP: Terminal Sacrifice

DAY ON TEST: 93  
HISTO: 53125

---

**ORGAN AND ACCOUNTABLE SITE STATUS**

---

**NORMAL**

\* Nose

---

**OBSERVATIONS**

\* Lung  
[ Inflammation Alveolus TGLs = 1-4+5 ]  
Inflammation Proteinosis  
Chronic Active, Mild  
Mild

TDMS No. 60311 - 03

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/F 344

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

COBALT

CAS Number: 7440-48-4

Date Report Requested: 06/18/2007

Time Report Requested: 13:39:05

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

Lab: BNW

ANIMAL NUM: 401 TMT: 5  
DOSE: 1.25 MG/M3

SEX: Male  
DISP: Terminal Sacrifice

DAY ON TEST: 93  
HISTO: 53096

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Nose

OBSERVATIONS

* Lung	Bronchiole, Epithelium	Hyperplasia Inflammation Proteinosis	Minimal Chronic Active, Minimal Mild
[ Inflammation	Alveolus TGLs = 1-4+5 ]		

TDMS No. 60311 - 03

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/F 344

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

COBALT

CAS Number: 7440-48-4

Date Report Requested: 06/18/2007

Time Report Requested: 13:39:05

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

Lab: BNW

---

ANIMAL NUM: 402    TMT: 5  
DOSE: 1.25 MG/M3

SEX: Male  
DISP: Terminal Sacrifice

DAY ON TEST: 93  
HISTO: 53097

---

ORGAN AND ACCOUNTABLE SITE STATUS

---

NORMAL

\* Nose

---

OBSERVATIONS

* Lung	Bronchiole, Epithelium	Hyperplasia Inflammation Proteinosis	Minimal Chronic Active, Mild Mild
[ Inflammation	Alveolus TGLs = 1-4+5 ]		

TDMS No. 60311 - 03

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/F 344

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

COBALT

CAS Number: 7440-48-4

Date Report Requested: 06/18/2007

Time Report Requested: 13:39:05

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

Lab: BNW

ANIMAL NUM: 403 TMT: 5  
DOSE: 1.25 MG/M3

SEX: Male  
DISP: Terminal Sacrifice

DAY ON TEST: 93  
HISTO: 53098

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Nose Prostate

OBSERVATIONS

* Lung	Alveolus	Hemorrhage	Minimal
	Bronchiole, Epithelium	Hyperplasia	Minimal
	Alveolus	Inflammation	Chronic Active, Mild
[ Inflammation	TGLs = 2-4+5 ]	Proteinosis	Mild



TDMS No. 60311 - 03

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/F 344

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

COBALT

CAS Number: 7440-48-4

Date Report Requested: 06/18/2007

Time Report Requested: 13:39:05

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

Lab: BNW

---

ANIMAL NUM: 404    TMT: 5  
DOSE: 1.25 MG/M3

SEX: Male  
DISP: Terminal Sacrifice

DAY ON TEST: 93  
HISTO: 53099

---

ORGAN AND ACCOUNTABLE SITE STATUS

---

NORMAL

\* Nose

---

OBSERVATIONS

* Lung	Bronchiole, Epithelium	Hyperplasia Inflammation Proteinosis	Minimal Chronic Active, Mild Mild
[ Inflammation	Alveolus TGLs = 1-4+5 ]		

TDMS No. 60311 - 03

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/F 344

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

COBALT

CAS Number: 7440-48-4

Date Report Requested: 06/18/2007

Time Report Requested: 13:39:05

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

Lab: BNW

---

ANIMAL NUM: 405 TMT: 5  
DOSE: 1.25 MG/M3

SEX: Male  
DISP: Terminal Sacrifice

DAY ON TEST: 93  
HISTO: 53100

---

OBSERVATIONS

* Lung	Bronchiole, Epithelium	Hyperplasia Inflammation Proteinosis	Minimal Chronic Active, Mild Moderate
[ Inflammation	TGLs = 1-4+5 ]		
* Nose	Respirat Epith	Hyperplasia	Minimal

TDMS No. 60311 - 03

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/F 344

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

COBALT

CAS Number: 7440-48-4

Date Report Requested: 06/18/2007

Time Report Requested: 13:39:05

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

Lab: BNW

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ANIMAL NUM: 406 TMT: 5  
DOSE: 1.25 MG/M3

SEX: Male  
DISP: Terminal Sacrifice

DAY ON TEST: 93  
HISTO: 53101

---

OBSERVATIONS

* Lung	Bronchiole, Epithelium	Hyperplasia Inflammation Proteinosis	Minimal Chronic Active, Mild Mild
[ Inflammation	TGLs = 1-4+5 ]		
* Nose	Olfactory Epi Olfactory Epi	Degeneration Hyperplasia	Minimal Minimal

TDMS No. 60311 - 03

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/F 344

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

COBALT

CAS Number: 7440-48-4

Date Report Requested: 06/18/2007

Time Report Requested: 13:39:05

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

Lab: BNW

---

ANIMAL NUM: 407    TMT: 5  
DOSE: 1.25 MG/M3

SEX: Male  
DISP: Terminal Sacrifice

DAY ON TEST: 93  
HISTO: 53102

---

ORGAN AND ACCOUNTABLE SITE STATUS

---

NORMAL

\* Nose

---

OBSERVATIONS

* Lung	Bronchiole, Epithelium	Hyperplasia Inflammation Proteinosis	Minimal Chronic Active, Mild Mild
[ Inflammation	Alveolus TGLs = 1-4+5 ]		

TDMS No. 60311 - 03

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/F 344

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

COBALT

CAS Number: 7440-48-4

Date Report Requested: 06/18/2007

Time Report Requested: 13:39:05

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

Lab: BNW

ANIMAL NUM: 408 TMT: 5  
DOSE: 1.25 MG/M3

SEX: Male  
DISP: Terminal Sacrifice

DAY ON TEST: 93  
HISTO: 53103

OBSERVATIONS

* Lung	Bronchiole, Epithelium	Hyperplasia Inflammation Proteinosis	Minimal Chronic Active, Mild Moderate
	Alveolus		
	[ Inflammation TGLs = 1,2,3-5+4 ]		
* Nose	Olfactory Epi Respirat Epith Olfactory Epi	Degeneration Hyperplasia Hyperplasia	Minimal Minimal Minimal

TDMS No. 60311 - 03

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/F 344

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

COBALT

CAS Number: 7440-48-4

Date Report Requested: 06/18/2007

Time Report Requested: 13:39:05

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

Lab: BNW

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<b>ANIMAL NUM:</b>	409	<b>TMT:</b>	5	<b>SEX:</b>	Male	<b>DAY ON TEST:</b>	93
		<b>DOSE:</b>	1.25 MG/M3	<b>DISP:</b>	Terminal Sacrifice	<b>HISTO:</b>	53104

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**OBSERVATIONS**

* Lung	Bronchiole, Epithelium	Hyperplasia Inflammation Proteinosis	Minimal Chronic Active, Mild Mild
[ Inflammation	TGLs = 1-4+5 ]		
* Nose	Respirat Epith	Hyperplasia	Minimal

TDMS No. 60311 - 03

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/F 344

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

COBALT

CAS Number: 7440-48-4

Date Report Requested: 06/18/2007

Time Report Requested: 13:39:05

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

Lab: BNW

ANIMAL NUM: 410 TMT: 5  
DOSE: 1.25 MG/M3

SEX: Male  
DISP: Terminal Sacrifice

DAY ON TEST: 93  
HISTO: 53105

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Nose

OBSERVATIONS

* Lung	Alveolus Bronchiole, Epithelium	Hemorrhage Hyperplasia Inflammation Proteinosis	Minimal Minimal Chronic Active, Mild Mild
[ Inflammation	Alveolus TGLs = 1-4+5 ]		

TDMS No. 60311 - 03

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/F 344

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

COBALT

CAS Number: 7440-48-4

Date Report Requested: 06/18/2007

Time Report Requested: 13:39:05

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

Lab: BNW

ANIMAL NUM: 601 TMT: 7  
DOSE: 2.5 MG/M3

SEX: Male  
DISP: Terminal Sacrifice

DAY ON TEST: 93  
HISTO: 53076

OBSERVATIONS

* Lung	Bronchiole, Epithelium	Hyperplasia Inflammation Proteinosis	Minimal Chronic Active, Minimal Mild
	Alveolus		
[ Inflammation	TGLs = 1-4+5 ]		
* Nose	Turbinate	Atrophy	Minimal
	Olfactory Epi	Degeneration	Minimal
	Respirat Epith	Hyperplasia	Minimal



TDMS No. 60311 - 03

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/F 344

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

COBALT

CAS Number: 7440-48-4

Date Report Requested: 06/18/2007

Time Report Requested: 13:39:05

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

Lab: BNW

ANIMAL NUM: 602 TMT: 7  
DOSE: 2.5 MG/M3

SEX: Male  
DISP: Terminal Sacrifice

DAY ON TEST: 93  
HISTO: 53077

OBSERVATIONS

* Lung	Bronchiole, Epithelium	Hyperplasia Inflammation Proteinosis	Mild Chronic Active, Minimal Mild
	Alveolus		
	[ Inflammation TGLs = 1-4+5 ]		
* Nose	Olfactory Epi Respirat Epith Olfactory Epi	Degeneration Hyperplasia Hyperplasia	Minimal Minimal Mild

TDMS No. 60311 - 03

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/F 344

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

COBALT

CAS Number: 7440-48-4

Date Report Requested: 06/18/2007

Time Report Requested: 13:39:05

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

Lab: BNW

ANIMAL NUM: 603 TMT: 7  
DOSE: 2.5 MG/M3

SEX: Male  
DISP: Terminal Sacrifice

DAY ON TEST: 93  
HISTO: 53078

OBSERVATIONS

Liver	[ Hepatodiaphragmatic Nodule TGLs = 1-7 ]	Hepatodiaphragmatic Nodule	
* Lung	Bronchiole, Epithelium	Hyperplasia Inflammation Proteinosis	Mild Chronic Active, Minimal Mild
	Alveolus		
	[ Inflammation TGLs = 2-4+5 ]		
* Nose	Turbinate	Atrophy	Minimal
	Olfactory Epi	Degeneration	Minimal
	Respirat Epith	Hyperplasia	Minimal
	Olfactory Epi	Hyperplasia	Minimal

TDMS No. 60311 - 03

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/F 344

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

COBALT

CAS Number: 7440-48-4

Date Report Requested: 06/18/2007

Time Report Requested: 13:39:05

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

Lab: BNW

ANIMAL NUM: 604 TMT: 7  
DOSE: 2.5 MG/M3

SEX: Male  
DISP: Terminal Sacrifice

DAY ON TEST: 93  
HISTO: 53079

OBSERVATIONS

* Lung	Alveolus Bronchiole, Epithelium	Hemorrhage Hyperplasia Inflammation Proteinosis	Minimal Mild Chronic Active, Minimal Mild
[ Inflammation	TGLs = 1-4+5 ]		
* Nose	Respirat Epith Olfactory Epi	Hyperplasia Hyperplasia	Minimal Minimal

TDMS No. 60311 - 03

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/F 344

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

COBALT

CAS Number: 7440-48-4

Date Report Requested: 06/18/2007

Time Report Requested: 13:39:05

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

Lab: BNW

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ANIMAL NUM: 605 TMT: 7  
DOSE: 2.5 MG/M3

SEX: Male  
DISP: Terminal Sacrifice

DAY ON TEST: 93  
HISTO: 53080

---

OBSERVATIONS

* Lung	Alveolus Bronchiole, Epithelium	Hemorrhage Hyperplasia Inflammation Proteinosis	Minimal Mild Chronic Active, Mild Moderate
[ Inflammation	Alveolus TGLs = 1-4+5 ]		
* Nose	Olfactory Epi Respirat Epith	Degeneration Hyperplasia	Minimal Minimal

TDMS No. 60311 - 03

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/F 344

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

COBALT

CAS Number: 7440-48-4

Date Report Requested: 06/18/2007

Time Report Requested: 13:39:05

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

Lab: BNW

---

ANIMAL NUM: 606 TMT: 7  
DOSE: 2.5 MG/M3

SEX: Male  
DISP: Terminal Sacrifice

DAY ON TEST: 93  
HISTO: 53081

---

OBSERVATIONS

* Lung	Alveolus Bronchiole, Epithelium	Hemorrhage Hyperplasia Inflammation Proteinosis	Minimal Minimal Chronic Active, Mild Mild
[ Inflammation	TGLs = 1-4+5 ]		
* Nose	Olfactory Epi Respirat Epith	Degeneration Hyperplasia	Minimal Minimal

TDMS No. 60311 - 03

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/F 344

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

COBALT

CAS Number: 7440-48-4

Date Report Requested: 06/18/2007

Time Report Requested: 13:39:05

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

Lab: BNW

ANIMAL NUM: 607 TMT: 7  
DOSE: 2.5 MG/M3

SEX: Male  
DISP: Terminal Sacrifice

DAY ON TEST: 93  
HISTO: 53082

OBSERVATIONS

* Lung	Bronchiole, Epithelium	Hyperplasia Inflammation Proteinosis	Minimal Chronic Active, Minimal Mild
	Alveolus		
	[ Inflammation TGLs = 1-4+5 ]		
* Nose	Turbinate	Atrophy	Minimal
	Olfactory Epi	Degeneration	Minimal
	Respirat Epith	Hyperplasia	Minimal

TDMS No. 60311 - 03

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/F 344

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

COBALT

CAS Number: 7440-48-4

Date Report Requested: 06/18/2007

Time Report Requested: 13:39:05

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

Lab: BNW

ANIMAL NUM: 608 TMT: 7  
DOSE: 2.5 MG/M3

SEX: Male  
DISP: Terminal Sacrifice

DAY ON TEST: 93  
HISTO: 53083

OBSERVATIONS

* Lung	Alveolus	Hemorrhage	Minimal
	Bronchiole, Epithelium	Hyperplasia	Minimal
	Alveolus	Inflammation	Chronic Active, Mild
[ Inflammation	TGLs = 1-4+5 ]	Proteinosis	Moderate
* Nose	Olfactory Epi	Degeneration	Minimal
	Respirat Epith	Hyperplasia	Minimal
	Olfactory Epi	Hyperplasia	Minimal

TDMS No. 60311 - 03

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/F 344

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

COBALT

CAS Number: 7440-48-4

Date Report Requested: 06/18/2007

Time Report Requested: 13:39:05

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

Lab: BNW

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ANIMAL NUM: 609 TMT: 7  
DOSE: 2.5 MG/M3

SEX: Male  
DISP: Terminal Sacrifice

DAY ON TEST: 93  
HISTO: 53084

---

**OBSERVATIONS**

* Lung	Bronchiole, Epithelium	Hyperplasia Inflammation Proteinosis	Minimal Chronic Active, Mild Mild
	Alveolus		
	[ Inflammation TGLs = 1,2,3-4+5 ]		
* Nose	Olfactory Epi Olfactory Epi	Degeneration Hyperplasia	Minimal Minimal



TDMS No. 60311 - 03

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/F 344

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

COBALT

CAS Number: 7440-48-4

Date Report Requested: 06/18/2007

Time Report Requested: 13:39:05

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

Lab: BNW

ANIMAL NUM: 610 TMT: 7  
DOSE: 2.5 MG/M3

SEX: Male  
DISP: Terminal Sacrifice

DAY ON TEST: 93  
HISTO: 53085

OBSERVATIONS

* Lung	Bronchiole, Epithelium	Hyperplasia Inflammation Proteinosis	Minimal Chronic Active, Mild Mild
[ Inflammation	TGLs = 1-4+5 ]		
* Nose	Olfactory Epi Respirat Epith Olfactory Epi	Degeneration Hyperplasia Hyperplasia	Minimal Minimal Minimal

TDMS No. 60311 - 03

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/F 344

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

COBALT

CAS Number: 7440-48-4

Date Report Requested: 06/18/2007

Time Report Requested: 13:39:05

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

Lab: BNW

ANIMAL NUM: 801 TMT: 9 DOSE: 5.0 MG/M3

SEX: Male DISP: Terminal Sacrifice

DAY ON TEST: 93 HISTO: 53056

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Cortex
- \* Brain
- \* Harderian Gland
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Lymph Node, Mandibular
- \* Pancreas
- \* Salivary Glands
- \* Stomach, Forestomach
- \* Thyroid Gland
- \* Adrenal Medulla
- \* Epididymis
- \* Heart
- \* Intestine Small, Duodenum
- \* Kidney
- \* Lymph Node, Mediastinal
- \* Pituitary Gland
- \* Seminal Vesicle
- \* Stomach, Glandular
- \* Trachea
- \* Bone
- \* Esophagus
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Larynx
- \* Lymph Node, Mesenteric
- \* Preputial Gland
- \* Skin
- \* Testes
- \* Urinary Bladder
- \* Bone Marrow
- \* Eye
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Liver
- \* Mammary Gland
- \* Prostate
- \* Spleen
- \* Thymus

MISSING

- \* Lymph Node, Bronchial
- \* Parathyroid Gland

OBSERVATIONS

- \* Lung
  - Alveolus Hemorrhage Minimal
  - Bronchiole, Epithelium Hyperplasia Mild
  - Inflammation Chronic Active, Mild
  - Proteinosis Moderate
- \* Nose
  - Turbinate Atrophy Minimal
  - Olfactory Epi Degeneration Mild
  - Respirat Epith Hyperplasia Mild
  - Olfactory Epi Hyperplasia Minimal

TDMS No. 60311 - 03

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/F 344

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

COBALT

CAS Number: 7440-48-4

Date Report Requested: 06/18/2007

Time Report Requested: 13:39:05

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

Lab: BNW

ANIMAL NUM: 802 TMT: 9  
DOSE: 5.0 MG/M3

SEX: Male  
DISP: Terminal Sacrifice

DAY ON TEST: 93  
HISTO: 53057

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Cortex
- \* Brain
- \* Harderian Gland
- \* Intestine Small, Duodenum
- \* Larynx
- \* Mammary Gland
- \* Preputial Gland
- \* Skin
- \* Testes
- \* Urinary Bladder

- \* Adrenal Medulla
- \* Epididymis
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Liver
- \* Pancreas
- \* Prostate
- \* Spleen
- \* Thymus

- \* Bone
- \* Esophagus
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Lymph Node, Mediastinal
- \* Parathyroid Gland
- \* Salivary Glands
- \* Stomach, Forestomach
- \* Thyroid Gland

- \* Bone Marrow
- \* Eye
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Lymph Node, Mesenteric
- \* Pituitary Gland
- \* Seminal Vesicle
- \* Stomach, Glandular
- \* Trachea

MISSING

- \* Lymph Node, Bronchial
- \* Lymph Node, Mandibular

OBSERVATIONS

* Heart		Cardiomyopathy	Minimal
* Kidney		Nephropathy	Minimal
* Lung	Bronchiole, Epithelium	Hyperplasia Inflammation Proteinosis	Mild Chronic Active, Moderate Moderate
	Alveolus		
	[ Inflammation TGLs = 1-4+5 ]		
* Nose	Turbinate	Atrophy	Minimal
	Olfactory Epi	Degeneration	Mild
	Respirat Epith	Hyperplasia	Mild
	Olfactory Epi	Hyperplasia	Mild

TDMS No. 60311 - 03

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/F 344

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

COBALT

CAS Number: 7440-48-4

Date Report Requested: 06/18/2007

Time Report Requested: 13:39:05

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

Lab: BNW

ANIMAL NUM: 803 TMT: 9 DOSE: 5.0 MG/M3

SEX: Male DISP: Terminal Sacrifice

DAY ON TEST: 93 HISTO: 53058

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Cortex
- \* Brain
- \* Harderian Gland
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Lymph Node, Mediastinal
- \* Parathyroid Gland
- \* Salivary Glands
- \* Stomach, Forestomach
- \* Thyroid Gland
- \* Adrenal Medulla
- \* Epididymis
- \* Heart
- \* Intestine Small, Duodenum
- \* Kidney
- \* Lymph Node, Mesenteric
- \* Pituitary Gland
- \* Seminal Vesicle
- \* Stomach, Glandular
- \* Trachea
- \* Bone
- \* Esophagus
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Larynx
- \* Mammary Gland
- \* Preputial Gland
- \* Skin
- \* Testes
- \* Urinary Bladder
- \* Bone Marrow
- \* Eye
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Liver
- \* Pancreas
- \* Prostate
- \* Spleen
- \* Thymus

MISSING

- \* Lymph Node, Bronchial
- \* Lymph Node, Mandibular

OBSERVATIONS

- \* Lung
  - Bronchiole, Epithelium Hyperplasia Inflammation Proteinosis Mild Chronic Active, Mild Moderate
  - Alveolus
- \* Nose
  - Turbinate Atrophy Degeneration Minimal Moderate
  - Olfactory Epi Hyperplasia Mild
  - Respirat Epith Hyperplasia Minimal
  - Olfactory Epi

TDMS No. 60311 - 03

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Date Report Requested: 06/18/2007

Test Type: 90-DAY

COBALT

Time Report Requested: 13:39:05

Route: RESPIRATORY EXPOSURE WHOLE BODY

CAS Number: 7440-48-4

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

Species/Strain: RATS/F 344

Lab: BNW

ANIMAL NUM: 804 TMT: 9  
DOSE: 5.0 MG/M3

SEX: Male  
DISP: Terminal Sacrifice

DAY ON TEST: 93  
HISTO: 53059

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Cortex
- \* Brain
- \* Harderian Gland
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Lymph Node, Mesenteric
- \* Preputial Gland
- \* Skin
- \* Testes
- \* Urinary Bladder
- \* Adrenal Medulla
- \* Epididymis
- \* Heart
- \* Intestine Small, Duodenum
- \* Kidney
- \* Pancreas
- \* Prostate
- \* Spleen
- \* Thymus
- \* Bone
- \* Esophagus
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Larynx
- \* Parathyroid Gland
- \* Salivary Glands
- \* Stomach, Forestomach
- \* Thyroid Gland
- \* Bone Marrow
- \* Eye
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Liver
- \* Pituitary Gland
- \* Seminal Vesicle
- \* Stomach, Glandular
- \* Trachea

MISSING

- \* Lymph Node, Bronchial
- \* Lymph Node, Mandibular
- \* Lymph Node, Mediastinal
- \* Mammary Gland

OBSERVATIONS

- \* Lung
  - Bronchiole, Epithelium Hyperplasia
  - Alveolus Inflammation
  - Turbinate Proteinosis
  - Olfactory Epi Atrophy
  - Respirat Epith Degeneration
  - Olfactory Epi Hyperplasia
- \* Nose
  - Mild
  - Chronic Active, Mild
  - Mild
  - Minimal
  - Moderate
  - Mild
  - Mild

TDMS No. 60311 - 03

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Date Report Requested: 06/18/2007

Test Type: 90-DAY

COBALT

Time Report Requested: 13:39:05

Route: RESPIRATORY EXPOSURE WHOLE BODY

CAS Number: 7440-48-4

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

Species/Strain: RATS/F 344

Lab: BNW

ANIMAL NUM: 805 TMT: 9 DOSE: 5.0 MG/M3

SEX: Male DISP: Terminal Sacrifice

DAY ON TEST: 93 HISTO: 53060

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Cortex
- \* Brain
- \* Harderian Gland
- \* Intestine Small, Duodenum
- \* Kidney
- \* Lymph Node, Mesenteric
- \* Preputial Gland
- \* Skin
- \* Testes
- \* Urinary Bladder
- \* Adrenal Medulla
- \* Epididymis
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Larynx
- \* Mammary Gland
- \* Prostate
- \* Spleen
- \* Thymus
- \* Bone
- \* Esophagus
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Liver
- \* Pancreas
- \* Salivary Glands
- \* Stomach, Forestomach
- \* Thyroid Gland
- \* Bone Marrow
- \* Eye
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Lymph Node, Mediastinal
- \* Pituitary Gland
- \* Seminal Vesicle
- \* Stomach, Glandular
- \* Trachea

MISSING

- \* Lymph Node, Bronchial
- \* Lymph Node, Mandibular
- \* Parathyroid Gland

OBSERVATIONS

- \* Heart
- \* Lung
- \* Nose
- Alveolar Epith
- Bronchiole, Epithelium
- Alveolus
- Turbinate
- Olfactory Epi
- Respirat Epith
- Olfactory Epi
- Cardiomyopathy
- Hyperplasia
- Hyperplasia
- Inflammation
- Proteinosis
- Atrophy
- Degeneration
- Hyperplasia
- Hyperplasia
- Minimal
- Mild
- Mild
- Chronic Active, Moderate
- Moderate
- Minimal
- Moderate
- Mild
- Mild

TDMS No. 60311 - 03

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Date Report Requested: 06/18/2007

Test Type: 90-DAY

COBALT

Time Report Requested: 13:39:05

Route: RESPIRATORY EXPOSURE WHOLE BODY

CAS Number: 7440-48-4

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

Species/Strain: RATS/F 344

Lab: BNW

ANIMAL NUM: 806 TMT: 9 DOSE: 5.0 MG/M3

SEX: Male DISP: Terminal Sacrifice

DAY ON TEST: 93 HISTO: 53061

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Cortex
- \* Brain
- \* Harderian Gland
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Lymph Node, Mediastinal
- \* Parathyroid Gland
- \* Salivary Glands
- \* Stomach, Forestomach
- \* Thyroid Gland
- \* Adrenal Medulla
- \* Epididymis
- \* Heart
- \* Intestine Small, Duodenum
- \* Kidney
- \* Lymph Node, Mesenteric
- \* Pituitary Gland
- \* Seminal Vesicle
- \* Stomach, Glandular
- \* Trachea
- \* Bone
- \* Esophagus
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Larynx
- \* Mammary Gland
- \* Preputial Gland
- \* Skin
- \* Testes
- \* Urinary Bladder
- \* Bone Marrow
- \* Eye
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Liver
- \* Pancreas
- \* Prostate
- \* Spleen
- \* Thymus

MISSING

- \* Lymph Node, Bronchial
- \* Lymph Node, Mandibular

OBSERVATIONS

- \* Lung
  - Alveolus Hemorrhage Minimal
  - Bronchiole, Epithelium Hyperplasia Mild
  - Inflammation Chronic Active, Mild
  - Proteinosis Mild
- \* Nose
  - Turbinate Atrophy Minimal
  - Olfactory Epi Degeneration Moderate
  - Respirat Epith Hyperplasia Minimal
  - Olfactory Epi Hyperplasia Mild

TDMS No. 60311 - 03

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/F 344

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

COBALT

CAS Number: 7440-48-4

Date Report Requested: 06/18/2007

Time Report Requested: 13:39:05

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

Lab: BNW

ANIMAL NUM: 807 TMT: 9 DOSE: 5.0 MG/M3

SEX: Male DISP: Terminal Sacrifice

DAY ON TEST: 93 HISTO: 53062

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Cortex
- \* Brain
- \* Harderian Gland
- \* Intestine Small, Duodenum
- \* Kidney
- \* Mammary Gland
- \* Preputial Gland
- \* Spleen
- \* Thymus
- \* Adrenal Medulla
- \* Epididymis
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Larynx
- \* Pancreas
- \* Prostate
- \* Stomach, Forestomach
- \* Thyroid Gland
- \* Bone
- \* Esophagus
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Liver
- \* Parathyroid Gland
- \* Seminal Vesicle
- \* Stomach, Glandular
- \* Trachea
- \* Bone Marrow
- \* Eye
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Lymph Node, Mesenteric
- \* Pituitary Gland
- \* Skin
- \* Testes
- \* Urinary Bladder

MISSING

- \* Lymph Node, Bronchial
- \* Lymph Node, Mandibular
- \* Lymph Node, Mediastinal

OBSERVATIONS

- \* Heart
- \* Lung
- \* Nose
- \* Salivary Glands
- Cardiomyopathy
- Bronchiole, Epithelium
- Alveolus
- Turbinate
- Olfactory Epi
- Respirat Epith
- Olfactory Epi
- Respirat Epith
- Hyperplasia
- Inflammation
- Proteinosis
- Atrophy
- Degeneration
- Hyperplasia
- Hyperplasia
- Metaplasia
- Inflammation
- Minimal
- Mild
- Chronic Active, Mild
- Moderate
- Minimal
- Mild
- Mild
- Minimal
- Squamous, Minimal
- Acute, Mild



TDMS No. 60311 - 03

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Date Report Requested: 06/18/2007

Test Type: 90-DAY

COBALT

Time Report Requested: 13:39:05

Route: RESPIRATORY EXPOSURE WHOLE BODY

CAS Number: 7440-48-4

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

Species/Strain: RATS/F 344

Lab: BNW

ANIMAL NUM: 808 TMT: 9  
DOSE: 5.0 MG/M3

SEX: Male  
DISP: Terminal Sacrifice

DAY ON TEST: 93  
HISTO: 53063

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                             |                          |                            |                           |
|-----------------------------|--------------------------|----------------------------|---------------------------|
| * Adrenal Cortex            | * Adrenal Medulla        | * Bone                     | * Bone Marrow             |
| * Brain                     | * Epididymis             | * Esophagus                | * Eye                     |
| * Harderian Gland           | * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum |
| * Intestine Small, Duodenum | * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      |
| * Kidney                    | * Larynx                 | * Liver                    | * Lymph Node, Mediastinal |
| * Lymph Node, Mesenteric    | * Mammary Gland          | * Pancreas                 | * Pituitary Gland         |
| * Preputial Gland           | * Prostate               | * Salivary Glands          | * Seminal Vesicle         |
| * Skin                      | * Spleen                 | * Stomach, Forestomach     | * Stomach, Glandular      |
| * Testes                    | * Thymus                 | * Thyroid Gland            | * Trachea                 |
| * Urinary Bladder           |                          |                            |                           |

MISSING

- |                         |                          |                     |
|-------------------------|--------------------------|---------------------|
| * Lymph Node, Bronchial | * Lymph Node, Mandibular | * Parathyroid Gland |
|-------------------------|--------------------------|---------------------|

OBSERVATIONS

- |         |                        |                |                          |
|---------|------------------------|----------------|--------------------------|
| * Heart |                        | Cardiomyopathy | Minimal                  |
| * Lung  | Alveolus               | Hemorrhage     | Minimal                  |
|         | Bronchiole, Epithelium | Hyperplasia    | Moderate                 |
|         |                        | Inflammation   | Chronic Active, Moderate |
|         | Alveolus               | Proteinosis    | Moderate                 |
| * Nose  | Olfactory Epi          | Degeneration   | Moderate                 |
|         | Respirat Epith         | Hyperplasia    | Mild                     |
|         | Olfactory Epi          | Hyperplasia    | Mild                     |

TDMS No. 60311 - 03

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/F 344

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

COBALT

CAS Number: 7440-48-4

Date Report Requested: 06/18/2007

Time Report Requested: 13:39:05

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

Lab: BNW

ANIMAL NUM: 809 TMT: 9  
DOSE: 5.0 MG/M3

SEX: Male  
DISP: Terminal Sacrifice

DAY ON TEST: 93  
HISTO: 53064

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Cortex
- \* Brain
- \* Harderian Gland
- \* Intestine Small, Duodenum
- \* Kidney
- \* Pancreas
- \* Salivary Glands
- \* Stomach, Forestomach
- \* Thyroid Gland
- \* Adrenal Medulla
- \* Epididymis
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Larynx
- \* Parathyroid Gland
- \* Seminal Vesicle
- \* Stomach, Glandular
- \* Trachea
- \* Bone
- \* Esophagus
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Liver
- \* Pituitary Gland
- \* Skin
- \* Testes
- \* Urinary Bladder
- \* Bone Marrow
- \* Eye
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Lymph Node, Mesenteric
- \* Preputial Gland
- \* Spleen
- \* Thymus

MISSING

- \* Lymph Node, Bronchial
- \* Prostate
- \* Lymph Node, Mandibular
- \* Lymph Node, Mediastinal
- \* Mammary Gland

OBSERVATIONS

- \* Heart
- \* Lung
- \* Nose
- Cardiomyopathy
- Bronchiole, Epithelium
- Alveolus
- Turbinate
- Olfactory Epi
- Respirat Epith
- Olfactory Epi
- Hyperplasia
- Inflammation
- Proteinosis
- Atrophy
- Degeneration
- Hyperplasia
- Hyperplasia
- Minimal
- Mild
- Chronic Active, Moderate
- Mild
- Minimal
- Mild
- Mild
- Mild

TDMS No. 60311 - 03

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Date Report Requested: 06/18/2007

Test Type: 90-DAY

COBALT

Time Report Requested: 13:39:05

Route: RESPIRATORY EXPOSURE WHOLE BODY

CAS Number: 7440-48-4

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

Species/Strain: RATS/F 344

Lab: BNW

ANIMAL NUM: 810 TMT: 9 DOSE: 5.0 MG/M3

SEX: Male DISP: Terminal Sacrifice

DAY ON TEST: 93 HISTO: 53065

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Cortex
- \* Brain
- \* Harderian Gland
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Lymph Node, Mediastinal
- \* Pituitary Gland
- \* Seminal Vesicle
- \* Stomach, Glandular
- \* Trachea
- \* Adrenal Medulla
- \* Epididymis
- \* Heart
- \* Intestine Small, Duodenum
- \* Kidney
- \* Lymph Node, Mesenteric
- \* Preputial Gland
- \* Skin
- \* Testes
- \* Urinary Bladder
- \* Bone
- \* Esophagus
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Larynx
- \* Pancreas
- \* Prostate
- \* Spleen
- \* Thymus
- \* Bone Marrow
- \* Eye
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Liver
- \* Parathyroid Gland
- \* Salivary Glands
- \* Stomach, Forestomach
- \* Thyroid Gland

MISSING

- \* Lymph Node, Bronchial
- \* Lymph Node, Mandibular
- \* Mammary Gland

OBSERVATIONS

- \* Lung
  - Alveolus Hemorrhage Minimal
  - Alveolar Epith Hyperplasia Minimal
  - Bronchiole, Epithelium Hyperplasia Moderate
  - Inflammation Chronic Active, Mild
- Lymph Node
  - Alveolus Proteinosis Moderate
  - Pancreatic Pigmentation Mild
- [ Pigmentation TGLs = 1-7 ]
- \* Nose
  - Turbinate Atrophy Minimal
  - Olfactory Epi Degeneration Mild
  - Respirat Epith Hyperplasia Minimal
  - Olfactory Epi Hyperplasia Mild

TDMS No. 60311 - 03

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Date Report Requested: 06/18/2007

Test Type: 90-DAY

COBALT

Time Report Requested: 13:39:05

Route: RESPIRATORY EXPOSURE WHOLE BODY

CAS Number: 7440-48-4

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

Species/Strain: RATS/F 344

Lab: BNW

ANIMAL NUM: 101 TMT: 2  
DOSE: control

SEX: Female  
DISP: Terminal Sacrifice

DAY ON TEST: 93  
HISTO: 53046

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                             |                          |                            |                           |
|-----------------------------|--------------------------|----------------------------|---------------------------|
| * Adrenal Cortex            | * Adrenal Medulla        | * Bone                     | * Bone Marrow             |
| * Brain                     | * Clitoral Gland         | * Esophagus                | * Eye                     |
| * Harderian Gland           | * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum |
| * Intestine Small, Duodenum | * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      |
| * Kidney                    | * Larynx                 | * Liver                    | * Lung                    |
| * Lymph Node, Mediastinal   | * Lymph Node, Mesenteric | * Mammary Gland            | * Nose                    |
| * Ovary                     | * Pancreas               | * Parathyroid Gland        | * Pituitary Gland         |
| * Salivary Glands           | * Skin                   | * Spleen                   | * Stomach, Forestomach    |
| * Stomach, Glandular        | * Thymus                 | * Thyroid Gland            | * Trachea                 |
| * Urinary Bladder           | * Uterus                 |                            |                           |

MISSING

- |                         |                          |
|-------------------------|--------------------------|
| * Lymph Node, Bronchial | * Lymph Node, Mandibular |
|-------------------------|--------------------------|

OBSERVATIONS

- |         |                |         |
|---------|----------------|---------|
| * Heart | Cardiomyopathy | Minimal |
|---------|----------------|---------|

TDMS No. 60311 - 03

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Date Report Requested: 06/18/2007

Test Type: 90-DAY

COBALT

Time Report Requested: 13:39:05

Route: RESPIRATORY EXPOSURE WHOLE BODY

CAS Number: 7440-48-4

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

Species/Strain: RATS/F 344

Lab: BNW

ANIMAL NUM: 102 TMT: 2  
DOSE: control

SEX: Female  
DISP: Terminal Sacrifice

DAY ON TEST: 93  
HISTO: 53047

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                             |                          |                            |                           |
|-----------------------------|--------------------------|----------------------------|---------------------------|
| * Adrenal Cortex            | * Adrenal Medulla        | * Bone                     | * Bone Marrow             |
| * Brain                     | * Clitoral Gland         | * Esophagus                | * Eye                     |
| * Harderian Gland           | * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum |
| * Intestine Small, Duodenum | * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      |
| * Kidney                    | * Larynx                 | * Liver                    | * Lung                    |
| * Lymph Node, Mesenteric    | * Mammary Gland          | * Nose                     | * Ovary                   |
| * Pancreas                  | * Parathyroid Gland      | * Pituitary Gland          | * Salivary Glands         |
| * Skin                      | * Spleen                 | * Stomach, Forestomach     | * Stomach, Glandular      |
| * Thymus                    | * Thyroid Gland          | * Trachea                  | * Urinary Bladder         |
| * Uterus                    |                          |                            |                           |

MISSING

- |                         |                          |                           |
|-------------------------|--------------------------|---------------------------|
| * Lymph Node, Bronchial | * Lymph Node, Mandibular | * Lymph Node, Mediastinal |
|-------------------------|--------------------------|---------------------------|

OBSERVATIONS

- |         |                |         |
|---------|----------------|---------|
| * Heart | Cardiomyopathy | Minimal |
|---------|----------------|---------|

TDMS No. 60311 - 03

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/F 344

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

COBALT

CAS Number: 7440-48-4

Date Report Requested: 06/18/2007

Time Report Requested: 13:39:05

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

Lab: BNW

ANIMAL NUM: 103 TMT: 2  
DOSE: control

SEX: Female  
DISP: Terminal Sacrifice

DAY ON TEST: 93  
HISTO: 53048

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Adrenal Cortex  
\* Brain  
\* Harderian Gland  
\* Intestine Large, Rectum  
\* Islets, Pancreatic  
\* Lung  
\* Ovary  
\* Salivary Glands  
\* Stomach, Glandular  
\* Urinary Bladder

\* Adrenal Medulla  
\* Clitoral Gland  
\* Heart  
\* Intestine Small, Duodenum  
\* Kidney  
\* Lymph Node, Mesenteric  
\* Pancreas  
\* Skin  
\* Thymus  
\* Uterus

\* Bone  
\* Esophagus  
\* Intestine Large, Cecum  
\* Intestine Small, Ileum  
\* Larynx  
\* Mammary Gland  
\* Parathyroid Gland  
\* Spleen  
\* Thyroid Gland

\* Bone Marrow  
\* Eye  
\* Intestine Large, Colon  
\* Intestine Small, Jejunum  
\* Liver  
\* Nose  
\* Pituitary Gland  
\* Stomach, Forestomach  
\* Trachea

MISSING

\* Lymph Node, Bronchial

\* Lymph Node, Mandibular

\* Lymph Node, Mediastinal

TDMS No. 60311 - 03

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/F 344

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

COBALT

CAS Number: 7440-48-4

Date Report Requested: 06/18/2007

Time Report Requested: 13:39:05

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

Lab: BNW

ANIMAL NUM: 104 TMT: 2  
DOSE: control

SEX: Female  
DISP: Terminal Sacrifice

DAY ON TEST: 93  
HISTO: 53049

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Cortex
- \* Brain
- \* Harderian Gland
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Lung
- \* Nose
- \* Salivary Glands
- \* Stomach, Glandular
- \* Urinary Bladder

- \* Adrenal Medulla
- \* Clitoral Gland
- \* Heart
- \* Intestine Small, Duodenum
- \* Kidney
- \* Lymph Node, Mediastinal
- \* Ovary
- \* Skin
- \* Thymus
- \* Uterus

- \* Bone
- \* Esophagus
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Larynx
- \* Lymph Node, Mesenteric
- \* Pancreas
- \* Spleen
- \* Thyroid Gland

- \* Bone Marrow
- \* Eye
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Liver
- \* Mammary Gland
- \* Pituitary Gland
- \* Stomach, Forestomach
- \* Trachea

MISSING

- \* Lymph Node, Bronchial

- \* Lymph Node, Mandibular

- \* Parathyroid Gland

TDMS No. 60311 - 03

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/F 344

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

COBALT

CAS Number: 7440-48-4

Date Report Requested: 06/18/2007

Time Report Requested: 13:39:05

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

Lab: BNW

ANIMAL NUM: 105 TMT: 2  
DOSE: control

SEX: Female  
DISP: Terminal Sacrifice

DAY ON TEST: 93  
HISTO: 53050

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

* Adrenal Cortex	* Adrenal Medulla	* Bone	* Bone Marrow
* Brain	* Clitoral Gland	* Esophagus	* Eye
* Harderian Gland	* Heart	* Intestine Large, Cecum	* Intestine Large, Colon
* Intestine Large, Rectum	* Intestine Small, Duodenum	* Intestine Small, Ileum	* Intestine Small, Jejunum
* Islets, Pancreatic	* Kidney	* Larynx	* Liver
* Lung	* Lymph Node, Mediastinal	* Lymph Node, Mesenteric	* Mammary Gland
* Nose	* Ovary	* Pancreas	* Parathyroid Gland
* Pituitary Gland	* Salivary Glands	* Skin	* Spleen
* Stomach, Forestomach	* Stomach, Glandular	* Thymus	* Thyroid Gland
* Trachea	* Urinary Bladder	* Uterus	

MISSING

* Lymph Node, Bronchial	* Lymph Node, Mandibular
-------------------------	--------------------------



TDMS No. 60311 - 03

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/F 344

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

COBALT

CAS Number: 7440-48-4

Date Report Requested: 06/18/2007

Time Report Requested: 13:39:05

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

Lab: BNW

ANIMAL NUM: 106 TMT: 2  
DOSE: control

SEX: Female  
DISP: Terminal Sacrifice

DAY ON TEST: 93  
HISTO: 53051

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

* Adrenal Cortex	* Adrenal Medulla	* Bone	* Bone Marrow
* Brain	* Clitoral Gland	* Esophagus	* Eye
* Harderian Gland	* Heart	* Intestine Large, Cecum	* Intestine Large, Colon
* Intestine Large, Rectum	* Intestine Small, Duodenum	* Intestine Small, Ileum	* Intestine Small, Jejunum
* Islets, Pancreatic	* Kidney	* Larynx	* Liver
* Lung	* Lymph Node, Mediastinal	* Lymph Node, Mesenteric	* Mammary Gland
* Nose	* Ovary	* Pancreas	* Pituitary Gland
* Salivary Glands	* Skin	* Spleen	* Stomach, Forestomach
* Stomach, Glandular	* Thymus	* Thyroid Gland	* Trachea
* Urinary Bladder	* Uterus		

MISSING

* Lymph Node, Bronchial	* Lymph Node, Mandibular	* Parathyroid Gland
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TDMS No. 60311 - 03

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/F 344

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

COBALT

CAS Number: 7440-48-4

Date Report Requested: 06/18/2007

Time Report Requested: 13:39:05

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

Lab: BNW

ANIMAL NUM: 107 TMT: 2  
DOSE: control

SEX: Female  
DISP: Terminal Sacrifice

DAY ON TEST: 93  
HISTO: 53052

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

* Adrenal Cortex	* Adrenal Medulla	* Bone	* Bone Marrow
* Brain	* Clitoral Gland	* Esophagus	* Eye
* Harderian Gland	* Heart	* Intestine Large, Cecum	* Intestine Large, Colon
* Intestine Large, Rectum	* Intestine Small, Duodenum	* Intestine Small, Ileum	* Intestine Small, Jejunum
* Islets, Pancreatic	* Kidney	* Larynx	* Liver
* Lung	* Lymph Node, Mediastinal	* Lymph Node, Mesenteric	* Mammary Gland
* Nose	* Ovary	* Pancreas	* Parathyroid Gland
* Pituitary Gland	* Salivary Glands	* Skin	* Spleen
* Stomach, Forestomach	* Stomach, Glandular	* Thymus	* Thyroid Gland
* Trachea	* Urinary Bladder	* Uterus	

MISSING

* Lymph Node, Bronchial	* Lymph Node, Mandibular
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TDMS No. 60311 - 03

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/F 344

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

COBALT

CAS Number: 7440-48-4

Date Report Requested: 06/18/2007

Time Report Requested: 13:39:05

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

Lab: BNW

ANIMAL NUM: 108 TMT: 2  
DOSE: control

SEX: Female  
DISP: Terminal Sacrifice

DAY ON TEST: 93  
HISTO: 53053

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

* Adrenal Cortex	* Adrenal Medulla	* Bone	* Bone Marrow
* Brain	* Clitoral Gland	* Esophagus	* Eye
* Harderian Gland	* Heart	* Intestine Large, Cecum	* Intestine Large, Colon
* Intestine Large, Rectum	* Intestine Small, Duodenum	* Intestine Small, Ileum	* Intestine Small, Jejunum
* Islets, Pancreatic	* Kidney	* Larynx	* Liver
* Lung	* Lymph Node, Mediastinal	* Lymph Node, Mesenteric	* Mammary Gland
* Nose	* Ovary	* Pancreas	* Parathyroid Gland
* Pituitary Gland	* Salivary Glands	* Skin	* Spleen
* Stomach, Forestomach	* Stomach, Glandular	* Thymus	* Thyroid Gland
* Trachea	* Urinary Bladder	* Uterus	

MISSING

* Lymph Node, Bronchial	* Lymph Node, Mandibular
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TDMS No. 60311 - 03

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/F 344

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

COBALT

CAS Number: 7440-48-4

Date Report Requested: 06/18/2007

Time Report Requested: 13:39:05

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

Lab: BNW

ANIMAL NUM: 109 TMT: 2 DOSE: control

SEX: Female DISP: Terminal Sacrifice

DAY ON TEST: 93 HISTO: 53054

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Cortex
- \* Brain
- \* Harderian Gland
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Lymph Node, Mediastinal
- \* Ovary
- \* Skin
- \* Thymus
- \* Uterus
- \* Adrenal Medulla
- \* Clitoral Gland
- \* Heart
- \* Intestine Small, Duodenum
- \* Kidney
- \* Lymph Node, Mesenteric
- \* Pancreas
- \* Spleen
- \* Thyroid Gland
- \* Bone
- \* Esophagus
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Larynx
- \* Mammary Gland
- \* Pituitary Gland
- \* Stomach, Forestomach
- \* Trachea
- \* Bone Marrow
- \* Eye
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Liver
- \* Nose
- \* Salivary Glands
- \* Stomach, Glandular
- \* Urinary Bladder

MISSING

- \* Lymph Node, Bronchial
- \* Lymph Node, Mandibular
- \* Parathyroid Gland

OBSERVATIONS

- \* Lung Inflammation Chronic Active, Minimal

TDMS No. 60311 - 03

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Date Report Requested: 06/18/2007

Test Type: 90-DAY

COBALT

Time Report Requested: 13:39:05

Route: RESPIRATORY EXPOSURE WHOLE BODY

CAS Number: 7440-48-4

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

Species/Strain: RATS/F 344

Lab: BNW

ANIMAL NUM: 110 TMT: 2  
DOSE: control

SEX: Female  
DISP: Terminal Sacrifice

DAY ON TEST: 93  
HISTO: 53055

ORGAN AND ACCOUNTABLE SITE STATUS

**NORMAL**

- |                           |                             |                          |                            |
|---------------------------|-----------------------------|--------------------------|----------------------------|
| * Adrenal Cortex          | * Adrenal Medulla           | * Bone                   | * Bone Marrow              |
| * Brain                   | * Clitoral Gland            | * Esophagus              | * Eye                      |
| * Harderian Gland         | * Heart                     | * Intestine Large, Cecum | * Intestine Large, Colon   |
| * Intestine Large, Rectum | * Intestine Small, Duodenum | * Intestine Small, Ileum | * Intestine Small, Jejunum |
| * Islets, Pancreatic      | * Kidney                    | * Larynx                 | * Liver                    |
| * Lymph Node, Mediastinal | * Lymph Node, Mesenteric    | * Mammary Gland          | * Nose                     |
| * Ovary                   | * Pancreas                  | * Parathyroid Gland      | * Pituitary Gland          |
| * Salivary Glands         | * Skin                      | * Spleen                 | * Stomach, Forestomach     |
| * Stomach, Glandular      | * Thymus                    | * Thyroid Gland          | * Trachea                  |
| * Urinary Bladder         | * Uterus                    |                          |                            |

**MISSING**

- |                         |                          |
|-------------------------|--------------------------|
| * Lymph Node, Bronchial | * Lymph Node, Mandibular |
|-------------------------|--------------------------|

**OBSERVATIONS**

* Lung	Inflammation	Chronic Active, Minimal
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TDMS No. 60311 - 03

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/F 344

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

COBALT

CAS Number: 7440-48-4

Date Report Requested: 06/18/2007

Time Report Requested: 13:39:05

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

Lab: BNW

ANIMAL NUM: 301    TMT: 4  
DOSE: 0.625 MG/M3

SEX: Female  
DISP: Terminal Sacrifice

DAY ON TEST: 93  
HISTO: 53126

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

\* Nose

**OBSERVATIONS**

* Lung		Inflammation	Chronic Active, Mild
	Alveolus	Proteinosis	Mild
	[ Inflammation TGLs = 1-4+5 ]		

TDMS No. 60311 - 03

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/F 344

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

COBALT

CAS Number: 7440-48-4

Date Report Requested: 06/18/2007

Time Report Requested: 13:39:05

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

Lab: BNW

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<b>ANIMAL NUM:</b>	302	<b>TMT:</b>	4
		<b>DOSE:</b>	0.625 MG/M3

<b>SEX:</b>	Female
<b>DISP:</b>	Terminal Sacrifice

<b>DAY ON TEST:</b>	93
<b>HISTO:</b>	53127

---

**ORGAN AND ACCOUNTABLE SITE STATUS**

---

**NORMAL**

\* Nose

---

**OBSERVATIONS**

* Lung		Inflammation	Chronic Active, Mild
	Alveolus	Proteinosis	Mild
	[ Inflammation TGLs = 1-4+5 ]		

TDMS No. 60311 - 03

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/F 344

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

COBALT

CAS Number: 7440-48-4

Date Report Requested: 06/18/2007

Time Report Requested: 13:39:05

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

Lab: BNW

---

ANIMAL NUM: 303 TMT: 4  
DOSE: 0.625 MG/M3

SEX: Female  
DISP: Terminal Sacrifice

DAY ON TEST: 93  
HISTO: 53128

---

ORGAN AND ACCOUNTABLE SITE STATUS

---

NORMAL

\* Nose

---

OBSERVATIONS

\* Lung  
[ Inflammation Alveolus TGLs = 1-4+5 ]  
Inflammation Proteinosis  
Chronic Active, Mild Minimal



TDMS No. 60311 - 03

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/F 344

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

COBALT

CAS Number: 7440-48-4

Date Report Requested: 06/18/2007

Time Report Requested: 13:39:05

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

Lab: BNW

ANIMAL NUM: 304 TMT: 4  
DOSE: 0.625 MG/M3

SEX: Female  
DISP: Terminal Sacrifice

DAY ON TEST: 93  
HISTO: 53129

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Nose

OBSERVATIONS

Liver [ Hepatodiaphragmatic Nodule TGLs = 1-14 ]

Hepatodiaphragmatic Nodule

\* Lung Alveolus  
[ Inflammation TGLs = 2-4+5 ]

Inflammation  
Proteinosis

Chronic Active, Mild  
Mild

TDMS No. 60311 - 03

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/F 344

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

COBALT

CAS Number: 7440-48-4

Date Report Requested: 06/18/2007

Time Report Requested: 13:39:05

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

Lab: BNW

---

ANIMAL NUM: 305 TMT: 4  
DOSE: 0.625 MG/M3

SEX: Female  
DISP: Terminal Sacrifice

DAY ON TEST: 93  
HISTO: 53130

---

**ORGAN AND ACCOUNTABLE SITE STATUS**

---

**NORMAL**

\* Nose

---

**OBSERVATIONS**

\* Lung  
[ Inflammation Alveolus TGLs = 1-4+5 ]  
Inflammation Proteinosis  
Chronic Active, Mild  
Mild

TDMS No. 60311 - 03

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/F 344

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

COBALT

CAS Number: 7440-48-4

Date Report Requested: 06/18/2007

Time Report Requested: 13:39:05

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

Lab: BNW

---

ANIMAL NUM: 306 TMT: 4  
DOSE: 0.625 MG/M3

SEX: Female  
DISP: Terminal Sacrifice

DAY ON TEST: 93  
HISTO: 53131

---

**OBSERVATIONS**

* Lung	Alveolus	Inflammation	Chronic Active, Mild
	[ Inflammation TGLs = 1-4+5 ]	Proteinosis	Mild
* Nose	Respirat Epith	Hyperplasia	Minimal

TDMS No. 60311 - 03

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/F 344

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

COBALT

CAS Number: 7440-48-4

Date Report Requested: 06/18/2007

Time Report Requested: 13:39:05

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

Lab: BNW

---

ANIMAL NUM: 307    TMT: 4  
DOSE: 0.625 MG/M3

SEX: Female  
DISP: Terminal Sacrifice

DAY ON TEST: 93  
HISTO: 53132

---

**ORGAN AND ACCOUNTABLE SITE STATUS**

---

**NORMAL**

\* Nose

---

**OBSERVATIONS**

\* Lung

[ Inflammation    Alveolus  
                         TGLs = 1-4+5 ]

Inflammation  
Proteinosis

Chronic Active, Minimal  
Mild

TDMS No. 60311 - 03

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/F 344

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

COBALT

CAS Number: 7440-48-4

Date Report Requested: 06/18/2007

Time Report Requested: 13:39:05

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

Lab: BNW

---

ANIMAL NUM: 308 TMT: 4  
DOSE: 0.625 MG/M3

SEX: Female  
DISP: Terminal Sacrifice

DAY ON TEST: 93  
HISTO: 53133

---

ORGAN AND ACCOUNTABLE SITE STATUS

---

NORMAL

\* Nose

---

OBSERVATIONS

\* Lung  
[ Inflammation TGLs = 1-4+5 ] Alveolus Inflammation Proteinosis Chronic Active, Mild Mild

TDMS No. 60311 - 03

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/F 344

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

COBALT

CAS Number: 7440-48-4

Date Report Requested: 06/18/2007

Time Report Requested: 13:39:05

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

Lab: BNW

<b>ANIMAL NUM:</b>	309	<b>TMT:</b>	4
		<b>DOSE:</b>	0.625 MG/M3

<b>SEX:</b>	Female
<b>DISP:</b>	Terminal Sacrifice

<b>DAY ON TEST:</b>	93
<b>HISTO:</b>	53134

**ORGAN AND ACCOUNTABLE SITE STATUS**

**NORMAL**

\* Nose

**OBSERVATIONS**

* Lung		Inflammation	Chronic Active, Mild
	Alveolus	Proteinosis	Mild
[ Inflammation	TGLs = 1-4+5 ]		

TDMS No. 60311 - 03

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/F 344

**P14: INDIVIDUAL ANIMAL PATHOLOGY DATA**

COBALT

CAS Number: 7440-48-4

Date Report Requested: 06/18/2007

Time Report Requested: 13:39:05

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

Lab: BNW

---

ANIMAL NUM: 310 TMT: 4  
DOSE: 0.625 MG/M3

SEX: Female  
DISP: Terminal Sacrifice

DAY ON TEST: 93  
HISTO: 53135

---

**ORGAN AND ACCOUNTABLE SITE STATUS**

---

**NORMAL**

\* Nose

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**OBSERVATIONS**

\* Lung  
[ Inflammation TGLs = 1-4+5 ] Alveolus Inflammation Proteinosis Chronic Active, Mild Minimal

TDMS No. 60311 - 03

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/F 344

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

COBALT

CAS Number: 7440-48-4

Date Report Requested: 06/18/2007

Time Report Requested: 13:39:05

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

Lab: BNW

ANIMAL NUM: 501 TMT: 6  
DOSE: 1.25 MG/M3

SEX: Female  
DISP: Terminal Sacrifice

DAY ON TEST: 93  
HISTO: 53106

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

\* Nose

OBSERVATIONS

* Lung	Bronchiole, Epithelium	Hyperplasia Inflammation Proteinosis	Minimal Chronic Active, Minimal Mild
[ Inflammation	Alveolus TGLs = 1-4+5 ]		



TDMS No. 60311 - 03

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/F 344

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

COBALT

CAS Number: 7440-48-4

Date Report Requested: 06/18/2007

Time Report Requested: 13:39:05

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

Lab: BNW

---

ANIMAL NUM: 502    TMT: 6  
DOSE: 1.25 MG/M3

SEX: Female  
DISP: Terminal Sacrifice

DAY ON TEST: 93  
HISTO: 53107

---

ORGAN AND ACCOUNTABLE SITE STATUS

---

NORMAL

\* Nose

---

OBSERVATIONS

* Lung	Alveolus Bronchiole, Epithelium	Hemorrhage Hyperplasia Inflammation Proteinosis	Minimal Minimal Chronic Active, Mild Mild
[ Inflammation	Alveolus TGLs = 1-4+5 ]		

TDMS No. 60311 - 03

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/F 344

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

COBALT

CAS Number: 7440-48-4

Date Report Requested: 06/18/2007

Time Report Requested: 13:39:05

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

Lab: BNW

---

ANIMAL NUM: 503 TMT: 6  
DOSE: 1.25 MG/M3

SEX: Female  
DISP: Terminal Sacrifice

DAY ON TEST: 93  
HISTO: 53108

---

ORGAN AND ACCOUNTABLE SITE STATUS

---

NORMAL

\* Nose

---

OBSERVATIONS

* Lung	Bronchiole, Epithelium	Hyperplasia Inflammation Proteinosis	Minimal Chronic Active, Mild Mild
[ Inflammation	Alveolus TGLs = 1-4+5 ]		

TDMS No. 60311 - 03

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/F 344

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

COBALT

CAS Number: 7440-48-4

Date Report Requested: 06/18/2007

Time Report Requested: 13:39:05

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

Lab: BNW

---

ANIMAL NUM: 504 TMT: 6  
DOSE: 1.25 MG/M3

SEX: Female  
DISP: Terminal Sacrifice

DAY ON TEST: 93  
HISTO: 53109

---

ORGAN AND ACCOUNTABLE SITE STATUS

---

NORMAL

\* Nose

---

OBSERVATIONS

* Lung	Alveolus Bronchiole, Epithelium	Hemorrhage Hyperplasia Inflammation Proteinosis	Minimal Minimal Chronic Active, Minimal Mild
[ Inflammation	Alveolus TGLs = 1-4+5 ]		

TDMS No. 60311 - 03

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/F 344

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

COBALT

CAS Number: 7440-48-4

Date Report Requested: 06/18/2007

Time Report Requested: 13:39:05

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

Lab: BNW

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<b>ANIMAL NUM:</b>	505	<b>TMT:</b>	6	<b>SEX:</b>	Female	<b>DAY ON TEST:</b>	93
		<b>DOSE:</b>	1.25 MG/M3	<b>DISP:</b>	Terminal Sacrifice	<b>HISTO:</b>	53110

---

**OBSERVATIONS**

* Lung	Bronchiole, Epithelium	Hyperplasia Inflammation Proteinosis	Minimal Chronic Active, Minimal Minimal
[ Inflammation	TGLs = 1,2-4 ]		
* Nose	Olfactory Epi	Degeneration	Minimal

TDMS No. 60311 - 03

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/F 344

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

COBALT

CAS Number: 7440-48-4

Date Report Requested: 06/18/2007

Time Report Requested: 13:39:05

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

Lab: BNW

---

<b>ANIMAL NUM:</b>	506	<b>TMT:</b>	6	<b>SEX:</b>	Female	<b>DAY ON TEST:</b>	93
		<b>DOSE:</b>	1.25 MG/M3	<b>DISP:</b>	Terminal Sacrifice	<b>HISTO:</b>	53111

---

**OBSERVATIONS**

* Lung	Bronchiole, Epithelium	Hyperplasia Inflammation Proteinosis	Minimal Chronic Active, Minimal Mild
[ Inflammation	TGLs = 1-4+5 ]		
* Nose	Olfactory Epi Respirat Epith	Degeneration Necrosis	Minimal Minimal

TDMS No. 60311 - 03

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/F 344

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

COBALT

CAS Number: 7440-48-4

Date Report Requested: 06/18/2007

Time Report Requested: 13:39:05

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

Lab: BNW

---

<b>ANIMAL NUM:</b>	507	<b>TMT:</b>	6	<b>SEX:</b>	Female	<b>DAY ON TEST:</b>	93
		<b>DOSE:</b>	1.25 MG/M3	<b>DISP:</b>	Terminal Sacrifice	<b>HISTO:</b>	53112

---

**OBSERVATIONS**

* Lung	Alveolus	Hemorrhage	Minimal
	Bronchiole, Epithelium	Hyperplasia	Minimal
	Alveolus	Inflammation	Chronic Active, Mild
	[ Inflammation TGLs = 1-4+5 ]	Proteinosis	Mild
* Nose	Olfactory Epi	Degeneration	Minimal

TDMS No. 60311 - 03

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/F 344

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

COBALT

CAS Number: 7440-48-4

Date Report Requested: 06/18/2007

Time Report Requested: 13:39:05

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

Lab: BNW

---

<b>ANIMAL NUM:</b>	508	<b>TMT:</b>	6	<b>SEX:</b>	Female	<b>DAY ON TEST:</b>	93
		<b>DOSE:</b>	1.25 MG/M3	<b>DISP:</b>	Terminal Sacrifice	<b>HISTO:</b>	53113

---

**OBSERVATIONS**

* Lung		Bronchiole, Epithelium	Hyperplasia Inflammation Proteinosis	Minimal Chronic Active, Minimal Mild
	[ Inflammation	TGLs = 1-4+5 ]		
* Nose		Olfactory Epi	Degeneration	Minimal

TDMS No. 60311 - 03

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/F 344

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

COBALT

CAS Number: 7440-48-4

Date Report Requested: 06/18/2007

Time Report Requested: 13:39:05

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

Lab: BNW

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ANIMAL NUM: 509    TMT: 6  
DOSE: 1.25 MG/M3

SEX: Female  
DISP: Terminal Sacrifice

DAY ON TEST: 93  
HISTO: 53114

---

ORGAN AND ACCOUNTABLE SITE STATUS

---

NORMAL

\* Nose

---

OBSERVATIONS

* Lung	Bronchiole, Epithelium	Hyperplasia Inflammation Proteinosis	Minimal Chronic Active, Mild Mild
[ Inflammation	Alveolus TGLs = 1-4+5 ]		



TDMS No. 60311 - 03

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/F 344

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

COBALT

CAS Number: 7440-48-4

Date Report Requested: 06/18/2007

Time Report Requested: 13:39:05

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

Lab: BNW

---

<b>ANIMAL NUM:</b>	510	<b>TMT:</b>	6	<b>SEX:</b>	Female	<b>DAY ON TEST:</b>	93
		<b>DOSE:</b>	1.25 MG/M3	<b>DISP:</b>	Terminal Sacrifice	<b>HISTO:</b>	53115

---

**OBSERVATIONS**

* Lung		Bronchiole, Epithelium	Hyperplasia Inflammation Proteinosis	Minimal Chronic Active, Mild Mild
	[ Inflammation	TGLs = 1-4+5 ]		
* Nose		Olfactory Epi	Degeneration	Minimal

TDMS No. 60311 - 03

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/F 344

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

COBALT

CAS Number: 7440-48-4

Date Report Requested: 06/18/2007

Time Report Requested: 13:39:05

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

Lab: BNW

ANIMAL NUM: 701 TMT: 8  
DOSE: 2.5 MG/M3

SEX: Female  
DISP: Terminal Sacrifice

DAY ON TEST: 93  
HISTO: 53086

OBSERVATIONS

* Lung	Bronchiole, Epithelium	Hyperplasia Inflammation Proteinosis	Minimal Chronic Active, Mild Mild
	Alveolus		
	[ Inflammation TGLs = 1-4+5 ]		
* Nose	Olfactory Epi Respirat Epith	Degeneration Hyperplasia	Minimal Minimal

TDMS No. 60311 - 03

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/F 344

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

COBALT

CAS Number: 7440-48-4

Date Report Requested: 06/18/2007

Time Report Requested: 13:39:05

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

Lab: BNW

ANIMAL NUM: 702 TMT: 8  
DOSE: 2.5 MG/M3

SEX: Female  
DISP: Terminal Sacrifice

DAY ON TEST: 93  
HISTO: 53087

OBSERVATIONS

* Lung	Alveolus Bronchiole, Epithelium	Hemorrhage Hyperplasia Inflammation Proteinosis	Minimal Minimal Chronic Active, Mild Mild
* Nose	Alveolus Olfactory Epi Olfactory Epi Respirat Epith	Degeneration Hyperplasia Hyperplasia	Minimal Minimal Minimal

TDMS No. 60311 - 03

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/F 344

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

COBALT

CAS Number: 7440-48-4

Date Report Requested: 06/18/2007

Time Report Requested: 13:39:05

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

Lab: BNW

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<b>ANIMAL NUM:</b>	703	<b>TMT:</b>	8	<b>SEX:</b>	Female	<b>DAY ON TEST:</b>	93
		<b>DOSE:</b>	2.5 MG/M3	<b>DISP:</b>	Terminal Sacrifice	<b>HISTO:</b>	53088

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**OBSERVATIONS**

* Lung	Bronchiole, Epithelium	Hyperplasia Inflammation Proteinosis	Mild Chronic Active, Mild Mild
* Nose	Alveolus Turbinates Olfactory Epi Respirat Epith	Atrophy Degeneration Hyperplasia	Minimal Minimal Minimal

TDMS No. 60311 - 03

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/F 344

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

COBALT

CAS Number: 7440-48-4

Date Report Requested: 06/18/2007

Time Report Requested: 13:39:05

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

Lab: BNW

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<b>ANIMAL NUM:</b>	704	<b>TMT:</b>	8	<b>SEX:</b>	Female	<b>DAY ON TEST:</b>	93
		<b>DOSE:</b>	2.5 MG/M3	<b>DISP:</b>	Terminal Sacrifice	<b>HISTO:</b>	53089

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**OBSERVATIONS**

* Lung	Bronchiole, Epithelium	Hyperplasia	Mild
	Alveolus	Inflammation	Chronic Active, Mild
	[ Inflammation TGLs = 1-4+5 ]	Proteinosis	Mild
* Nose	Olfactory Epi	Degeneration	Minimal

TDMS No. 60311 - 03

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/F 344

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

COBALT

CAS Number: 7440-48-4

Date Report Requested: 06/18/2007

Time Report Requested: 13:39:05

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

Lab: BNW

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<b>ANIMAL NUM:</b>	705	<b>TMT:</b>	8	<b>SEX:</b>	Female	<b>DAY ON TEST:</b>	93
		<b>DOSE:</b>	2.5 MG/M3	<b>DISP:</b>	Terminal Sacrifice	<b>HISTO:</b>	53090

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**OBSERVATIONS**

* Lung		Bronchiole, Epithelium	Hyperplasia Inflammation Proteinosis	Mild Chronic Active, Mild Moderate
	[ Inflammation	TGLs = 1-4+5 ]		
* Nose		Olfactory Epi Respirat Epith	Degeneration Hyperplasia	Minimal Minimal

TDMS No. 60311 - 03

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/F 344

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

COBALT

CAS Number: 7440-48-4

Date Report Requested: 06/18/2007

Time Report Requested: 13:39:05

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

Lab: BNW

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<b>ANIMAL NUM:</b>	706	<b>TMT:</b>	8	<b>SEX:</b>	Female	<b>DAY ON TEST:</b>	93
		<b>DOSE:</b>	2.5 MG/M3	<b>DISP:</b>	Terminal Sacrifice	<b>HISTO:</b>	53091

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**OBSERVATIONS**

* Lung		Bronchiole, Epithelium	Hyperplasia	Minimal
		Alveolus	Inflammation	Chronic Active, Minimal
	[ Inflammation	TGLs = 1-4+5 ]	Proteinosis	Mild
* Nose		Olfactory Epi	Degeneration	Minimal
		Olfactory Epi	Hyperplasia	Minimal
		Respirat Epith	Hyperplasia	Minimal

TDMS No. 60311 - 03

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/F 344

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

COBALT

CAS Number: 7440-48-4

Date Report Requested: 06/18/2007

Time Report Requested: 13:39:05

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

Lab: BNW

ANIMAL NUM: 707 TMT: 8  
DOSE: 2.5 MG/M3

SEX: Female  
DISP: Terminal Sacrifice

DAY ON TEST: 93  
HISTO: 53092

OBSERVATIONS

* Lung	Bronchiole, Epithelium	Hyperplasia Inflammation Proteinosis	Minimal Chronic Active, Mild Mild
	Alveolus		
[ Inflammation	TGLs = 2-4+5 ]		
* Nose	Turbinate	Atrophy	Minimal
	Olfactory Epi	Degeneration	Minimal
	Respirat Epith	Hyperplasia	Minimal
Ovary		Cyst	Mild
[ Cyst	TGLs = 1-9 ]		



TDMS No. 60311 - 03

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/F 344

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

COBALT

CAS Number: 7440-48-4

Date Report Requested: 06/18/2007

Time Report Requested: 13:39:05

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

Lab: BNW

ANIMAL NUM: 708 TMT: 8  
DOSE: 2.5 MG/M3

SEX: Female  
DISP: Terminal Sacrifice

DAY ON TEST: 93  
HISTO: 53093

OBSERVATIONS

* Lung	Bronchiole, Epithelium	Hyperplasia Inflammation Proteinosis	Minimal Chronic Active, Minimal Minimal
	Alveolus		
	[ Inflammation TGLs = 1-5 ]		
* Nose	Turbinate Olfactory Epi Respirat Epith	Atrophy Degeneration Hyperplasia	Minimal Minimal Minimal

TDMS No. 60311 - 03

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/F 344

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

COBALT

CAS Number: 7440-48-4

Date Report Requested: 06/18/2007

Time Report Requested: 13:39:05

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

Lab: BNW

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<b>ANIMAL NUM:</b>	709	<b>TMT:</b>	8	<b>SEX:</b>	Female	<b>DAY ON TEST:</b>	93
		<b>DOSE:</b>	2.5 MG/M3	<b>DISP:</b>	Terminal Sacrifice	<b>HISTO:</b>	53094

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**OBSERVATIONS**

* Lung	Bronchiole, Epithelium	Hyperplasia Inflammation Proteinosis	Minimal Chronic Active, Minimal Minimal
* Nose	Alveolus Olfactory Epi Respirat Epith Olfactory Epi	Degeneration Hyperplasia Hyperplasia	Minimal Minimal Minimal

TDMS No. 60311 - 03

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/F 344

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

COBALT

CAS Number: 7440-48-4

Date Report Requested: 06/18/2007

Time Report Requested: 13:39:05

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

Lab: BNW

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<b>ANIMAL NUM:</b>	710	<b>TMT:</b>	8	<b>SEX:</b>	Female	<b>DAY ON TEST:</b>	93
		<b>DOSE:</b>	2.5 MG/M3	<b>DISP:</b>	Terminal Sacrifice	<b>HISTO:</b>	53095

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**OBSERVATIONS**

* Lung	Bronchiole, Epithelium	Hyperplasia Inflammation Proteinosis	Minimal Chronic Active, Minimal Mild
* Nose	Alveolus Turbinates Olfactory Epi Respirat Epith	Atrophy Degeneration Hyperplasia	Minimal Minimal Minimal

TDMS No. 60311 - 03

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Date Report Requested: 06/18/2007

Test Type: 90-DAY

COBALT

Time Report Requested: 13:39:05

Route: RESPIRATORY EXPOSURE WHOLE BODY

CAS Number: 7440-48-4

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

Species/Strain: RATS/F 344

Lab: BNW

ANIMAL NUM: 901 TMT: 10 DOSE: 5.0 MG/M3

SEX: Female DISP: Terminal Sacrifice

DAY ON TEST: 93 HISTO: 53066

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Cortex
- \* Brain
- \* Harderian Gland
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Lymph Node, Mesenteric
- \* Parathyroid Gland
- \* Spleen
- \* Thyroid Gland
- \* Adrenal Medulla
- \* Clitoral Gland
- \* Heart
- \* Intestine Small, Duodenum
- \* Larynx
- \* Mammary Gland
- \* Pituitary Gland
- \* Stomach, Forestomach
- \* Trachea
- \* Bone
- \* Esophagus
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Liver
- \* Ovary
- \* Salivary Glands
- \* Stomach, Glandular
- \* Urinary Bladder
- \* Bone Marrow
- \* Eye
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Lymph Node, Mediastinal
- \* Pancreas
- \* Skin
- \* Thymus
- \* Uterus

MISSING

- \* Lymph Node, Bronchial
- \* Lymph Node, Mandibular

OBSERVATIONS

- \* Kidney Nephropathy Minimal
- \* Lung Bronchiole, Epithelium Hyperplasia Mild  
Inflammation Chronic Active, Mild  
Proteinosis Mild
- \* Nose Alveolus Turbinate Atrophy Minimal  
Olfactory Epi Degeneration Moderate  
Respirat Epith Hyperplasia Mild  
Olfactory Epi Hyperplasia Mild

TDMS No. 60311 - 03

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Date Report Requested: 06/18/2007

Test Type: 90-DAY

COBALT

Time Report Requested: 13:39:05

Route: RESPIRATORY EXPOSURE WHOLE BODY

CAS Number: 7440-48-4

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

Species/Strain: RATS/F 344

Lab: BNW

ANIMAL NUM: 902 TMT: 10  
DOSE: 5.0 MG/M3

SEX: Female  
DISP: Terminal Sacrifice

DAY ON TEST: 93  
HISTO: 53067

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                             |                          |                            |                           |
|-----------------------------|--------------------------|----------------------------|---------------------------|
| * Adrenal Cortex            | * Adrenal Medulla        | * Bone                     | * Bone Marrow             |
| * Brain                     | * Clitoral Gland         | * Esophagus                | * Eye                     |
| * Harderian Gland           | * Intestine Large, Cecum | * Intestine Large, Colon   | * Intestine Large, Rectum |
| * Intestine Small, Duodenum | * Intestine Small, Ileum | * Intestine Small, Jejunum | * Islets, Pancreatic      |
| * Kidney                    | * Larynx                 | * Liver                    | * Lymph Node, Mesenteric  |
| * Mammary Gland             | * Ovary                  | * Pancreas                 | * Parathyroid Gland       |
| * Pituitary Gland           | * Salivary Glands        | * Skin                     | * Spleen                  |
| * Stomach, Forestomach      | * Stomach, Glandular     | * Thymus                   | * Thyroid Gland           |
| * Trachea                   | * Urinary Bladder        | * Uterus                   |                           |

MISSING

- |                         |                          |                           |
|-------------------------|--------------------------|---------------------------|
| * Lymph Node, Bronchial | * Lymph Node, Mandibular | * Lymph Node, Mediastinal |
|-------------------------|--------------------------|---------------------------|

OBSERVATIONS

- |         |   |   |  |
|---------|---|---|--|
| * Heart |   | Cardiomyopathy  | Minimal                                  |
| * Lung  | Bronchiole, Epithelium  | Hyperplasia<br>Inflammation<br>Proteinosis            | Mild<br>Chronic Active, Mild<br>Moderate |
|         | Alveolus  |   |  |
| * Nose  | Turbinate<br>Olfactory Epi<br>Respirat Epith<br>Olfactory Epi | Atrophy<br>Degeneration<br>Hyperplasia<br>Hyperplasia | Minimal<br>Mild<br>Mild<br>Mild          |

TDMS No. 60311 - 03

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Date Report Requested: 06/18/2007

Test Type: 90-DAY

COBALT

Time Report Requested: 13:39:05

Route: RESPIRATORY EXPOSURE WHOLE BODY

CAS Number: 7440-48-4

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

Species/Strain: RATS/F 344

Lab: BNW

ANIMAL NUM: 903 TMT: 10 DOSE: 5.0 MG/M3

SEX: Female DISP: Terminal Sacrifice

DAY ON TEST: 93 HISTO: 53068

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Cortex
- \* Brain
- \* Harderian Gland
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Lymph Node, Mediastinal
- \* Pancreas
- \* Skin
- \* Thymus
- \* Uterus
- \* Adrenal Medulla
- \* Clitoral Gland
- \* Heart
- \* Intestine Small, Duodenum
- \* Kidney
- \* Lymph Node, Mesenteric
- \* Parathyroid Gland
- \* Spleen
- \* Thyroid Gland
- \* Bone
- \* Esophagus
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Larynx
- \* Mammary Gland
- \* Pituitary Gland
- \* Stomach, Forestomach
- \* Trachea
- \* Bone Marrow
- \* Eye
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Liver
- \* Ovary
- \* Salivary Glands
- \* Stomach, Glandular
- \* Urinary Bladder

MISSING

- \* Lymph Node, Bronchial
- \* Lymph Node, Mandibular

OBSERVATIONS

- \* Lung
    - Alveolar Epith
    - Bronchiole, Epithelium
    - Alveolus
  - \* Nose
    - Olfactory Epi
    - Respirat Epith
    - Olfactory Epi
- Hyperplasia
  - Hyperplasia
  - Inflammation
  - Proteinosis
  - Degeneration
  - Hyperplasia
  - Hyperplasia
- Minimal
  - Mild
  - Chronic Active, Moderate
  - Mild
  - Mild
  - Mild
  - Mild

TDMS No. 60311 - 03

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/F 344

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

COBALT

CAS Number: 7440-48-4

Date Report Requested: 06/18/2007

Time Report Requested: 13:39:05

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

Lab: BNW

ANIMAL NUM: 904 TMT: 10 DOSE: 5.0 MG/M3

SEX: Female DISP: Terminal Sacrifice

DAY ON TEST: 93 HISTO: 53069

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Cortex
- \* Brain
- \* Harderian Gland
- \* Intestine Small, Duodenum
- \* Kidney
- \* Mammary Gland
- \* Pituitary Gland
- \* Stomach, Forestomach
- \* Trachea
- \* Adrenal Medulla
- \* Clitoral Gland
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Larynx
- \* Ovary
- \* Salivary Glands
- \* Stomach, Glandular
- \* Urinary Bladder
- \* Bone
- \* Esophagus
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Liver
- \* Pancreas
- \* Skin
- \* Thymus
- \* Uterus
- \* Bone Marrow
- \* Eye
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Lymph Node, Mesenteric
- \* Parathyroid Gland
- \* Spleen
- \* Thyroid Gland

MISSING

- \* Lymph Node, Bronchial
- \* Lymph Node, Mandibular
- \* Lymph Node, Mediastinal

OBSERVATIONS

- \* Heart
- \* Lung
- \* Nose
- Cardiomyopathy
- Bronchiole, Epithelium
- Alveolus
- Olfactory Epi
- Respirat Epith
- Olfactory Epi
- Hyperplasia
- Inflammation
- Proteinosis
- Degeneration
- Hyperplasia
- Hyperplasia
- Minimal
- Mild
- Chronic Active, Moderate
- Mild
- Moderate
- Mild
- Mild

TDMS No. 60311 - 03

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/F 344

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

COBALT

CAS Number: 7440-48-4

Date Report Requested: 06/18/2007

Time Report Requested: 13:39:05

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

Lab: BNW

ANIMAL NUM: 905 TMT: 10 DOSE: 5.0 MG/M3

SEX: Female DISP: Terminal Sacrifice

DAY ON TEST: 93 HISTO: 53070

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Cortex
- \* Brain
- \* Harderian Gland
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Lymph Node, Mediastinal
- \* Pancreas
- \* Skin
- \* Thymus
- \* Uterus
- \* Adrenal Medulla
- \* Clitoral Gland
- \* Heart
- \* Intestine Small, Duodenum
- \* Kidney
- \* Lymph Node, Mesenteric
- \* Parathyroid Gland
- \* Spleen
- \* Thyroid Gland
- \* Bone
- \* Esophagus
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Larynx
- \* Mammary Gland
- \* Pituitary Gland
- \* Stomach, Forestomach
- \* Trachea
- \* Bone Marrow
- \* Eye
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Liver
- \* Ovary
- \* Salivary Glands
- \* Stomach, Glandular
- \* Urinary Bladder

MISSING

- \* Lymph Node, Bronchial
- \* Lymph Node, Mandibular

OBSERVATIONS

- \* Lung
  - Bronchiole, Epithelium      Hyperplasia
  - Alveolus                              Inflammation
  - Turbinate                              Proteinosis
  - Olfactory Epi                            Atrophy
  - Respirat Epith                         Degeneration
  - Olfactory Epi                            Hyperplasia
- \* Nose
  - Mild
  - Chronic Active, Moderate
  - Mild
  - Minimal
  - Moderate
  - Minimal
  - Moderate



TDMS No. 60311 - 03

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Date Report Requested: 06/18/2007

Test Type: 90-DAY

COBALT

Time Report Requested: 13:39:05

Route: RESPIRATORY EXPOSURE WHOLE BODY

CAS Number: 7440-48-4

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

Species/Strain: RATS/F 344

Lab: BNW

ANIMAL NUM: 906 TMT: 10 DOSE: 5.0 MG/M3

SEX: Female DISP: Terminal Sacrifice

DAY ON TEST: 93 HISTO: 53071

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Cortex
- \* Brain
- \* Harderian Gland
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Lymph Node, Mediastinal
- \* Pancreas
- \* Skin
- \* Thymus
- \* Uterus
- \* Adrenal Medulla
- \* Clitoral Gland
- \* Heart
- \* Intestine Small, Duodenum
- \* Kidney
- \* Lymph Node, Mesenteric
- \* Parathyroid Gland
- \* Spleen
- \* Thyroid Gland
- \* Bone
- \* Esophagus
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Larynx
- \* Mammary Gland
- \* Pituitary Gland
- \* Stomach, Forestomach
- \* Trachea
- \* Bone Marrow
- \* Eye
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Liver
- \* Ovary
- \* Salivary Glands
- \* Stomach, Glandular
- \* Urinary Bladder

MISSING

- \* Lymph Node, Bronchial
- \* Lymph Node, Mandibular

OBSERVATIONS

- |        |  |  |   |
|--------|--|--|---|
| * Lung | Alveolus<br>Bronchiole, Epithelium   | Hemorrhage<br>Hyperplasia<br>Inflammation                            | Minimal<br>Mild<br>Chronic Active, Mild         |
| * Nose | Alveolus<br>Turbinates<br>Olfactory Epi<br>Respirat Epith<br>Olfactory Epi | Proteinosis<br>Atrophy<br>Degeneration<br>Hyperplasia<br>Hyperplasia | Mild<br>Minimal<br>Moderate<br>Mild<br>Moderate |

TDMS No. 60311 - 03

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Date Report Requested: 06/18/2007

Test Type: 90-DAY

COBALT

Time Report Requested: 13:39:05

Route: RESPIRATORY EXPOSURE WHOLE BODY

CAS Number: 7440-48-4

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

Species/Strain: RATS/F 344

Lab: BNW

ANIMAL NUM: 907 TMT: 10 DOSE: 5.0 MG/M3

SEX: Female DISP: Terminal Sacrifice

DAY ON TEST: 93 HISTO: 53072

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Cortex
- \* Brain
- \* Harderian Gland
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Lymph Node, Mediastinal
- \* Pancreas
- \* Skin
- \* Thymus
- \* Uterus
- \* Adrenal Medulla
- \* Clitoral Gland
- \* Heart
- \* Intestine Small, Duodenum
- \* Kidney
- \* Lymph Node, Mesenteric
- \* Parathyroid Gland
- \* Spleen
- \* Thyroid Gland
- \* Bone
- \* Esophagus
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Larynx
- \* Mammary Gland
- \* Pituitary Gland
- \* Stomach, Forestomach
- \* Trachea
- \* Bone Marrow
- \* Eye
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Liver
- \* Ovary
- \* Salivary Glands
- \* Stomach, Glandular
- \* Urinary Bladder

MISSING

- \* Lymph Node, Bronchial
- \* Lymph Node, Mandibular

OBSERVATIONS

- |        |  |   |  |
|--------|--|---|--|
| * Lung | Bronchiole, Epithelium   | Hyperplasia<br>Inflammation<br>Proteinosis            | Mild<br>Chronic Active, Moderate<br>Mild |
| * Nose | Alveolus<br>Turbinates<br>Olfactory Epi<br>Respirat Epith<br>Olfactory Epi | Atrophy<br>Degeneration<br>Hyperplasia<br>Hyperplasia | Minimal<br>Mild<br>Mild<br>Mild          |

TDMS No. 60311 - 03

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

Date Report Requested: 06/18/2007

Test Type: 90-DAY

COBALT

Time Report Requested: 13:39:05

Route: RESPIRATORY EXPOSURE WHOLE BODY

CAS Number: 7440-48-4

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

Species/Strain: RATS/F 344

Lab: BNW

ANIMAL NUM: 908 TMT: 10 DOSE: 5.0 MG/M3

SEX: Female DISP: Terminal Sacrifice

DAY ON TEST: 93 HISTO: 53073

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Cortex
- \* Brain
- \* Harderian Gland
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Lymph Node, Mediastinal
- \* Pancreas
- \* Spleen
- \* Thyroid Gland
- \* Adrenal Medulla
- \* Clitoral Gland
- \* Heart
- \* Intestine Small, Duodenum
- \* Kidney
- \* Lymph Node, Mesenteric
- \* Pituitary Gland
- \* Stomach, Forestomach
- \* Trachea
- \* Bone
- \* Esophagus
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Larynx
- \* Mammary Gland
- \* Salivary Glands
- \* Stomach, Glandular
- \* Urinary Bladder
- \* Bone Marrow
- \* Eye
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Liver
- \* Ovary
- \* Skin
- \* Thymus
- \* Uterus

MISSING

- \* Lymph Node, Bronchial
- \* Lymph Node, Mandibular
- \* Parathyroid Gland

OBSERVATIONS

- \* Lung
    - Alveolus
    - Bronchiole, Epithelium
    - Alveolus
    - [ Inflammation TGLs = 1-4+5 ]
  - \* Nose
    - Olfactory Epi
    - Respirat Epith
    - Olfactory Epi
- Hemorrhage  
Hyperplasia  
Inflammation  
Proteinosis
- Degeneration  
Hyperplasia  
Hyperplasia
- Minimal  
Mild  
Chronic Active, Mild  
Mild
- Moderate  
Mild  
Mild

TDMS No. 60311 - 03

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/F 344

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

COBALT

CAS Number: 7440-48-4

Date Report Requested: 06/18/2007

Time Report Requested: 13:39:05

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

Lab: BNW

<b>ANIMAL NUM:</b> 909	<b>TMT:</b> 10	<b>SEX:</b> Female	<b>DAY ON TEST:</b> 93
	<b>DOSE:</b> 5.0 MG/M3	<b>DISP:</b> Terminal Sacrifice	<b>HISTO:</b> 53074

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- |                             |                           |                            |                           |
|-----------------------------|---------------------------|----------------------------|---------------------------|
| * Adrenal Cortex            | * Adrenal Medulla         | * Bone                     | * Bone Marrow             |
| * Brain                     | * Clitoral Gland          | * Esophagus                | * Eye                     |
| * Harderian Gland           | * Intestine Large, Cecum  | * Intestine Large, Colon   | * Intestine Large, Rectum |
| * Intestine Small, Duodenum | * Intestine Small, Ileum  | * Intestine Small, Jejunum | * Islets, Pancreatic      |
| * Larynx                    | * Lymph Node, Mediastinal | * Lymph Node, Mesenteric   | * Mammary Gland           |
| * Ovary                     | * Pancreas                | * Parathyroid Gland        | * Pituitary Gland         |
| * Salivary Glands           | * Skin                    | * Spleen                   | * Stomach, Forestomach    |
| * Stomach, Glandular        | * Thymus                  | * Thyroid Gland            | * Trachea                 |
| * Urinary Bladder           | * Uterus                  |                            |                           |

MISSING

- |                         |                          |
|-------------------------|--------------------------|
| * Lymph Node, Bronchial | * Lymph Node, Mandibular |
|-------------------------|--------------------------|

OBSERVATIONS

- |          |   |                            |                      |
|----------|---|----------------------------|----------------------|
| * Heart  |   | Cardiomyopathy             | Minimal              |
| * Kidney |   | Nephropathy                | Minimal              |
| * Liver  |   | Hepatodiaphragmatic Nodule |                      |
|          | [ Hepatodiaphragmatic Nodule TGLs = 1-6 ] |                            |                      |
| * Lung   | Bronchiole, Epithelium                    | Hyperplasia                | Mild                 |
|          | Alveolus                                  | Inflammation               | Chronic Active, Mild |
|          | [ Inflammation TGLs = 2-4+5 ]             | Proteinosis                | Mild                 |
| * Nose   | Olfactory Epi                             | Degeneration               | Mild                 |
|          | Respirat Epith                            | Hyperplasia                | Mild                 |
|          | Olfactory Epi                             | Hyperplasia                | Mild                 |

TDMS No. 60311 - 03

Test Type: 90-DAY

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/F 344

P14: INDIVIDUAL ANIMAL PATHOLOGY DATA

COBALT

CAS Number: 7440-48-4

Date Report Requested: 06/18/2007

Time Report Requested: 13:39:05

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

Lab: BNW

ANIMAL NUM: 910 TMT: 10 DOSE: 5.0 MG/M3

SEX: Female DISP: Terminal Sacrifice

DAY ON TEST: 93 HISTO: 53075

ORGAN AND ACCOUNTABLE SITE STATUS

NORMAL

- \* Adrenal Cortex
- \* Brain
- \* Harderian Gland
- \* Intestine Large, Rectum
- \* Islets, Pancreatic
- \* Lymph Node, Mediastinal
- \* Pancreas
- \* Spleen
- \* Thyroid Gland
- \* Adrenal Medulla
- \* Clitoral Gland
- \* Heart
- \* Intestine Small, Duodenum
- \* Kidney
- \* Lymph Node, Mesenteric
- \* Pituitary Gland
- \* Stomach, Forestomach
- \* Trachea
- \* Bone
- \* Esophagus
- \* Intestine Large, Cecum
- \* Intestine Small, Ileum
- \* Larynx
- \* Mammary Gland
- \* Salivary Glands
- \* Stomach, Glandular
- \* Urinary Bladder
- \* Bone Marrow
- \* Eye
- \* Intestine Large, Colon
- \* Intestine Small, Jejunum
- \* Liver
- \* Ovary
- \* Skin
- \* Thymus
- \* Uterus

MISSING

- \* Lymph Node, Bronchial
- \* Lymph Node, Mandibular
- \* Parathyroid Gland

OBSERVATIONS

- \* Lung
  - Bronchiole, Epithelium
    - Hyperplasia
    - Inflammation
    - Proteinosis
  - Alveolus
    - Mild
    - Chronic Active, Mild
    - Mild
- \* Nose
  - Turbinate
    - Atrophy
    - Degeneration
  - Olfactory Epi
    - Minimal
    - Mild
  - Respirat Epith
    - Minimal
  - Olfactory Epi
    - Hyperplasia
    - Mild

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