

Experiment Number: 60311 - 05
Test Type: CHRONIC
Route: RESPIRATORY EXPOSURE WHOLE BODY
Species/Strain: RATS/F344/N Tac

P17: NEOPLASMS BY INDIVIDUAL ANIMAL (SYSTEMIC LESIONS ABRIDGED)

Cobalt
CAS Number: 7440-48-4

Date Report Requested: 01/18/2012
Time Report Requested: 14:48:12
First Dose M/F: 05/08/06 / 05/08/06
Lab: BNW

F2_RD

NTP Study Number: C60311
Lock Date: 12/03/2008
Cage Range: ALL
Date Range: ALL
Reasons For Removal: ALL
Removal Date Range: ALL
Treatment Groups: Include ALL
Study Gender: Both
TDMSE Version: 2.6.0.0_007
PWG Approval Date: NONE

Note: Animals arranged according to days on test.

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FISCHER 344-TACONIC RATS MALE	DAY ON TEST																								males (cont...)
	0 3 7 6	0 3 8 3	0 4 4 1	0 5 1 4	0 5 1 9	0 5 4 2	0 5 6 2	0 5 8 3	0 5 9 8	0 6 1 1	0 6 1 3	0 6 2 6	0 6 6 3	0 6 6 3	0 6 6 8	0 6 7 0	0 6 7 5	0 6 7 6	0 6 7 8	0 6 8 2	0 6 8 2	0 6 8 3	0 6 8 8	0 6 8 8	
Control	0 0 0 5 0	0 0 0 0 0	0 0 0 4 0	0 0 0 3 9	0 0 0 3 6	0 0 0 1 2	0 0 0 1 5	0 0 0 2 1	0 0 0 4 8	0 0 0 0 2	0 0 0 3 1	0 0 0 0 7	0 0 0 0 3	0 0 0 1 1	0 0 0 3 3	0 0 0 2 4	0 0 0 4 6	0 0 0 4 3	0 0 0 4 9	0 0 0 4 9	0 0 0 0 6	0 0 0 3 2	0 0 0 2 0	0 0 0 1 7	0 0 0 2 5

Heart Schwannoma Malignant	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+

ENDOCRINE SYSTEM

Adrenal Cortex	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adrenal Medulla	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Pheochromocytoma Benign					X								X	X		X	X							
Pheochromocytoma Malignant															X									
Bilateral, Pheochromocytoma Benign									X										X					
Islets, Pancreatic Carcinoma	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	X	+	+	+	+	X	+
Parathyroid Gland	+	+	+	+	+	+	+	+	+	+	M	+	+	+	+	+	+	+	+	+	+	+	+	+
Pituitary Gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Pars Distalis, Adenoma			X	X				X	X	X			X	X	X		X	X	X	X	X	X	X	X
Thyroid Gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
C-cell, Adenoma											X												X	
C-cell, Carcinoma																		X						
Follicular Cell, Carcinoma															X									

GENERAL BODY SYSTEM

NONE																								
------	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

GENITAL SYSTEM

Epididymis	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
------------	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

* .. Total animals with tissue examined microscopically; Total animals with tumor
 + .. Tissue examined microscopically
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	0376	0383	0441	0511	0554	0555	0555	0555	0555	0666	0666	0666	0666	0666	0666	0666	0666	0666	0666	0666	0666	0666	0666	0666		
Control	ANIMAL ID																									
	0050	0001	0004	0003	0003	0001	0001	0002	0005	0001	0008	0002	0001	0007	0003	0001	0003	0004	0006	0003	0009	0009	0006	0002		
Preputial Gland Adenoma Carcinoma	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+		
Prostate Adenoma	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+		
Seminal Vesicle	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+		
Testes Bilateral, Interstitial Cell, Adenoma Interstitial Cell, Adenoma	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+		
			X			X		X	X				X	X			X			X		X	X			
HEMATOPOIETIC SYSTEM																										
Bone Marrow	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+		
Lymph Node										+							+	+		+		+				
Lymph Node, Bronchial	M	M	+	+	+	M	M	+	+	M	+	M	M	M	+	+	+	+	M	M	+	+	M	+	M	
Lymph Node, Mandibular	+	+	+	+	+	+	+	+	+	+	+	+	+	M	+	+	+	+	+	+	+	+	+	+		
Lymph Node, Mediastinal	+	M	M	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+		
Lymph Node, Mesenteric	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+		
Spleen	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+		
Thymus	+	M	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	M	M	+	+	+	
INTEGUMENTARY SYSTEM																										

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	0691	0669	0667	0700	0700	0701	0702	0702	0702	0702	0702	0702	0702	0702	0702	0702	0702	0702	0702	0702	0702	0702	0702	0702		
Control	ANIMAL ID																									
	00035	00044	00072	00081	00083	00087	00088	00088	00090	00094	00096	00096	00096	00096	00096	00096	00096	00096	00096	00096	00096	00096	00096	00096		
Heart Schwannoma Malignant	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50 1	
ENDOCRINE SYSTEM																										
Adrenal Cortex	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50	
Adrenal Medulla	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50	
Pheochromocytoma Benign						X	X	X					X				X	X							11	
Pheochromocytoma Malignant		X																							2	
Bilateral, Pheochromocytoma Benign				X	X																				4	
Islets, Pancreatic Carcinoma	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50 2	
Parathyroid Gland	+	+	M	+	+	+	M	M	+	+	+	+	+	+	+	+	+	M	+	+	+	+	+	+	45	
Pituitary Gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50	
Pars Distalis, Adenoma				X	X	X					X	X				X	X			X	X	X		X	27	
Thyroid Gland	+	+	+	+	+	+	M	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	49	
C-cell, Adenoma															X									X	4	
C-cell, Carcinoma																									1	
Follicular Cell, Carcinoma											X														2	
GENERAL BODY SYSTEM																										
NONE																										
GENITAL SYSTEM																										
Epididymis	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50	

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	0691	0696	0697	0700	0701	0702	0703	0704	0705	0706	0707	0708	0709	0710	0711	0712	0713	0714	0715	0716	0717	0718	0719	0720	
Control	0035	0042	0044	0022	0018	0003	0007	0008	0005	0000	0004	0006	0007	0008	0009	0020	0024	0027	0031	0033	0039	0046	0058	0064	
Preputial Gland Adenoma Carcinoma	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
			X											X											
Prostate Adenoma	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
																							X		
Seminal Vesicle	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
Testes Bilateral, Interstitial Cell, Adenoma	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
Interstitial Cell, Adenoma	X	X	X			X			X	X				X	X	X	X	X	X	X	X		X		
					X		X	X			X	X	X												
HEMATOPOIETIC SYSTEM																									
Bone Marrow	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
Lymph Node			+			+	+			+	+			+											
Lymph Node, Bronchial	M	+	+	M	M	+	M	+	+	+	M	+	+	M	M	+	M	+	+	M	+	+	M	M	
Lymph Node, Mandibular	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	M	+	
Lymph Node, Mediastinal	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	M	+	+	+	M	+	+	+	+	
Lymph Node, Mesenteric	+	+	+	+	+	+	M	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
Spleen	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
Thymus	+	+	+	+	+	+	+	+	M	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	

INTEGUMENTARY SYSTEM

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	0691	0691	0691	0691	0691	0691	0691	0691	0691	0691	0691	0691	0691	0691	0691	0691	0691	0691	0691	0691	0691	0691	0691				
Control	ANIMAL ID																										
	00035	00042	00044	00022	00018	00003	00007	00043	00030	00001	00011	00011	00011	00022	00022	00022	00033	00033	00033	00044	00044	00001	00011	00022	00044		
Mammary Gland	+	M	+	M	+	+	+	M	+	+	M	M	M	M	+	+	M	+	+	+	+	+	+	+		31	
Carcinoma																										1	
Fibroadenoma																							X			1	
Skin	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+		50	
Basal Cell Adenoma																							X			2	
Hamartoma																		X								1	
Keratoacanthoma											X											X	X			4	
Squamous Cell Carcinoma									X																	1	
Trichoepithelioma				X																						2	
Subcutaneous Tissue, Fibroma					X																					2	
Subcutaneous Tissue, Lipoma																										2	
MUSCULOSKELETAL SYSTEM																											
Bone	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+		50
Skeletal Muscle																										+	1
NERVOUS SYSTEM																											
Brain	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+		50
Astrocytoma Malignant																											1
Spinal Cord																											1
RESPIRATORY SYSTEM																											
Larynx	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+		50
Lung	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+		50
Alveolar/Bronchiolar Adenoma																											1
Alveolar/Bronchiolar Adenoma, Multiple																									X	1	

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FISCHER 344-TACONIC RATS MALE	DAY ON TEST																								* TOTALS
	0691	0691	0691	0691	0691	0691	0691	0691	0691	0691	0691	0691	0691	0691	0691	0691	0691	0691	0691	0691	0691	0691	0691	0691	
Control	0035	0035	0035	0035	0035	0035	0035	0035	0035	0035	0035	0035	0035	0035	0035	0035	0035	0035	0035	0035	0035	0035	0035	0035	
Pheochromocytoma Malignant, Metastatic, Adrenal Medulla		X																							1
Squamous Cell Carcinoma, Metastatic, Skin										X															1
Nose	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	48
Trachea	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
SPECIAL SENSES SYSTEM																									
Ear																							+		1
Eye	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
Harderian Gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
Zymbal's Gland Adenoma																									4
Zymbal's Gland Carcinoma																									1
																									3
URINARY SYSTEM																									
Kidney	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
Urinary Bladder	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
SYSTEMIC LESIONS																									
Multiple Organ	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
Leukemia Mononuclear	X		X	X		X				X	X	X		X		X				X				21	
Mesothelioma Malignant																							X		2

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	0 4 1 3	0 4 3 9	0 5 4 0	0 5 6 2	0 5 7 7	0 5 8 0	0 5 8 3	0 5 9 3	0 5 9 6	0 6 0 3	0 6 1 0	0 6 1 8	0 6 2 4	0 6 3 4	0 6 4 1	0 6 6 3	0 6 6 7	0 6 6 7	0 6 7 4	0 6 7 5	0 6 8 3	0 6 8 4	0 6 8 4		
1.25 mg/m3	0 0 4 4	0 0 0 6	0 0 0 1	0 0 4 2	0 0 2 3	0 0 2 4	0 0 1 7	0 0 5 0	0 0 3 6	0 0 3 5	0 0 3 2	0 0 4 0	0 0 0 4	0 0 1 6	0 0 4 3	0 0 2 2	0 0 2 2	0 0 2 2	0 0 1 9	0 0 4 8	0 0 0 1	0 0 1 6	0 0 2 2	0 0 4 4	
ANIMAL ID	0 0 4 4	0 0 4 6	0 0 0 1	0 0 4 2	0 0 2 3	0 0 2 4	0 0 1 7	0 0 5 0	0 0 3 6	0 0 3 5	0 0 3 2	0 0 4 0	0 0 0 4	0 0 1 6	0 0 4 3	0 0 2 2	0 0 2 2	0 0 2 2	0 0 1 9	0 0 4 8	0 0 0 1	0 0 1 6	0 0 2 2	0 0 4 4	

ALIMENTARY SYSTEM

Esophagus	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Intestine Large, Cecum	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Intestine Large, Colon	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Intestine Large, Rectum	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Intestine Small, Duodenum	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Intestine Small, Ileum	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Intestine Small, Jejunum	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+
Liver Hepatocellular Adenoma	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Mesentery							+				+													+
Pancreas Acinus, Adenoma	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Salivary Glands	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Stomach, Forestomach Squamous Cell Papilloma	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Stomach, Glandular	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Tooth																								

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 Lab: BNW

FISCHER 344-TACONIC RATS MALE	DAY ON TEST	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	males (cont...)
	ANIMAL ID	4	4	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	
1.25 mg/m3		1	3	4	6	7	8	8	9	9	0	1	1	2	3	4	6	6	6	6	7	7	8	
		3	9	0	2	7	0	3	3	6	3	0	8	4	4	1	3	3	7	7	4	5	8	
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
		4	4	0	4	2	3	1	5	3	3	3	4	0	1	4	2	4	2	2	1	0	4	
		4	6	1	2	3	4	7	0	6	5	2	0	4	6	3	2	9	0	1	9	8	1	

CARDIOVASCULAR SYSTEM

Blood Vessel

Heart

Alveolar/Bronchiolar Carcinoma, Metastatic,
Lung

Schwannoma Malignant

+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
																					X		

ENDOCRINE SYSTEM

Adrenal Cortex

Adrenal Medulla

Pheochromocytoma Benign

Pheochromocytoma Malignant

Bilateral, Pheochromocytoma Benign

Islets, Pancreatic

Adenoma

Carcinoma

Parathyroid Gland

Pituitary Gland

Pars Distalis, Adenoma

Pars Intermedia, Adenoma

Thyroid Gland

C-cell, Adenoma

C-cell, Carcinoma

Follicular Cell, Carcinoma

+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
						X					X						X	X				X	
															X				X				
+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
																							X
M	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
X	X		X	X		X		X		X	X	X	X	X	X			X	X	X	X		X
+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
			X																		X		X
									X														

* .. Total animals with tissue examined microscopically; Total animals with tumor
 + .. Tissue examined microscopically
 X .. Lesion present
 I .. Insufficient tissue

M .. Missing tissue
 A .. Autolysis precludes evaluation
 BLANK .. Not examined microscopically

Experiment Number: 60311 - 05
 Test Type: CHRONIC
 Route: RESPIRATORY EXPOSURE WHOLE BODY
 Species/Strain: RATS/F344/N Tac

P17: NEOPLASMS BY INDIVIDUAL ANIMAL (SYSTEMIC LESIONS ABRIDGED)
 Cobalt
 CAS Number: 7440-48-4

Date Report Requested: 01/18/2012
 Time Report Requested: 14:48:12
 First Dose M/F: 05/08/06 / 05/08/06
 Lab: BNW

FISCHER 344-TACONIC RATS MALE 1.25 mg/m3	DAY ON TEST																				ANIMAL ID	males (cont...)		
	0 4	0 4	0 5	0 5	0 5	0 5	0 5	0 5	0 5	0 5	0 5	0 6	0 6	0 6	0 6	0 6	0 6	0 6	0 6	0 6			0 6	0 6
	1	3	4	6	7	8	8	9	9	0	1	1	2	3	4	6	6	6	7	7	7	8	8	8
	3	9	0	2	7	0	3	3	6	3	0	8	4	4	1	3	3	7	7	4	5	3	4	4
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	4	4	0	4	2	3	1	5	3	3	3	4	0	1	4	2	4	2	2	1	0	4	0	1
	4	6	1	2	3	4	7	0	6	5	2	0	4	6	3	2	9	0	1	9	8	1	6	2

GENERAL BODY SYSTEM

NONE

GENITAL SYSTEM

Epididymis	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Penis																								
Preputial Gland Adenoma	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Prostate	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Seminal Vesicle	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Testes Bilateral, Interstitial Cell, Adenoma	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Interstitial Cell, Adenoma				X						X		X		X	X	X		X	X	X	X	X	X	

HEMATOPOIETIC SYSTEM

Bone Marrow	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Lymph Node																								
Lymph Node, Bronchial	M	M	+	M	+	+	+	M	+	M	+	+	M	+	+	+	M	M	+	M	M	M	+	M
Lymph Node, Mandibular Carcinoma, Metastatic, Zymbal'S Gland	+	+	+	+	M	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Lymph Node, Mediastinal	+	M	+	+	+	+	M	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+

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 + .. Tissue examined microscopically
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 I .. Insufficient tissue

M .. Missing tissue
 A .. Autolysis precludes evaluation
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Experiment Number: 60311 - 05
 Test Type: CHRONIC
 Route: RESPIRATORY EXPOSURE WHOLE BODY
 Species/Strain: RATS/F344/N Tac

P17: NEOPLASMS BY INDIVIDUAL ANIMAL (SYSTEMIC LESIONS ABRIDGED)

Cobalt
 CAS Number: 7440-48-4

Date Report Requested: 01/18/2012
 Time Report Requested: 14:48:12
 First Dose M/F: 05/08/06 / 05/08/06
 Lab: BNW

FISCHER 344-TACONIC RATS MALE 1.25 mg/m3	DAY ON TEST																				ANIMAL ID	males (cont...)			
	0 4 1 3	0 4 3 9	0 5 4 0	0 5 6 2	0 5 7 7	0 5 8 0	0 5 8 3	0 5 8 3	0 5 9 6	0 6 0 3	0 6 1 0	0 6 1 8	0 6 2 4	0 6 3 4	0 6 4 1	0 6 6 3	0 6 6 7	0 6 7 4	0 6 7 5	0 6 8 3			0 6 8 4	0 6 8 4	
Lymph Node, Mesenteric	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+		
Spleen	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+		
Thymus	M	+	+	+	+	+	+	+	M	+	+	+	+	+	+	+	M	+	+	+	+	+	+		
INTEGUMENTARY SYSTEM																									
Mammary Gland Fibroadenoma	M	M	+	M	+	+	+	+	+	M	+	M	+	+	M	+	M	M	+	+	+	+	M	+	+
Skin	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
Keratoacanthoma							X												X						
Squamous Cell Papilloma																							X		
Lip, Squamous Cell Papilloma													X												
Pinna, Neural Crest Tumor																						X			
Subcutaneous Tissue, Fibroma																				X					
Subcutaneous Tissue, Lipoma																									
MUSCULOSKELETAL SYSTEM																									
Bone	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
NERVOUS SYSTEM																									
Brain	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
Carcinoma, Metastatic, Zymbal'S Gland												X													
Oligodendroglioma Malignant																						X			
RESPIRATORY SYSTEM																									
Larynx	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	

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 + .. Tissue examined microscopically
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 I .. Insufficient tissue

M .. Missing tissue
 A .. Autolysis precludes evaluation
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Experiment Number: 60311 - 05
 Test Type: CHRONIC
 Route: RESPIRATORY EXPOSURE WHOLE BODY
 Species/Strain: RATS/F344/N Tac

P17: NEOPLASMS BY INDIVIDUAL ANIMAL (SYSTEMIC LESIONS ABRIDGED)

Cobalt

CAS Number: 7440-48-4

Date Report Requested: 01/18/2012
 Time Report Requested: 14:48:12
 First Dose M/F: 05/08/06 / 05/08/06
 Lab: BNW

FISCHER 344-TACONIC RATS MALE	DAY ON TEST																								males (cont...)
	0 4 1 3	0 4 3 9	0 5 4 0	0 5 6 2	0 5 7 7	0 5 8 0	0 5 8 3	0 5 9 3	0 5 9 6	0 6 0 3	0 6 1 0	0 6 1 8	0 6 2 4	0 6 3 4	0 6 4 1	0 6 6 3	0 6 6 7	0 6 6 7	0 6 7 4	0 6 7 5	0 6 8 3	0 6 8 4	0 6 8 4		
1.25 mg/m3	ANIMAL ID																								
	0 0 2 4 4	0 0 0 4 6	0 0 0 0 1	0 0 2 4 2	0 0 2 2 3	0 0 2 1 4	0 0 2 5 7	0 0 2 3 0	0 0 2 3 6	0 0 2 3 5	0 0 2 3 2	0 0 2 4 0	0 0 2 0 4	0 0 2 1 6	0 0 2 4 3	0 0 2 2 2	0 0 2 4 9	0 0 2 2 0	0 0 2 2 1	0 0 2 1 9	0 0 2 0 8	0 0 2 0 1	0 0 2 1 6	0 0 2 1 2	0 0 2 2 4
Lung	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Alveolar/Bronchiolar Adenoma					X				X					X											
Alveolar/Bronchiolar Adenoma, Multiple																									
Alveolar/Bronchiolar Carcinoma						X			X							X									
Alveolar/Bronchiolar Carcinoma, Multiple																									
Carcinoma, Metastatic, Zymbal's Gland																						X			
Cystic Keratinizing Epithelioma																									
Mediastinum, Alveolar/Bronchiolar Carcinoma, Metastatic, Lung																						X			
Nose	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	I	I	+	A	+
Trachea	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
SPECIAL SENSES SYSTEM																									
Ear																									+
Eye	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Harderian Gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Zymbal's Gland																									
Carcinoma														+											X
URINARY SYSTEM																									
Kidney	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Renal Tubule, Adenoma																									
Urinary Bladder	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+

* .. Total animals with tissue examined microscopically; Total animals with tumor
 + .. Tissue examined microscopically
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 A .. Autolysis precludes evaluation
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Experiment Number: 60311 - 05
 Test Type: CHRONIC
 Route: RESPIRATORY EXPOSURE WHOLE BODY
 Species/Strain: RATS/F344/N Tac

P17: NEOPLASMS BY INDIVIDUAL ANIMAL (SYSTEMIC LESIONS ABRIDGED)

Cobalt

CAS Number: 7440-48-4

Date Report Requested: 01/18/2012

Time Report Requested: 14:48:12

First Dose M/F: 05/08/06 / 05/08/06

Lab: BNW

FISCHER 344-TACONIC RATS MALE	DAY ON TEST																							* TOTALS
	0699	0705	0708	0711	0719	0722	0729	0732	0739	0742	0749	0752	0759	0762	0769	0772	0779	0782	0789	0792	0799	0802		
1.25 mg/m3	00215	00039	00055	00081	00098	00073	00077	00079	00090	00091	00094	00095	00096	00097	00098	00099	00100	00101	00102	00103	00104	00105	00106	
	ANIMAL ID	00215	00039	00055	00081	00098	00073	00077	00079	00090	00091	00094	00095	00096	00097	00098	00099	00100	00101	00102	00103	00104	00105	00106

ALIMENTARY SYSTEM

Esophagus	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
Intestine Large, Cecum	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
Intestine Large, Colon	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
Intestine Large, Rectum	+	+	+	M	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	49
Intestine Small, Duodenum	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
Intestine Small, Ileum	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
Intestine Small, Jejunum	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	49
Liver	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
Hepatocellular Adenoma																								1
Mesentery																						+		4
Pancreas	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
Acinus, Adenoma																								1
Salivary Glands	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
Stomach, Forestomach	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
Squamous Cell Papilloma																								1
Stomach, Glandular	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
Tooth																						+		2

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Experiment Number: 60311 - 05
 Test Type: CHRONIC
 Route: RESPIRATORY EXPOSURE WHOLE BODY
 Species/Strain: RATS/F344/N Tac

P17: NEOPLASMS BY INDIVIDUAL ANIMAL (SYSTEMIC LESIONS ABRIDGED)

Cobalt

CAS Number: 7440-48-4

Date Report Requested: 01/18/2012

Time Report Requested: 14:48:12

First Dose M/F: 05/08/06 / 05/08/06

Lab: BNW

DAY ON TEST	FISCHER 344-TACONIC RATS MALE																								* TOTALS
	0699	0705	0708	0705	0711	0712	0712	0712	0712	0712	0712	0712	0712	0712	0712	0712	0712	0712	0712	0712	0712	0712	0712	0712	
1.25 mg/m3	00215	00223	00230	00234	00240	00243	00247	00250	00253	00256	00259	00262	00265	00268	00271	00274	00277	00280	00283	00286	00289	00292	00295	00298	50

CARDIOVASCULAR SYSTEM

Blood Vessel																									+	1	
Heart	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50		
Alveolar/Bronchiolar Carcinoma, Metastatic, Lung					X																						2
Schwannoma Malignant				X																						1	

ENDOCRINE SYSTEM

Adrenal Cortex	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50						
Adrenal Medulla	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50						
Pheochromocytoma Benign													X		X		X		X		X				10						
Pheochromocytoma Malignant																			X												2
Bilateral, Pheochromocytoma Benign	X	X		X	X		X		X	X	X								X				X	X	13						
Islets, Pancreatic	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50						
Adenoma																										1					
Carcinoma																										1					
Parathyroid Gland	M	+	+	M	+	+	+	+	+	+	+	M	+	+	+	+	+	+	+	+	+	+	+	M	45						
Pituitary Gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50						
Pars Distalis, Adenoma	X	X		X	X	X	X	X	X		X				X	X	X					X	X	32							
Pars Intermedia, Adenoma									X																		1				
Thyroid Gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50						
C-cell, Adenoma								X											X	X		X						8			
C-cell, Carcinoma											X						X											2			
Follicular Cell, Carcinoma																			X							2					

* .. Total animals with tissue examined microscopically; Total animals with tumor
 + .. Tissue examined microscopically
 X .. Lesion present
 I .. Insufficient tissue

M .. Missing tissue
 A .. Autolysis precludes evaluation
 BLANK .. Not examined microscopically

Experiment Number: 60311 - 05
 Test Type: CHRONIC
 Route: RESPIRATORY EXPOSURE WHOLE BODY
 Species/Strain: RATS/F344/N Tac

P17: NEOPLASMS BY INDIVIDUAL ANIMAL (SYSTEMIC LESIONS ABRIDGED)

Cobalt

CAS Number: 7440-48-4

Date Report Requested: 01/18/2012
 Time Report Requested: 14:48:12
 First Dose M/F: 05/08/06 / 05/08/06
 Lab: BNW

FISCHER 344-TACONIC RATS MALE 1.25 mg/m3	DAY ON TEST																								* TOTALS
	0699	0705	0708	0705	0711	0712	0712	0712	0712	0712	0712	0712	0712	0712	0712	0712	0712	0712	0712	0712	0712	0712	0712	0712	
ANIMAL ID	0011	0013	0015	0018	0020	0023	0027	0029	0030	0031	0034	0035	0036	0037	0038	0039	0040	0041	0042	0043	0044	0045	0046	0047	0048
	5	9	5	1	8	3	7	9	0	1	4	5	6	7	8	3	7	8	7	2	3	8	9	0	5

GENERAL BODY SYSTEM

NONE

GENITAL SYSTEM

Epididymis	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
Penis																										1
Preputial Gland Adenoma	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
											X															1
Prostate	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
Seminal Vesicle	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
Testes	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
Bilateral, Interstitial Cell, Adenoma		X	X	X		X				X	X	X		X	X		X	X	X	X	X		X		21	
Interstitial Cell, Adenoma	X				X			X	X				X			X						X		X	18	

HEMATOPOIETIC SYSTEM

Bone Marrow	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
Lymph Node					+		+												+				+	+		9
Lymph Node, Bronchial	M	+	M	+	+	+	+	+	M	M	M	M	+	M	+	+	M	M	+	+	M	M	M	M	+	25
Lymph Node, Mandibular Carcinoma, Metastatic, Zymbal'S Gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	49
					X																				1	
Lymph Node, Mediastinal	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	48

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Experiment Number: 60311 - 05
 Test Type: CHRONIC
 Route: RESPIRATORY EXPOSURE WHOLE BODY
 Species/Strain: RATS/F344/N Tac

P17: NEOPLASMS BY INDIVIDUAL ANIMAL (SYSTEMIC LESIONS ABRIDGED)

Cobalt

CAS Number: 7440-48-4

Date Report Requested: 01/18/2012

Time Report Requested: 14:48:12

First Dose M/F: 05/08/06 / 05/08/06

Lab: BNW

FISCHER 344-TACONIC RATS MALE 1.25 mg/m3	DAY ON TEST																				* TOTALS				
	0699	0705	0708	0701	0705	0709	0709	0709	0709	0709	0709	0709	0709	0709	0709	0709	0709	0709	0709	0709		0709			
ANIMAL ID	00215	00035	00031	00048	00003	00007	00009	00000	00001	00004	00005	00006	00007	00008	00003	00007	00008	00007	00002	00003	00008	00009	00000		
Lymph Node, Mesenteric	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50	
Spleen	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50	
Thymus	+	+	+	+	+	+	+	+	M	+	+	+	+	+	+	M	+	+	+	+	+	+	M	+	44
INTEGUMENTARY SYSTEM																									
Mammary Gland Fibroadenoma	+	+	M	+	+	+	+	M	M	M	+	M	+	M	M	+	+	+	+	+	+	+	M	M	32 1
Skin	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
Keratoacanthoma				X							X		X										X	6	
Squamous Cell Papilloma																								1	
Lip, Squamous Cell Papilloma																								1	
Pinna, Neural Crest Tumor																								1	
Subcutaneous Tissue, Fibroma															X				X					3	
Subcutaneous Tissue, Lipoma																							X	1	
MUSCULOSKELETAL SYSTEM																									
Bone	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50	
NERVOUS SYSTEM																									
Brain	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50	
Carcinoma, Metastatic, Zymbal'S Gland																								1	
Oligodendroglioma Malignant																							X	2	
RESPIRATORY SYSTEM																									
Larynx	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50	

* .. Total animals with tissue examined microscopically; Total animals with tumor
 + .. Tissue examined microscopically
 X .. Lesion present
 I .. Insufficient tissue

M .. Missing tissue
 A .. Autolysis precludes evaluation
 BLANK .. Not examined microscopically

Experiment Number: 60311 - 05
 Test Type: CHRONIC
 Route: RESPIRATORY EXPOSURE WHOLE BODY
 Species/Strain: RATS/F344/N Tac

P17: NEOPLASMS BY INDIVIDUAL ANIMAL (SYSTEMIC LESIONS ABRIDGED)

Cobalt

CAS Number: 7440-48-4

Date Report Requested: 01/18/2012
 Time Report Requested: 14:48:12
 First Dose M/F: 05/08/06 / 05/08/06
 Lab: BNW

FISCHER 344-TACONIC RATS MALE 1.25 mg/m3	DAY ON TEST																				* TOTALS
	0699	0705	0708	0709	0712	0719	0722	0729	0732	0739	0742	0749	0752	0759	0762	0769	0772	0779	0782	0789	
ANIMAL ID	0015	0009	0005	0001	0008	0003	0007	0009	0000	0001	0004	0005	0006	0007	0008	0003	0007	0008	0007	0002	
Lung	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
Alveolar/Bronchiolar Adenoma	X						X			X										X	7
Alveolar/Bronchiolar Adenoma, Multiple									X	X									X		3
Alveolar/Bronchiolar Carcinoma	X	X	X	X										X		X				X	10
Alveolar/Bronchiolar Carcinoma, Multiple					X							X		X			X	X			6
Carcinoma, Metastatic, Zymbal'S Gland			X																		1
Cystic Keratinizing Epithelioma											X										1
Mediastinum, Alveolar/Bronchiolar Carcinoma, Metastatic, Lung					X																2
Nose	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	47
Trachea	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
SPECIAL SENSES SYSTEM																					
Ear																		+		+	5
Eye	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
Harderian Gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
Zymbal's Gland				+							+										3
Carcinoma			X								X										3
URINARY SYSTEM																					
Kidney	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
Renal Tubule, Adenoma																				X	1
Urinary Bladder	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50

* .. Total animals with tissue examined microscopically; Total animals with tumor
 + .. Tissue examined microscopically
 X .. Lesion present
 I .. Insufficient tissue

M .. Missing tissue
 A .. Autolysis precludes evaluation
 BLANK .. Not examined microscopically

Experiment Number: 60311 - 05

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/F344/N Tac

P17: NEOPLASMS BY INDIVIDUAL ANIMAL (SYSTEMIC LESIONS ABRIDGED)

Cobalt

CAS Number: 7440-48-4

Date Report Requested: 01/18/2012

Time Report Requested: 14:48:12

First Dose M/F: 05/08/06 / 05/08/06

Lab: BNW

		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	DAY ON TEST	6	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
FISCHER 344-TACONIC RATS MALE		9	0	0	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	3	3	3	3	3	3
		9	5	8	5	9	9	9	9	9	9	9	9	9	9	9	9	9	9	0	0	0	0	0	0
1.25 mg/m3		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ANIMAL ID	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
		1	3	0	3	4	0	0	0	1	1	1	2	2	2	3	3	3	4	0	1	1	2	3	4
		5	9	5	1	8	3	7	9	0	1	4	5	6	7	8	3	7	8	7	2	3	8	9	0
																							* TOTALS		

SYSTEMIC LESIONS

Multiple Organ	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
Leukemia Mononuclear						X	X		X	X	X		X	X		X	X	X	X	X	X	X	X	X	25
Mesothelioma Malignant																	X								3

* .. Total animals with tissue examined microscopically; Total animals with tumor
 + .. Tissue examined microscopically
 X .. Lesion present
 I .. Insufficient tissue

M .. Missing tissue
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 BLANK .. Not examined microscopically

Experiment Number: 60311 - 05
 Test Type: CHRONIC
 Route: RESPIRATORY EXPOSURE WHOLE BODY
 Species/Strain: RATS/F344/N Tac

P17: NEOPLASMS BY INDIVIDUAL ANIMAL (SYSTEMIC LESIONS ABRIDGED)

Cobalt

CAS Number: 7440-48-4

Date Report Requested: 01/18/2012
 Time Report Requested: 14:48:12
 First Dose M/F: 05/08/06 / 05/08/06
 Lab: BNW

DAY ON TEST		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FISCHER 344-TACONIC RATS MALE		4	5	5	5	5	5	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
		7	3	4	8	8	9	0	1	1	1	2	2	4	5	5	5	5	6	7	8	8	8	8	8
2.5 mg/m3		2	5	8	2	3	8	9	1	8	8	5	8	6	2	2	4	4	7	8	0	3	8	8	9
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ANIMAL ID	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	
		3	4	2	2	2	3	1	4	2	3	2	1	1	0	3	2	4	0	4	3	0	1	1	
		9	0	4	3	7	1	2	6	1	6	2	4	5	8	8	5	2	3	5	7	6	0	8	

males
(cont...)

ALIMENTARY SYSTEM

Esophagus	+	M	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Intestine Large, Cecum	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+
Intestine Large, Colon Carcinoma	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+
Intestine Large, Rectum	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+
Intestine Small, Duodenum	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+
Intestine Small, Ileum	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	A	+	+	+	A	+
Intestine Small, Jejunum	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	A	+	+	+	+	+
Liver	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Mesentery Lipoma	+	+												+	+									+
Pancreas	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+
Salivary Glands Schwannoma Malignant	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Stomach, Forestomach	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Stomach, Glandular	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+

CARDIOVASCULAR SYSTEM

* .. Total animals with tissue examined microscopically; Total animals with tumor
 + .. Tissue examined microscopically
 X .. Lesion present
 I .. Insufficient tissue

M .. Missing tissue
 A .. Autolysis precludes evaluation
 BLANK .. Not examined microscopically

Experiment Number: 60311 - 05
 Test Type: CHRONIC
 Route: RESPIRATORY EXPOSURE WHOLE BODY
 Species/Strain: RATS/F344/N Tac

P17: NEOPLASMS BY INDIVIDUAL ANIMAL (SYSTEMIC LESIONS ABRIDGED)

Cobalt

CAS Number: 7440-48-4

Date Report Requested: 01/18/2012

Time Report Requested: 14:48:12

First Dose M/F: 05/08/06 / 05/08/06

Lab: BNW

FISCHER 344-TACONIC RATS MALE	DAY ON TEST																				males (cont...)		
	0 4 7 2	0 5 3 5	0 5 4 8	0 5 8 2	0 5 8 3	0 5 9 8	0 6 0 9	0 6 1 1	0 6 1 8	0 6 1 8	0 6 2 5	0 6 2 8	0 6 4 6	0 6 5 2	0 6 5 4	0 6 5 4	0 6 6 7	0 6 8 8	0 6 8 8	0 6 8 8		0 6 9 9	
2.5 mg/m3	0 0 4 3 9	0 0 4 4 0	0 0 4 2 4	0 0 4 2 3	0 0 4 2 7	0 0 4 1 1	0 0 4 4 2	0 0 4 2 6	0 0 4 3 1	0 0 4 2 6	0 0 4 2 2	0 0 4 1 4	0 0 4 1 5	0 0 4 0 8	0 0 4 2 8	0 0 4 4 5	0 0 4 4 2	0 0 4 4 3	0 0 4 0 5	0 0 4 3 7	0 0 4 0 6	0 0 4 1 9	0 0 4 2 6

Heart	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Alveolar/Bronchiolar Carcinoma, Metastatic Schwannoma Malignant																							X

ENDOCRINE SYSTEM

Adrenal Cortex	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adrenal Medulla	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Pheochromocytoma Benign				X						X		X		X				X			X	X	
Pheochromocytoma Malignant											X	X						X			X	X	
Bilateral, Pheochromocytoma Benign					X			X	X				X	X			X		X	X			
Islets, Pancreatic	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+
Adenoma									X														X
Carcinoma								X					X										
Parathyroid Gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	M	+	+	M	+
Pituitary Gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Pars Distalis, Adenoma	X	X		X	X				X	X		X	X	X		X	X		X	X	X	X	
Thyroid Gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
C-cell, Adenoma			X			X																X	X
C-cell, Carcinoma								X															

GENERAL BODY SYSTEM

NONE

GENITAL SYSTEM

* .. Total animals with tissue examined microscopically; Total animals with tumor
 + .. Tissue examined microscopically
 X .. Lesion present
 I .. Insufficient tissue

M .. Missing tissue
 A .. Autolysis precludes evaluation
 BLANK .. Not examined microscopically

Experiment Number: 60311 - 05
 Test Type: CHRONIC
 Route: RESPIRATORY EXPOSURE WHOLE BODY
 Species/Strain: RATS/F344/N Tac

P17: NEOPLASMS BY INDIVIDUAL ANIMAL (SYSTEMIC LESIONS ABRIDGED)
 Cobalt
 CAS Number: 7440-48-4

Date Report Requested: 01/18/2012
 Time Report Requested: 14:48:12
 First Dose M/F: 05/08/06 / 05/08/06
 Lab: BNW

FISCHER 344-TACONIC RATS MALE 2.5 mg/m3	DAY ON TEST																								ANIMAL ID	males (cont...)	
	0 4 7 2	0 5 3 5	0 5 4 8	0 5 8 2	0 5 8 3	0 5 9 8	0 6 0 9	0 6 1 1	0 6 1 8	0 6 1 8	0 6 2 5	0 6 2 8	0 6 4 6	0 6 5 2	0 6 5 2	0 6 5 4	0 6 5 4	0 6 6 7	0 6 8 8	0 6 8 8	0 6 8 8	0 6 8 9	0 6 8 9				
Epididymis	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	0 0 4 3 9	males (cont...)	
Preputial Gland Carcinoma	+	+	+	+	+	X	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	0 0 4 3 9	M	
Prostate Pheochromocytoma Malignant, Metastatic, Adrenal Medulla	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	0 0 4 3 9		
Seminal Vesicle	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	0 0 4 3 9		
Testes Bilateral, Interstitial Cell, Adenoma Interstitial Cell, Adenoma	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	0 0 4 3 9	X X X X X	
HEMATOPOIETIC SYSTEM																											
Bone Marrow	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	0 0 4 3 9	
Lymph Node																										0 0 4 3 9	
Lymph Node, Bronchial	M	+	+	M	M	M	M	+	+	+	M	+	M	M	+	M	M	M	+	+	M	M	M	+	0 0 4 3 9		
Lymph Node, Mandibular	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	0 0 4 3 9	
Lymph Node, Mediastinal	+	+	+	+	+	+	M	+	+	+	+	+	+	+	+	+	+	M	+	+	+	+	+	+	0 0 4 3 9		
Lymph Node, Mesenteric	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	0 0 4 3 9	
Spleen	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	0 0 4 3 9	
Thymus	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	M	+	+	+	+	+	+	+	+	0 0 4 3 9		

* .. Total animals with tissue examined microscopically; Total animals with tumor
 + .. Tissue examined microscopically
 X .. Lesion present
 I .. Insufficient tissue

M .. Missing tissue
 A .. Autolysis precludes evaluation
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Experiment Number: 60311 - 05
 Test Type: CHRONIC
 Route: RESPIRATORY EXPOSURE WHOLE BODY
 Species/Strain: RATS/F344/N Tac

P17: NEOPLASMS BY INDIVIDUAL ANIMAL (SYSTEMIC LESIONS ABRIDGED)
 Cobalt
 CAS Number: 7440-48-4

Date Report Requested: 01/18/2012
 Time Report Requested: 14:48:12
 First Dose M/F: 05/08/06 / 05/08/06
 Lab: BNW

DAY ON TEST	FISCHER 344-TACONIC RATS MALE																				ANIMAL ID	males (cont...)		
	0 4 7 2	0 5 3 5	0 5 4 8	0 5 8 2	0 5 8 3	0 5 9 8	0 6 0 9	0 6 1 1	0 6 1 8	0 6 1 8	0 6 2 5	0 6 2 8	0 6 4 6	0 6 5 2	0 6 5 4	0 6 5 4	0 6 6 7	0 6 8 8	0 6 8 8	0 6 8 8			0 6 8 8	0 6 8 9
2.5 mg/m3	0 4 3 9	0 0 4 0	0 0 4 2	0 0 4 2	0 0 4 2	0 0 4 3	0 0 4 1	0 0 4 2	0 0 4 1	0 0 4 6	0 0 4 2	0 0 4 4	0 0 4 4	0 0 4 4	0 0 4 4	0 0 3 8	0 0 2 8	0 0 4 5	0 0 4 2	0 0 4 3	0 0 0 6	0 0 4 1	0 0 4 9	0 0 0 6

INTEGUMENTARY SYSTEM

Mammary Gland	+	+	+	M	+	+	M	M	+	+	+	M	M	+	M	+	+	+	+	+	+	+	+	+	M
Skin	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Basal Cell Adenoma																									
Basal Cell Carcinoma																X									
Keratoacanthoma				X	X									X			X								
Sebaceous Gland, Adenoma																									
Subcutaneous Tissue, Fibroma												X											X		

MUSCULOSKELETAL SYSTEM

Bone	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
------	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

NERVOUS SYSTEM

Brain	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
-------	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

RESPIRATORY SYSTEM

Larynx	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Lung	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Alveolar/Bronchiolar Adenoma		X				X						X	X												
Alveolar/Bronchiolar Adenoma, Multiple																									
Alveolar/Bronchiolar Carcinoma	X														X	X	X					X	X		
Alveolar/Bronchiolar Carcinoma, Multiple									X								X						X		X
Mediastinum, Alveolar/Bronchiolar Carcinoma, Metastatic, Lung																									X
Nose	A	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	I	A	+	+	+	I	+

* .. Total animals with tissue examined microscopically; Total animals with tumor
 + .. Tissue examined microscopically
 X .. Lesion present
 I .. Insufficient tissue

M .. Missing tissue
 A .. Autolysis precludes evaluation
 BLANK .. Not examined microscopically

Experiment Number: 60311 - 05
 Test Type: CHRONIC
 Route: RESPIRATORY EXPOSURE WHOLE BODY
 Species/Strain: RATS/F344/N Tac

P17: NEOPLASMS BY INDIVIDUAL ANIMAL (SYSTEMIC LESIONS ABRIDGED)

Cobalt
 CAS Number: 7440-48-4

Date Report Requested: 01/18/2012
 Time Report Requested: 14:48:12
 First Dose M/F: 05/08/06 / 05/08/06
 Lab: BNW

FISCHER 344-TACONIC RATS MALE	DAY ON TEST																								males (cont...)	
	04	05	05	05	05	05	06	06	06	06	06	06	06	06	06	06	06	06	06	06	06	06	06			
2.5 mg/m3	72	35	48	82	83	98	01	11	11	22	22	48	55	55	55	66	67	88	88	88	88	89	89			
ANIMAL ID	0043	0044	0042	0022	0022	0031	0044	0023	0014	0023	0011	0000	0003	0024	0008	0008	0005	0002	0003	0005	0007	0006	0000			
Trachea	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+			
SPECIAL SENSES SYSTEM																										
Eye	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+			
Harderian Gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+			
URINARY SYSTEM																										
Kidney	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+			
Alveolar/Bronchiolar Carcinoma, Metastatic, Lung																										
Urinary Bladder	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+			
SYSTEMIC LESIONS																										
Multiple Organ	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+			
Histiocytic Sarcoma																										
Leukemia Mononuclear				X					X	X								X	X	X	X	X	X	X	X	X

* .. Total animals with tissue examined microscopically; Total animals with tumor
 + .. Tissue examined microscopically
 X .. Lesion present
 I .. Insufficient tissue

M .. Missing tissue
 A .. Autolysis precludes evaluation
 BLANK .. Not examined microscopically

Experiment Number: 60311 - 05
 Test Type: CHRONIC
 Route: RESPIRATORY EXPOSURE WHOLE BODY
 Species/Strain: RATS/F344/N Tac

P17: NEOPLASMS BY INDIVIDUAL ANIMAL (SYSTEMIC LESIONS ABRIDGED)

Cobalt

CAS Number: 7440-48-4

Date Report Requested: 01/18/2012

Time Report Requested: 14:48:12

First Dose M/F: 05/08/06 / 05/08/06

Lab: BNW

FISCHER 344-TACONIC RATS MALE	DAY ON TEST																										* TOTALS
	0 7 0 3	0 7 0 4	0 7 0 5	0 7 0 5	0 7 1 6	0 7 1 6	0 7 1 9	0 7 2 1	0 7 2 2	0 7 2 5	0 7 2 9	0 7 2 9	0 7 2 9	0 7 2 9	0 7 2 9	0 7 2 9	0 7 2 9	0 7 3 0	0 7 3 0	0 7 3 0	0 7 3 0	0 7 3 0	0 7 3 0	0 7 3 0			
2.5 mg/m3	0 4 1 3	0 4 4 7	0 4 0 2	0 4 4 9	0 4 3 2	0 4 4 4	0 4 0 1	0 4 0 9	0 4 2 0	0 4 0 4	0 4 0 5	0 4 0 7	0 4 0 6	0 4 1 8	0 4 3 0	0 4 3 3	0 4 4 1	0 4 4 8	0 4 1 1	0 4 1 7	0 4 3 9	0 4 3 4	0 4 3 5	0 4 4 3	0 4 5 0		

ALIMENTARY SYSTEM

Esophagus	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	M	+	+	+	48
Intestine Large, Cecum	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	49
Intestine Large, Colon Carcinoma	+	+	+	+	+	+	+	+	+	+	+	+	+	X	+	+	+	+	+	+	+	+	+	49 1	
Intestine Large, Rectum	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	49	
Intestine Small, Duodenum	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	49	
Intestine Small, Ileum	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	47	
Intestine Small, Jejunum	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	48	
Liver	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50	
Mesentery									+												+			9	
Lipoma																						+		1	
Pancreas	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	49	
Salivary Glands Schwannoma Malignant	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	X	+	+	50 1	
Stomach, Forestomach	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50	
Stomach, Glandular	+	+	+	+	+	+	+	+	+	+	+	+	+	M	+	+	+	+	+	+	+	+	+	49	

CARDIOVASCULAR SYSTEM

* .. Total animals with tissue examined microscopically; Total animals with tumor
 + .. Tissue examined microscopically
 X .. Lesion present
 I .. Insufficient tissue

M .. Missing tissue
 A .. Autolysis precludes evaluation
 BLANK .. Not examined microscopically

Experiment Number: 60311 - 05
 Test Type: CHRONIC
 Route: RESPIRATORY EXPOSURE WHOLE BODY
 Species/Strain: RATS/F344/N Tac

P17: NEOPLASMS BY INDIVIDUAL ANIMAL (SYSTEMIC LESIONS ABRIDGED)

Cobalt

CAS Number: 7440-48-4

Date Report Requested: 01/18/2012

Time Report Requested: 14:48:12

First Dose M/F: 05/08/06 / 05/08/06

Lab: BNW

FISCHER 344-TACONIC RATS MALE	DAY ON TEST																				* TOTALS						
	07	07	07	07	07	07	07	07	07	07	07	07	07	07	07	07	07	07	07	07		07					
2.5 mg/m3	003	004	005	005	006	006	009	001	005	009	009	009	009	009	009	009	009	009	009	009	009						
ANIMAL ID	00413	00447	00402	00449	00432	00440	00401	00409	00400	00404	00405	00407	00406	00408	00400	00403	00403	00404	00404	00401	00401	00403	00403	00404	00405	00403	

Heart	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
Alveolar/Bronchiolar Carcinoma, Metastatic																											1
Schwannoma Malignant																											1

ENDOCRINE SYSTEM

Adrenal Cortex	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
Adrenal Medulla	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
Pheochromocytoma Benign				X							X	X			X			X		X	X				X		15
Pheochromocytoma Malignant				X											X					X					X		9
Bilateral, Pheochromocytoma Benign	X	X			X	X		X	X	X	X			X	X		X					X	X			22	
Islets, Pancreatic	+	+	+	+	+	+	+	+	M	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	48
Adenoma			X				X	X										X									6
Carcinoma																		X		X	X						5
Parathyroid Gland	+	+	+	+	+	+	+	+	M	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	47
Pituitary Gland	+	+	+	+	+	+	+	+	+	+	+	+	+	M	+	+	+	+	+	+	+	+	+	+	+	+	49
Pars Distalis, Adenoma	X	X	X	X	X		X					X	X		X		X	X	X	X	X			X	X		31
Thyroid Gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
C-cell, Adenoma								X	X					X									X				8
C-cell, Carcinoma												X			X												3

GENERAL BODY SYSTEM

NONE

GENITAL SYSTEM

* .. Total animals with tissue examined microscopically; Total animals with tumor
 + .. Tissue examined microscopically
 X .. Lesion present
 I .. Insufficient tissue

M .. Missing tissue
 A .. Autolysis precludes evaluation
 BLANK .. Not examined microscopically

Experiment Number: 60311 - 05
 Test Type: CHRONIC
 Route: RESPIRATORY EXPOSURE WHOLE BODY
 Species/Strain: RATS/F344/N Tac

P17: NEOPLASMS BY INDIVIDUAL ANIMAL (SYSTEMIC LESIONS ABRIDGED)

Cobalt

CAS Number: 7440-48-4

Date Report Requested: 01/18/2012
 Time Report Requested: 14:48:12
 First Dose M/F: 05/08/06 / 05/08/06
 Lab: BNW

FISCHER 344-TACONIC RATS MALE 2.5 mg/m3	DAY ON TEST																				* TOTALS	
	073	074	075	075	076	076	077	077	077	077	077	077	077	077	077	077	077	077	077	077		077
ANIMAL ID	00413	00441	00440	00444	00443	00444	00400	00400	00404	00404	00404	00404	00404	00404	00404	00404	00404	00404	00404	00404	00404	
Epididymis	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
Preputial Gland Carcinoma	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	49 1
Prostate Pheochromocytoma Malignant, Metastatic, Adrenal Medulla	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50 1
Seminal Vesicle	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
Testes Bilateral, Interstitial Cell, Adenoma	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
Interstitial Cell, Adenoma	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	17

HEMATOPOIETIC SYSTEM

Bone Marrow	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
Lymph Node								+	+													5
Lymph Node, Bronchial	+	+	M	+	+	M	M	+	M	+	M	M	M	M	+	+	M	+	M	+	M	21
Lymph Node, Mandibular	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
Lymph Node, Mediastinal	+	+	M	+	+	+	+	+	+	+	+	+	M	+	+	+	+	+	+	+	+	46
Lymph Node, Mesenteric	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	M	+	49
Spleen	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
Thymus	+	+	+	+	+	+	+	+	M	+	+	+	+	+	+	+	+	+	M	+	+	47

* .. Total animals with tissue examined microscopically; Total animals with tumor
 + .. Tissue examined microscopically
 X .. Lesion present
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M .. Missing tissue
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 BLANK .. Not examined microscopically

Experiment Number: 60311 - 05

P17: NEOPLASMS BY INDIVIDUAL ANIMAL (SYSTEMIC LESIONS ABRIDGED)

Date Report Requested: 01/18/2012

Test Type: CHRONIC

Cobalt

Time Report Requested: 14:48:12

Route: RESPIRATORY EXPOSURE WHOLE BODY

CAS Number: 7440-48-4

First Dose M/F: 05/08/06 / 05/08/06

Species/Strain: RATS/F344/N Tac

Lab: BNW

	DAY ON TEST																										
FISCHER 344-TACONIC RATS MALE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	
2.5 mg/m3	0	0	0	0	1	1	1	2	2	2	2	2	2	2	2	2	2	2	3	3	3	3	3	3	3	3	
	3	4	5	5	6	6	9	1	5	9	9	9	9	9	9	9	9	9	0	0	0	0	0	0	0	0	
	ANIMAL ID																										
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	
	1	4	0	4	3	4	0	0	2	0	0	0	1	2	3	3	4	4	1	1	1	3	3	4	5	0	
	3	7	2	9	2	4	1	9	0	4	5	7	6	8	0	3	1	8	1	7	9	4	5	3	0		* TOTALS

INTEGUMENTARY SYSTEM

Mammary Gland	M	+	M	+	+	+	+	M	M	M	M	M	+	M	M	+	+	M	+	+	+	M	+	M	M	30
Skin	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
Basal Cell Adenoma				X																						1
Basal Cell Carcinoma																										1
Keratoacanthoma	X		X		X																					7
Sebaceous Gland, Adenoma																						X				1
Subcutaneous Tissue, Fibroma																					X					3

MUSCULOSKELETAL SYSTEM

Bone	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
------	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	-----------

NERVOUS SYSTEM

Brain	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
-------	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	-----------

RESPIRATORY SYSTEM

Larynx	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
Lung	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
Alveolar/Bronchiolar Adenoma			X	X			X																	X		8
Alveolar/Bronchiolar Adenoma, Multiple										X										X						2
Alveolar/Bronchiolar Carcinoma	X	X			X			X	X			X	X		X	X		X	X	X				X	X	20
Alveolar/Bronchiolar Carcinoma, Multiple				X		X	X			X	X			X	X		X	X					X			14
Mediastinum, Alveolar/Bronchiolar Carcinoma, Metastatic, Lung												X	X		X	X		X								5
Nose	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	45

* .. Total animals with tissue examined microscopically; Total animals with tumor
+ .. Tissue examined microscopically
X .. Lesion present
I .. Insufficient tissue

M .. Missing tissue
A .. Autolysis precludes evaluation
BLANK .. Not examined microscopically

Experiment Number: 60311 - 05
 Test Type: CHRONIC
 Route: RESPIRATORY EXPOSURE WHOLE BODY
 Species/Strain: RATS/F344/N Tac

P17: NEOPLASMS BY INDIVIDUAL ANIMAL (SYSTEMIC LESIONS ABRIDGED)

Cobalt

CAS Number: 7440-48-4

Date Report Requested: 01/18/2012

Time Report Requested: 14:48:12

First Dose M/F: 05/08/06 / 05/08/06

Lab: BNW

FISCHER 344-TACONIC RATS MALE 2.5 mg/m3	DAY ON TEST																									* TOTALS
	07 3	07 4	07 5	07 5	07 6	07 6	07 9	07 1	07 5	07 9	07 9	07 9	07 9	07 9	07 9	07 9	07 9	07 9	07 9	07 9	07 9	07 9	07 9	07 9		
ANIMAL ID	00413	00441	00404	00443	00434	00400	00400	00400	00400	00400	00400	00400	00400	00400	00400	00400	00400	00400	00400	00400	00400	00400	00400	00400	00400	
Trachea	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50	
SPECIAL SENSES SYSTEM																										
Eye	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50	
Harderian Gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50	
URINARY SYSTEM																										
Kidney	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50	
Alveolar/Bronchiolar Carcinoma, Metastatic, Lung							X																		1	
Urinary Bladder	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50	
SYSTEMIC LESIONS																										
Multiple Organ	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50	
Histiocytic Sarcoma																							X		1	
Leukemia Mononuclear		X				X		X	X				X	X	X					X		X	X	X	22	

* .. Total animals with tissue examined microscopically; Total animals with tumor
 + .. Tissue examined microscopically
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First Dose M/F: 05/08/06 / 05/08/06

Lab: BNW

FISCHER 344-TACONIC RATS MALE	DAY ON TEST																								males (cont...)	
	04	04	04	05	05	05	05	05	05	05	06	06	06	06	06	06	06	06	06	06	06	06	06	06		
5.0 mg/m3	7	7	9	1	5	6	7	7	9	1	1	1	2	4	4	5	6	6	7	8	8	8	9	9		
	0	8	1	6	2	1	2	2	0	1	8	9	8	6	6	2	0	0	9	8	9	9	1	1	6	
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	
	2	3	4	0	0	3	1	5	4	3	4	2	0	0	3	3	3	4	0	4	1	2	0	2	4	
	4	1	0	4	5	7	7	0	8	9	6	1	3	6	8	2	0	9	9	2	8	6	2	0	5	

ALIMENTARY SYSTEM

Esophagus	+	+	+	+	+	+	+	+	+	+	+	+	+	+	M	+	+	+	+	+	+	+	+	+
Intestine Large, Cecum	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Intestine Large, Colon	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Intestine Large, Rectum	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Intestine Small, Duodenum	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Intestine Small, Ileum	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Intestine Small, Jejunum	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Liver	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Alveolar/Bronchiolar Carcinoma, Metastatic, Lung															X									
Carcinoma, Metastatic, Kidney																								
Hemangiosarcoma																								
Hepatocellular Adenoma																X								
Mesentery																								+
Pancreas	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, Metastatic, Kidney																								
Salivary Glands	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Stomach, Forestomach	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+

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Lab: BNW

FISCHER 344-TACONIC RATS MALE	DAY ON TEST																								males (cont...)
	04	04	04	05	05	05	05	05	05	05	06	06	06	06	06	06	06	06	06	06	06	06	06	06	
5.0 mg/m3	7	7	9	1	5	6	7	7	9	1	1	1	2	4	4	5	6	6	7	8	8	8	9	9	
ANIMAL ID	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	
	62	63	64	60	60	63	61	65	64	63	64	62	60	63	63	63	64	60	64	61	62	60	62	64	
	41	00	04	05	07	07	00	08	09	06	01	03	06	08	02	00	09	09	02	08	06	02	00	05	

Stomach, Glandular

+ +

CARDIOVASCULAR SYSTEM

Heart

+ +

Alveolar/Bronchiolar Carcinoma, Metastatic

X X

Alveolar/Bronchiolar Carcinoma, Metastatic, Lung

X

Pheochromocytoma Malignant, Metastatic, Adrenal Medulla

Schwannoma Malignant

ENDOCRINE SYSTEM

Adrenal Cortex

+ +

Adrenal Medulla

+ +

Pheochromocytoma Benign

X X

X

X

X

Pheochromocytoma Malignant

X

Bilateral, Pheochromocytoma Benign

X

X

X X

X X

X

X

Bilateral, Pheochromocytoma Malignant

X

X

Islets, Pancreatic

+ + + + + + + + + + + + + + + M + + + + + + + +

Adenoma

Carcinoma

X

X

X

Parathyroid Gland

+ + + + + + + + + M + + + + + + + + + + + + + +

Pituitary Gland

+ +

Pars Distalis, Adenoma

X X

X X

X

X X

X

X

X

X

X

X

Thyroid Gland

+ + + + + + + + + M + + + + + + + + + + + + + +

Bilateral, C-cell, Adenoma

X

* .. Total animals with tissue examined microscopically; Total animals with tumor
 + .. Tissue examined microscopically
 X .. Lesion present
 I .. Insufficient tissue

M .. Missing tissue
 A .. Autolysis precludes evaluation
 BLANK .. Not examined microscopically

Experiment Number: 60311 - 05
Test Type: CHRONIC
Route: RESPIRATORY EXPOSURE WHOLE BODY
Species/Strain: RATS/F344/N Tac

P17: NEOPLASMS BY INDIVIDUAL ANIMAL (SYSTEMIC LESIONS ABRIDGED)
Cobalt
CAS Number: 7440-48-4

Date Report Requested: 01/18/2012
Time Report Requested: 14:48:12
First Dose M/F: 05/08/06 / 05/08/06
Lab: BNW

| DAY ON TEST | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
|--------------------------------------|--|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---|---|-----------------|
| FISCHER 344-TACONIC RATS MALE | | 4 | 4 | 4 | 5 | 5 | 5 | 5 | 5 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 7 | 8 | 8 | 8 | 8 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | |
| 5.0 mg/m3 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| ANIMAL ID | | 00624 | 00631 | 00640 | 00645 | 00667 | 00677 | 00680 | 00688 | 00699 | 00706 | 00711 | 00718 | 00723 | 00730 | 00733 | 00733 | 00733 | 00740 | 00742 | 00748 | 00749 | 00752 | 00759 | 00762 | 00769 | 00772 | 00778 | 00782 | 00788 | 00792 | 00798 | 00800 | 00805 | 00812 | 00815 | 00820 | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | males (cont...) |

C-cell, Adenoma
C-cell, Carcinoma

X

GENERAL BODY SYSTEM

Peritoneum

GENITAL SYSTEM

Epididymis

+ +

Preputial Gland Carcinoma

+ M
X

Prostate

+ +

Seminal Vesicle Carcinoma, Metastatic, Kidney

+ +

Testes
Bilateral, Interstitial Cell, Adenoma
Interstitial Cell, Adenoma

+
X X X X X
X X X

HEMATOPOIETIC SYSTEM

Bone Marrow

+ +

Lymph Node
Renal, Pheochromocytoma Malignant,
Metastatic, Adrenal Medulla

+ + + + + + + + +

Lymph Node, Bronchial

M M M M M + + M M M M + + M M M + M M + + M M M M

* .. Total animals with tissue examined microscopically; Total animals with tumor
+ .. Tissue examined microscopically
X .. Lesion present
I .. Insufficient tissue

M .. Missing tissue
A .. Autolysis precludes evaluation
BLANK .. Not examined microscopically

Experiment Number: 60311 - 05
 Test Type: CHRONIC
 Route: RESPIRATORY EXPOSURE WHOLE BODY
 Species/Strain: RATS/F344/N Tac

P17: NEOPLASMS BY INDIVIDUAL ANIMAL (SYSTEMIC LESIONS ABRIDGED)
 Cobalt
 CAS Number: 7440-48-4

Date Report Requested: 01/18/2012
 Time Report Requested: 14:48:12
 First Dose M/F: 05/08/06 / 05/08/06
 Lab: BNW

| FISCHER 344-TACONIC RATS MALE
5.0 mg/m3 | DAY ON TEST | | | | | | | | | | | | | | | | | | | | males
(cont...) | | | | | |
|---|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------------------|------|---|---|---|---|
| | 0470 | 0478 | 0491 | 0456 | 0456 | 0456 | 0456 | 0456 | 0456 | 0466 | 0466 | 0466 | 0466 | 0466 | 0466 | 0466 | 0466 | 0466 | 0466 | 0466 | | 0466 | | | | |
| ANIMAL ID | 00624 | 00663 | 00664 | 00600 | 00600 | 00600 | 00600 | 00600 | 00600 | 00600 | 00600 | 00600 | 00600 | 00600 | 00600 | 00600 | 00600 | 00600 | 00600 | 00600 | 00600 | | | | | |
| Lymph Node, Mandibular | + | + | + | + | + | + | + | M | + | + | + | + | + | + | + | + | + | + | M | + | + | + | + | + | + | + |
| Lymph Node, Mediastinal
Alveolar/Bronchiolar Carcinoma, Metastatic,
Lung | + | M | + | + | + | + | + | + | + | + | X | X | X | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Lymph Node, Mesenteric | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | M | + | + | + | + | + | + | + | + | + | + |
| Spleen | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Thymus
Alveolar/Bronchiolar Carcinoma, Metastatic,
Lung | + | + | + | + | + | + | + | + | + | + | X | X | + | + | M | + | + | + | + | + | + | + | + | + | + | + |
| INTEGUMENTARY SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Mammary Gland
Fibroadenoma | + | + | M | + | M | + | M | M | M | + | M | + | + | + | M | M | + | + | + | M | + | + | + | M | M | |
| Skin
Basal Cell Adenoma
Keratoacanthoma
Trichoepithelioma
Subcutaneous Tissue, Fibrous Histiocytoma | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | X | + | + | + |
| MUSCULOSKELETAL SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Bone
Alveolar/Bronchiolar Carcinoma, Metastatic,
Lung | + | + | + | + | + | + | + | + | + | + | + | X | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Skeletal Muscle | | | | | | | | | | + | + | | | | | | | | | | | + | | | | |

* .. Total animals with tissue examined microscopically; Total animals with tumor
 + .. Tissue examined microscopically
 X .. Lesion present
 I .. Insufficient tissue

M .. Missing tissue
 A .. Autolysis precludes evaluation
 BLANK .. Not examined microscopically

Experiment Number: 60311 - 05
 Test Type: CHRONIC
 Route: RESPIRATORY EXPOSURE WHOLE BODY
 Species/Strain: RATS/F344/N Tac

P17: NEOPLASMS BY INDIVIDUAL ANIMAL (SYSTEMIC LESIONS ABRIDGED)

Cobalt

CAS Number: 7440-48-4

Date Report Requested: 01/18/2012

Time Report Requested: 14:48:12

First Dose M/F: 05/08/06 / 05/08/06

Lab: BNW

| FISCHER 344-TACONIC RATS MALE | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | | ANIMAL ID | males
(cont...) | | |
|-------------------------------|-------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|-----------|--------------------|---|--|
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | 0 | |
| 5.0 mg/m3 | 4 | 4 | 4 | 5 | 5 | 5 | 5 | 5 | 5 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 0 | | |
| | 7 | 7 | 9 | 1 | 5 | 6 | 7 | 7 | 9 | 1 | 1 | 1 | 2 | 4 | 4 | 5 | 6 | 6 | 7 | 8 | 8 | 8 | 9 | 9 | 9 | 9 | 0 | |
| | 0 | 8 | 1 | 6 | 2 | 1 | 2 | 2 | 0 | 1 | 8 | 9 | 8 | 6 | 6 | 2 | 0 | 0 | 9 | 8 | 9 | 9 | 1 | 1 | 6 | 6 | 0 | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 0 | |
| | 2 | 3 | 4 | 0 | 0 | 3 | 1 | 5 | 4 | 3 | 4 | 2 | 0 | 0 | 3 | 3 | 3 | 4 | 0 | 4 | 1 | 2 | 0 | 2 | 4 | 4 | 0 | |
| | 4 | 1 | 0 | 4 | 5 | 7 | 7 | 0 | 8 | 9 | 6 | 1 | 3 | 6 | 8 | 2 | 0 | 9 | 9 | 2 | 8 | 6 | 2 | 0 | 5 | 5 | 0 | |

Alveolar/Bronchiolar Carcinoma, Metastatic, Lung

X

X

Carcinoma, Metastatic, Kidney

Fibrous Histiocytoma, Metastatic, Skin

X

NERVOUS SYSTEM

Brain

+ +

RESPIRATORY SYSTEM

Larynx

+ +

Lung

+ +

Alveolar/Bronchiolar Adenoma

X

Alveolar/Bronchiolar Adenoma, Multiple

X

Alveolar/Bronchiolar Carcinoma

X

Alveolar/Bronchiolar Carcinoma, Multiple

X

Carcinoma, Metastatic, Kidney

X

X

X

X

X

X

X

X

X

X

X

X

X

X

Carcinoma, Metastatic, Zymbal'S Gland

Cystic Keratinizing Epithelioma

X

Pheochromocytoma Malignant, Metastatic, Adrenal Medulla

Mediastinum, Alveolar/Bronchiolar Carcinoma, Metastatic, Lung

X

X

X

Mediastinum, Carcinoma, Metastatic, Kidney

Mediastinum, Carcinoma, Metastatic, Uncertain Primary Site

X

Nose

+ +

Trachea

+ +

* .. Total animals with tissue examined microscopically; Total animals with tumor
 + .. Tissue examined microscopically
 X .. Lesion present
 I .. Insufficient tissue

M .. Missing tissue
 A .. Autolysis precludes evaluation
 BLANK .. Not examined microscopically

Experiment Number: 60311 - 05
 Test Type: CHRONIC
 Route: RESPIRATORY EXPOSURE WHOLE BODY
 Species/Strain: RATS/F344/N Tac

P17: NEOPLASMS BY INDIVIDUAL ANIMAL (SYSTEMIC LESIONS ABRIDGED)

Cobalt

CAS Number: 7440-48-4

Date Report Requested: 01/18/2012

Time Report Requested: 14:48:12

First Dose M/F: 05/08/06 / 05/08/06

Lab: BNW

| FISCHER 344-TACONIC RATS MALE | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | | males
(cont...) |
|-------------------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|--------------------|
| | 0
4 | 0
4 | 0
4 | 0
5 | 0
5 | 0
5 | 0
5 | 0
5 | 0
5 | 0
5 | 0
6 | 0
6 | 0
6 | 0
6 | 0
6 | 0
6 | 0
6 | 0
6 | 0
6 | 0
6 | 0
6 | 0
6 | 0
6 | 0
6 | |
| 5.0 mg/m3 | 7 | 7 | 9 | 1 | 5 | 6 | 7 | 7 | 9 | 1 | 1 | 1 | 2 | 4 | 4 | 5 | 6 | 6 | 7 | 8 | 8 | 8 | 9 | 9 | |
| ANIMAL ID | 0
6
2
4 | 0
6
3
1 | 0
6
4
0 | 0
6
0
4 | 0
6
0
5 | 0
6
0
7 | 0
6
0
7 | 0
6
0
7 | 0
6
0
0 | 0
6
0
8 | 0
6
0
9 | 0
6
0
6 | 0
6
0
1 | 0
6
0
3 | 0
6
0
8 | 0
6
0
2 | 0
6
0
0 | 0
6
0
3 | 0
6
0
3 | 0
6
0
4 | 0
6
0
4 | 0
6
0
1 | 0
6
0
2 | 0
6
0
0 | |

SPECIAL SENSES SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | | |
|-----------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Eye | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Harderian Gland | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Zymbal's Gland
Carcinoma | | | | | | | | | | | | | | | | | | | | | | | | |

URINARY SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Kidney | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Alveolar/Bronchiolar Carcinoma, Metastatic,
Lung | | | | | | | | | | | | | | | | | | | | | | | X | |
| Renal Tubule, Adenoma | | | | | | | | | | | | | | | | | | | | | | | | |
| Renal Tubule, Adenoma, Multiple | | | | | | | | | | | | | | | | | | | | | | | | X |
| Renal Tubule, Carcinoma | | | | | | | | | | | | | | | | | | | | | | | | X |
| Urinary Bladder | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |

SYSTEMIC LESIONS

| | | | | | | | | | | | | | | | | | | | | | | | | |
|------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Multiple Organ | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Leukemia Mononuclear | | X | X | X | X | X | | X | | | | | X | X | X | | X | X | X | X | | | | X |
| Mesothelioma Malignant | | | | | | | | | | | | | | | | | | | | | | | | X |

* .. Total animals with tissue examined microscopically; Total animals with tumor
 + .. Tissue examined microscopically
 X .. Lesion present
 I .. Insufficient tissue

M .. Missing tissue
 A .. Autolysis precludes evaluation
 BLANK .. Not examined microscopically

Experiment Number: 60311 - 05
 Test Type: CHRONIC
 Route: RESPIRATORY EXPOSURE WHOLE BODY
 Species/Strain: RATS/F344/N Tac

P17: NEOPLASMS BY INDIVIDUAL ANIMAL (SYSTEMIC LESIONS ABRIDGED)

Cobalt

CAS Number: 7440-48-4

Date Report Requested: 01/18/2012
 Time Report Requested: 14:48:12
 First Dose M/F: 05/08/06 / 05/08/06
 Lab: BNW

| DAY ON TEST | FISCHER 344-TACONIC RATS MALE | | | | | | | | | | | | | | | | | | | | * TOTALS | | | | |
|-------------|-------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|----------|-------|-------|-------|-------|
| | 0698 | 0702 | 0703 | 0705 | 0707 | 0707 | 0707 | 0707 | 0707 | 0707 | 0707 | 0707 | 0707 | 0707 | 0707 | 0707 | 0707 | 0707 | 0707 | 0707 | | 0707 | | | |
| 5.0 mg/m3 | 00610 | 00644 | 00644 | 00612 | 00609 | 00608 | 00609 | 00603 | 00601 | 00604 | 00605 | 00606 | 00602 | 00603 | 00605 | 00607 | 00608 | 00603 | 00604 | 00603 | 00604 | 00601 | 00607 | 00605 | 00606 |
| ANIMAL ID | 00611 | 00644 | 00644 | 00612 | 00609 | 00608 | 00609 | 00603 | 00601 | 00604 | 00605 | 00606 | 00602 | 00603 | 00605 | 00607 | 00608 | 00603 | 00604 | 00603 | 00604 | 00601 | 00607 | 00605 | 00606 |

Stomach, Glandular + 50

CARDIOVASCULAR SYSTEM

Heart + 50
 Alveolar/Bronchiolar Carcinoma, Metastatic 2
 Alveolar/Bronchiolar Carcinoma, Metastatic, Lung 1
 Pheochromocytoma Malignant, Metastatic, Adrenal Medulla X 1
 Schwannoma Malignant X 2

ENDOCRINE SYSTEM

Adrenal Cortex + 50
 Adrenal Medulla + 50
 Pheochromocytoma Benign X 13
 Pheochromocytoma Malignant X 9
 Bilateral, Pheochromocytoma Benign X 21
 Bilateral, Pheochromocytoma Malignant X 7
 Islets, Pancreatic + 49
 Adenoma X 3
 Carcinoma X 6
 Parathyroid Gland + + + + + + + + M M + M + + + + + + + + + + + + 46
 Pituitary Gland + + + + + + + + + + + + + + + + M + + + + + + + + 49
 Pars Distalis, Adenoma X 24
 Thyroid Gland + 49
 Bilateral, C-cell, Adenoma X 1

* .. Total animals with tissue examined microscopically; Total animals with tumor
 + .. Tissue examined microscopically
 X .. Lesion present
 I .. Insufficient tissue

M .. Missing tissue
 A .. Autolysis precludes evaluation
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Experiment Number: 60311 - 05
 Test Type: CHRONIC
 Route: RESPIRATORY EXPOSURE WHOLE BODY
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 Cobalt
 CAS Number: 7440-48-4

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 Time Report Requested: 14:48:12
 First Dose M/F: 05/08/06 / 05/08/06
 Lab: BNW

| FISCHER 344-TACONIC RATS MALE | DAY ON TEST | | | | | | | | | | | | | | | | | | | | * TOTALS | | | | |
|-------------------------------|-------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----------|-----|-----|-----|-----|
| | 068 | 072 | 077 | 078 | 079 | 081 | 082 | 083 | 084 | 085 | 086 | 087 | 088 | 089 | 090 | 091 | 092 | 093 | 094 | 095 | | 096 | 097 | 098 | 099 |
| 5.0 mg/m3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| ANIMAL ID | 061 | 064 | 066 | 068 | 070 | 072 | 074 | 076 | 078 | 080 | 082 | 084 | 086 | 088 | 090 | 092 | 094 | 096 | 098 | 100 | 101 | 102 | 103 | 104 | 105 |

| | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---------|
| Lymph Node, Mandibular | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 48 |
| Lymph Node, Mediastinal
Alveolar/Bronchiolar Carcinoma, Metastatic,
Lung | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | M | + | + | 48
3 |
| Lymph Node, Mesenteric | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 49 |
| Spleen | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Thymus
Alveolar/Bronchiolar Carcinoma, Metastatic,
Lung | M | + | M | + | + | + | + | + | + | + | + | M | + | + | + | + | + | + | + | + | + | + | + | + | 46
2 |

INTEGUMENTARY SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---------|
| Mammary Gland
Fibroadenoma | M | + | + | + | M | + | M | M | + | + | M | M | + | + | X | + | M | + | + | + | + | + | + | M | 31
1 |
| Skin
Basal Cell Adenoma | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50
3 |
| Keratoacanthoma | X | | | | | | | | | | | | | | | | X | | | | | | | | 2 |
| Trichoepithelioma | | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| Subcutaneous Tissue, Fibrous Histiocytoma | | | | | | | | | | | | | | | | | | | | | | | | | 2 |

MUSCULOSKELETAL SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---------|
| Bone
Alveolar/Bronchiolar Carcinoma, Metastatic,
Lung | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50
1 |
| Skeletal Muscle | | | | | | | | | | | | | | | | | | | | | | | | | 4 |

* .. Total animals with tissue examined microscopically; Total animals with tumor
 + .. Tissue examined microscopically
 X .. Lesion present
 I .. Insufficient tissue

M .. Missing tissue
 A .. Autolysis precludes evaluation
 BLANK .. Not examined microscopically

Experiment Number: 60311 - 05
Test Type: CHRONIC
Route: RESPIRATORY EXPOSURE WHOLE BODY
Species/Strain: RATS/F344/N Tac

P17: NEOPLASMS BY INDIVIDUAL ANIMAL (SYSTEMIC LESIONS ABRIDGED)
Cobalt
CAS Number: 7440-48-4

Date Report Requested: 01/18/2012
Time Report Requested: 14:48:12
First Dose M/F: 05/08/06 / 05/08/06
Lab: BNW

| FISCHER 344-TACONIC RATS MALE
5.0 mg/m3 | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | | * TOTALS | |
|--|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|---|
| | 06
98 | 07
00
22 | 07
00
22 | 07
01
35 | 07
01
57 | 07
01
77 | 07
02
22 | 07
02
23 | 07
02
29 | 07
02
29 | 07
02
29 | 07
02
29 | 07
02
29 | 07
02
29 | 07
02
29 | 07
02
29 | 07
02
29 | 07
02
29 | 07
02
29 | 07
02
29 | 07
02
29 | 07
02
29 | 07
02
29 | 07
02
29 | | |
| ANIMAL ID | 00
61
80 | 00
64
87 | 00
64
87 | 00
61
82 | 00
62
89 | 00
68
93 | 00
66
81 | 00
66
81 | 00
66
81 | 00
66
81 | 00
66
81 | 00
66
81 | 00
66
81 | 00
66
81 | 00
66
81 | 00
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81 | 00
66
81 | 00
66
81 | 00
66
81 | 00
66
81 | 00
66
81 | 00
66
81 | 00
66
81 | 00
66
81 | |
| Alveolar/Bronchiolar Carcinoma, Metastatic, Lung | | | | | | | | | | | | | | | | | | | | | | | | | | 2 |
| Carcinoma, Metastatic, Kidney | | | | | | | | | | | | X | | | | | | | | | | | | | | 1 |
| Fibrous Histiocytoma, Metastatic, Skin | | | | | | | | | | | | | | | | | | | | | | | | | | 1 |

NERVOUS SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|----|
| Brain | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
|-------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|----|

RESPIRATORY SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|----|----|
| Larynx | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Lung | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Alveolar/Bronchiolar Adenoma | X | | | | | | X | | | | | | | | | | | X | | X | | | | | 8 | |
| Alveolar/Bronchiolar Adenoma, Multiple | | | | | | | X | | | | | | | | | X | | | | | | X | | | 6 | |
| Alveolar/Bronchiolar Carcinoma | | X | | | | | | | | | | | | | | | | | | | X | | | | 6 | |
| Alveolar/Bronchiolar Carcinoma, Multiple | X | | X | X | X | X | | | X | X | X | X | X | X | X | X | X | X | X | X | X | | X | X | 30 | |
| Carcinoma, Metastatic, Kidney | | | | | | | | | | | X | | | | | | | | | | | | | | 1 | |
| Carcinoma, Metastatic, Zymbal'S Gland | | | | | | | X | | | | | | | | | | | | | | | | | | 1 | |
| Cystic Keratinizing Epithelioma | | | | | | | | | | | | | | | | | | | | | | | | | 1 | |
| Pheochromocytoma Malignant, Metastatic, Adrenal Medulla | X | | | | | | | | | | | | | | | | | | | | | | | | 1 | |
| Mediastinum, Alveolar/Bronchiolar Carcinoma, Metastatic, Lung | | | | | | | | | | | | | | | | | | | | | | | | | 3 | |
| Mediastinum, Carcinoma, Metastatic, Kidney | | | | | | | | | | | X | | | | | | | | | | | | | | 1 | |
| Mediastinum, Carcinoma, Metastatic, Uncertain Primary Site | | | | | | | | | | | | | | | | | | | | | | | | | 1 | |
| Nose | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Trachea | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |

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

Experiment Number: 60311 - 05
 Test Type: CHRONIC
 Route: RESPIRATORY EXPOSURE WHOLE BODY
 Species/Strain: RATS/F344/N Tac

P17: NEOPLASMS BY INDIVIDUAL ANIMAL (SYSTEMIC LESIONS ABRIDGED)

Cobalt

CAS Number: 7440-48-4

Date Report Requested: 01/18/2012

Time Report Requested: 14:48:12

First Dose M/F: 05/08/06 / 05/08/06

Lab: BNW

| | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|-------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|----------|
| FISCHER 344-TACONIC RATS MALE

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

SPECIAL SENSES SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | | |
|-----------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|----|
| Eye | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Harderian Gland | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Zymbal's Gland | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| Carcinoma | | | | | | | | | | | | | | | | | | | | | | | | 1 |

URINARY SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | | |
|--|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|----|
| Kidney | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Alveolar/Bronchiolar Carcinoma, Metastatic, Lung | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| Renal Tubule, Adenoma | | | | | | | | | | | | | | | | | | | | | | X | X | 2 |
| Renal Tubule, Adenoma, Multiple | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| Renal Tubule, Carcinoma | | | | | | | | | | | | X | | | | | | | | | | | | 2 |
| Urinary Bladder | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |

SYSTEMIC LESIONS

| | | | | | | | | | | | | | | | | | | | | | | | | |
|------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|----|
| Multiple Organ | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Leukemia Mononuclear | | X | | | | X | | | X | X | | | X | | | X | | | | | | X | | 22 |
| Mesothelioma Malignant | | | | | | | | | | | | | | | X | | | | | | | | | 1 |

*** END OF MALE DATA ***

* .. Total animals with tissue examined microscopically; Total animals with tumor
 + .. Tissue examined microscopically
 X .. Lesion present
 I .. Insufficient tissue

M .. Missing tissue
 A .. Autolysis precludes evaluation
 BLANK .. Not examined microscopically

Experiment Number: 60311 - 05
 Test Type: CHRONIC
 Route: RESPIRATORY EXPOSURE WHOLE BODY
 Species/Strain: RATS/F344/N Tac

P17: NEOPLASMS BY INDIVIDUAL ANIMAL (SYSTEMIC LESIONS ABRIDGED)
 Cobalt
 CAS Number: 7440-48-4

Date Report Requested: 01/18/2012
 Time Report Requested: 14:48:12
 First Dose M/F: 05/08/06 / 05/08/06
 Lab: BNW

| FISCHER 344-TACONIC RATS
FEMALE
Control | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | | ANIMAL ID | females
(cont...) |
|---|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|-----------------------|-----------|----------------------|
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| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0
0
1
1
6 | | |

ALIMENTARY SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | | |
|--|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Esophagus | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Intestine Large, Cecum
Carcinoma, Metastatic, Islets, Pancreatic | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Intestine Large, Colon
Carcinoma, Metastatic, Islets, Pancreatic | X | | | | | | | | | | | | | | | | | | | | | | | |
| Intestine Large, Rectum | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Intestine Small, Duodenum | M | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | M | + | + | + |
| Intestine Small, Ileum
Carcinoma
Carcinoma, Metastatic, Islets, Pancreatic
Fibrous Histiocytoma, Metastatic, Skin | + | + | + | + | + | A | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | |
| Intestine Small, Jejunum
Carcinoma
Carcinoma, Metastatic, Islets, Pancreatic | + | + | + | + | + | | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | |
| Liver
Carcinoma, Metastatic, Islets, Pancreatic
Fibrous Histiocytoma, Metastatic, Skin | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | |
| Mesentery
Carcinoma, Metastatic, Islets, Pancreatic | + | | | | | | + | | | | | | | | | | | | | | | + | + | |
| Pancreas | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | |

* .. Total animals with tissue examined microscopically; Total animals with tumor
 + .. Tissue examined microscopically
 X .. Lesion present
 I .. Insufficient tissue

M .. Missing tissue
 A .. Autolysis precludes evaluation
 BLANK .. Not examined microscopically

Experiment Number: 60311 - 05
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Cobalt

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Time Report Requested: 14:48:12

First Dose M/F: 05/08/06 / 05/08/06

Lab: BNW

| FISCHER 344-TACONIC RATS
FEMALE
Control | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | | | ANIMAL ID | females
(cont...) |
|---|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|-----------------------|-----------|----------------------|
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| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0
0
1
1
6 | | |

Acinus, Carcinoma, Metastatic, Islets, Pancreatic

X

Salivary Glands
Fibrous Histiocytoma, Metastatic, Skin

+
X

Stomach, Forestomach
Squamous Cell Papilloma

+ +

Stomach, Glandular

+ +

Tongue
Squamous Cell Papilloma

Tooth

+

CARDIOVASCULAR SYSTEM

Heart
Carcinoma, Metastatic, Islets, Pancreatic
Fibrous Histiocytoma, Metastatic, Skin

+
X
X

ENDOCRINE SYSTEM

Adrenal Cortex
Carcinoma, Metastatic, Islets, Pancreatic

+
X

Adrenal Medulla
Pheochromocytoma Benign
Bilateral, Fibrous Histiocytoma, Metastatic, Skin
Bilateral, Pheochromocytoma Benign

+
X X
X

* .. Total animals with tissue examined microscopically; Total animals with tumor
 + .. Tissue examined microscopically
 X .. Lesion present
 I .. Insufficient tissue

M .. Missing tissue
 A .. Autolysis precludes evaluation
 BLANK .. Not examined microscopically

Experiment Number: 60311 - 05

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Species/Strain: RATS/F344/N Tac

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Cobalt

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First Dose M/F: 05/08/06 / 05/08/06

Lab: BNW

| FISCHER 344-TACONIC RATS
FEMALE
Control | DAY ON TEST | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | ANIMAL ID | females
(cont...) |
|---|-------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|-----------|----------------------|
| | 2 | 3 | 5 | 5 | 5 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | | | |
| | 3 | 1 | 1 | 3 | 5 | 1 | 4 | 5 | 6 | 7 | 7 | 8 | 9 | 9 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 0 | | |
| | 4 | 6 | 1 | 0 | 0 | 1 | 6 | 4 | 3 | 4 | 4 | 3 | 1 | 8 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | |
| | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | |
| | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | |
| | | 1 | 3 | 0 | 3 | 1 | 1 | 2 | 0 | 4 | 2 | 4 | 2 | 2 | 4 | 3 | 0 | 0 | 1 | 1 | 2 | 3 | 4 | 0 | 0 | 0 | 1 | | |
| | | 6 | 5 | 9 | 6 | 8 | 2 | 4 | 5 | 8 | 3 | 4 | 0 | 8 | 9 | 2 | 3 | 7 | 0 | 7 | 5 | 9 | 5 | 2 | 4 | 8 | 6 | | |

Islets, Pancreatic
Carcinoma

Parathyroid Gland

Pituitary Gland
Pars Distalis, Adenoma

Thyroid Gland
Bilateral, C-cell, Adenoma
C-cell, Adenoma
C-cell, Carcinoma
Follicular Cell, Carcinoma

GENERAL BODY SYSTEM

Peritoneum
Carcinoma, Metastatic, Islets, Pancreatic

GENITAL SYSTEM

Clitoral Gland
Adenoma
Carcinoma

Ovary
Carcinoma, Metastatic, Islets, Pancreatic

Uterus
Carcinoma, Metastatic, Islets, Pancreatic
Hemangiosarcoma
Leiomyoma

* .. Total animals with tissue examined microscopically; Total animals with tumor
+ .. Tissue examined microscopically
X .. Lesion present
I .. Insufficient tissue

M .. Missing tissue
A .. Autolysis precludes evaluation
BLANK .. Not examined microscopically

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Cobalt

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Lab: BNW

| FISCHER 344-TACONIC RATS
FEMALE
Control | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | | ANIMAL ID | females
(cont...) | | | | | | | | | | | | | | | | | | | |
|---|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|--|
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8 | |

Polyp Stromal

X

X

X

X

X

HEMATOPOIETIC SYSTEM

Bone Marrow

+ +

Lymph Node

+ +

Deep Cervical, Fibrous Histiocytoma, Metastatic, Skin

X

Lumbar, Renal, Carcinoma, Metastatic, Islets, Pancreatic

X

Lymph Node, Bronchial

M + M + M M M M M M + + M + M + + M M + M + M + +

Fibrous Histiocytoma, Metastatic, Skin

X

Lymph Node, Mandibular

+ + + + + + M + + + + + + + + M + + + + + + + + + + + +

Fibrous Histiocytoma, Metastatic, Skin

X

Lymph Node, Mediastinal

+ + + + M + + + + + + + + M + + M + + + + + + + M + +

Carcinoma, Metastatic, Islets, Pancreatic

X

Lymph Node, Mesenteric

+ +

Carcinoma, Metastatic, Islets, Pancreatic

X

Spleen

+ +

Carcinoma, Metastatic, Islets, Pancreatic

X

Fibrous Histiocytoma, Metastatic, Skin

X

Thymus

M +

INTEGUMENTARY SYSTEM

Mammary Gland

+ +

* .. Total animals with tissue examined microscopically; Total animals with tumor
 + .. Tissue examined microscopically
 X .. Lesion present
 I .. Insufficient tissue

M .. Missing tissue
 A .. Autolysis precludes evaluation
 BLANK .. Not examined microscopically

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 Cobalt
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 Lab: BNW

| FISCHER 344-TACONIC RATS
FEMALE
Control | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | | ANIMAL ID | females
(cont...) |
|---|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|--------------------------|-----------|----------------------|
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| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 000111111111111111111111 | | |
| Adenoma | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Carcinoma | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Fibroadenoma | | | X | | | | | X | | X | | | | | X | | | | | | X | | | | | |
| Fibroadenoma, Multiple | | | | | | | | | | | | | | | | | | | | | X | | | | | |
| Skin | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Basal Cell Adenoma | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Squamous Cell Papilloma | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Subcutaneous Tissue, Fibroma | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Subcutaneous Tissue, Fibrous Histiocytoma | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Subcutaneous Tissue, Lipoma | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Subcutaneous Tissue, Schwannoma Malignant | | | | | | | | | | | | | | | | | | | | | | | | | | |

MUSCULOSKELETAL SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Bone | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Skeletal Muscle | + | | | | | | | | | | | | | | | | | | | | | | |
| Carcinoma, Metastatic, Islets, Pancreatic | X | | | | | | | | | | | | | | | | | | | | | | |

NERVOUS SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | |
|-------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Brain | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
|-------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

RESPIRATORY SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Larynx | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Lung | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Alveolar/Bronchiolar Adenoma | | | | | | | | | | | | | | | | | | | | | | | |
| Carcinoma, Metastatic, Islets, Pancreatic | X | | | | | | | | | | | | | | | | | | | | | | |
| Fibrous Histiocytoma, Metastatic, Skin | | X | | | | | | | | | | | | | | | | | | | | | |

* .. Total animals with tissue examined microscopically; Total animals with tumor
 + .. Tissue examined microscopically
 X .. Lesion present
 I .. Insufficient tissue

M .. Missing tissue
 A .. Autolysis precludes evaluation
 BLANK .. Not examined microscopically

Experiment Number: 60311 - 05
 Test Type: CHRONIC
 Route: RESPIRATORY EXPOSURE WHOLE BODY
 Species/Strain: RATS/F344/N Tac

P17: NEOPLASMS BY INDIVIDUAL ANIMAL (SYSTEMIC LESIONS ABRIDGED)

Cobalt

CAS Number: 7440-48-4

Date Report Requested: 01/18/2012

Time Report Requested: 14:48:12

First Dose M/F: 05/08/06 / 05/08/06

Lab: BNW

| FISCHER 344-TACONIC RATS
FEMALE
Control | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | | ANIMAL ID | females
(cont...) |
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| Mediastinum, Fibrous Histiocytoma, Metastatic, Skin | X | | | | | | | | | | | | | | | | | | | | | | | | | |
| Nose | + | | | | | | | | | | | | | | | | | | | | | | | | | |
| Trachea | + | | | | | | | | | | | | | | | | | | | | | | | | | |
| SPECIAL SENSES SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Ear | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Eye | + | | | | | | | | | | | | | | | | | | | | | | | | | |
| Harderian Gland | + | | | | | | | | | | | | | | | | | | | | | | | | | |
| URINARY SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Kidney | + | | | | | | | | | | | | | | | | | | | | | | | | | |
| Urinary Bladder
Carcinoma, Metastatic, Islets, Pancreatic | + | | | | | | | | | | | | | | | | | | | | | | | | | |
| SYSTEMIC LESIONS | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Multiple Organ
Leukemia Mononuclear | + | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | |

* .. Total animals with tissue examined microscopically; Total animals with tumor
 + .. Tissue examined microscopically
 X .. Lesion present
 I .. Insufficient tissue

M .. Missing tissue
 A .. Autolysis precludes evaluation
 BLANK .. Not examined microscopically

Experiment Number: 60311 - 05
 Test Type: CHRONIC
 Route: RESPIRATORY EXPOSURE WHOLE BODY
 Species/Strain: RATS/F344/N Tac

P17: NEOPLASMS BY INDIVIDUAL ANIMAL (SYSTEMIC LESIONS ABRIDGED)
 Cobalt
 CAS Number: 7440-48-4

Date Report Requested: 01/18/2012
 Time Report Requested: 14:48:12
 First Dose M/F: 05/08/06 / 05/08/06
 Lab: BNW

| FISCHER 344-TACONIC RATS
FEMALE
Control | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | | | * TOTALS |
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ALIMENTARY SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---------|-------------------|
| Esophagus | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Intestine Large, Cecum
Carcinoma, Metastatic, Islets, Pancreatic | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50
1 |
| Intestine Large, Colon
Carcinoma, Metastatic, Islets, Pancreatic | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50
1 |
| Intestine Large, Rectum | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Intestine Small, Duodenum | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 48 |
| Intestine Small, Ileum
Carcinoma
Carcinoma, Metastatic, Islets, Pancreatic
Fibrous Histiocytoma, Metastatic, Skin | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | X | + | + | 49
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1 |
| Intestine Small, Jejunum
Carcinoma
Carcinoma, Metastatic, Islets, Pancreatic | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50
1
1 |
| Liver
Carcinoma, Metastatic, Islets, Pancreatic
Fibrous Histiocytoma, Metastatic, Skin | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50
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1 |
| Mesentery
Carcinoma, Metastatic, Islets, Pancreatic | | | + | | + | | | + | | + | + | + | | | + | | | + | + | | | | | 13
1 | |
| Pancreas | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |

* .. Total animals with tissue examined microscopically; Total animals with tumor
 + .. Tissue examined microscopically
 X .. Lesion present
 I .. Insufficient tissue

M .. Missing tissue
 A .. Autolysis precludes evaluation
 BLANK .. Not examined microscopically

Experiment Number: 60311 - 05
 Test Type: CHRONIC
 Route: RESPIRATORY EXPOSURE WHOLE BODY
 Species/Strain: RATS/F344/N Tac

P17: NEOPLASMS BY INDIVIDUAL ANIMAL (SYSTEMIC LESIONS ABRIDGED)

Cobalt

CAS Number: 7440-48-4

Date Report Requested: 01/18/2012
 Time Report Requested: 14:48:12
 First Dose M/F: 05/08/06 / 05/08/06
 Lab: BNW

| FISCHER 344-TACONIC RATS
FEMALE
Control | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | | * TOTALS | | |
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| Acinus, Carcinoma, Metastatic, Islets, Pancreatic | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | |
| Salivary Glands
Fibrous Histiocytoma, Metastatic, Skin | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50
1 | |
| Stomach, Forestomach
Squamous Cell Papilloma | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50
1 | |
| Stomach, Glandular | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Tongue
Squamous Cell Papilloma | | | | | | | | | | | | | | | | | | | | | | | | | | 1
1 | |
| Tooth | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | |
| CARDIOVASCULAR SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Heart
Carcinoma, Metastatic, Islets, Pancreatic
Fibrous Histiocytoma, Metastatic, Skin | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50
1
1 | |
| ENDOCRINE SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Adrenal Cortex
Carcinoma, Metastatic, Islets, Pancreatic | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50
1 | |
| Adrenal Medulla
Pheochromocytoma Benign
Bilateral, Fibrous Histiocytoma, Metastatic, Skin
Bilateral, Pheochromocytoma Benign | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50
4
1
2 | |

* .. Total animals with tissue examined microscopically; Total animals with tumor
 + .. Tissue examined microscopically
 X .. Lesion present
 I .. Insufficient tissue

M .. Missing tissue
 A .. Autolysis precludes evaluation
 BLANK .. Not examined microscopically

Experiment Number: 60311 - 05
 Test Type: CHRONIC
 Route: RESPIRATORY EXPOSURE WHOLE BODY
 Species/Strain: RATS/F344/N Tac

P17: NEOPLASMS BY INDIVIDUAL ANIMAL (SYSTEMIC LESIONS ABRIDGED)

Cobalt

CAS Number: 7440-48-4

Date Report Requested: 01/18/2012

Time Report Requested: 14:48:12

First Dose M/F: 05/08/06 / 05/08/06

Lab: BNW

| FISCHER 344-TACONIC RATS
FEMALE
Control | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | | * TOTALS | | |
|--|-------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|----------|--|--|
| | 0731 | 0731 | 0731 | 0731 | 0731 | 0731 | 0731 | 0731 | 0731 | 0731 | 0731 | 0731 | 0731 | 0731 | 0731 | 0731 | 0731 | 0731 | 0731 | 0731 | 0731 | 0731 | 0731 | 0731 | | | |
| ANIMAL ID | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | 0011 | | |
| Islets, Pancreatic Carcinoma | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50
1 | | |
| Parathyroid Gland | M | + | + | + | M | + | + | + | M | + | + | + | + | + | + | + | + | + | + | M | + | + | + | + | 42 | | |
| Pituitary Gland Pars Distalis, Adenoma | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50
29 | | |
| Thyroid Gland Bilateral, C-cell, Adenoma | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50
1 | | |
| C-cell, Adenoma | X | | | | | | | X | | | | | | | | | | | | X | | | | | 7 | | |
| C-cell, Carcinoma | | | | | | | | | | | | | | | | | | | | | | | | | 1 | | |
| Follicular Cell, Carcinoma | | | | | | | | | | | | | | | | | | | | | | | | | 1 | | |
| GENERAL BODY SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Peritoneum Carcinoma, Metastatic, Islets, Pancreatic | | | | | | | | | | | | | | | | | | | | | | | | | 1
1 | | |
| GENITAL SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Clitoral Gland Adenoma | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 49
2 | | |
| Carcinoma | | | X | | | | | | | | | | | | | | | | | | | | | | 4 | | |
| Ovary Carcinoma, Metastatic, Islets, Pancreatic | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50
1 | | |
| Uterus Carcinoma, Metastatic, Islets, Pancreatic | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50
1 | | |
| Hemangiosarcoma | | | | | | | | | | | | | | | | | | | | | | | | | 1 | | |
| Leiomyoma | | | | | | | | | | | | | | | | | | | | | | | | | 1 | | |

* .. Total animals with tissue examined microscopically; Total animals with tumor
 + .. Tissue examined microscopically
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Experiment Number: 60311 - 05
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Cobalt

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Lab: BNW

| FISCHER 344-TACONIC RATS
FEMALE
Control | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | * TOTALS | | | | | | | | |
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| HEMATOPOIETIC SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Bone Marrow | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Lymph Node | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 4 | |
| Deep Cervical, Fibrous Histiocytoma, Metastatic, Skin | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | |
| Lumbar, Renal, Carcinoma, Metastatic, Islets, Pancreatic | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | |
| Lymph Node, Bronchial | + | + | + | + | + | + | + | M | M | + | + | M | M | M | M | M | + | + | M | + | + | M | + | M | + | | | | | 26 | | |
| Fibrous Histiocytoma, Metastatic, Skin | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | |
| Lymph Node, Mandibular | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 48 | |
| Fibrous Histiocytoma, Metastatic, Skin | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | |
| Lymph Node, Mediastinal | M | + | + | + | + | + | + | M | M | + | + | + | + | + | + | + | + | + | + | M | + | + | + | + | + | | | | | 42 | | |
| Carcinoma, Metastatic, Islets, Pancreatic | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | |
| Lymph Node, Mesenteric | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Carcinoma, Metastatic, Islets, Pancreatic | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | |
| Spleen | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Carcinoma, Metastatic, Islets, Pancreatic | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | |
| Fibrous Histiocytoma, Metastatic, Skin | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | |
| Thymus | + | + | + | + | + | + | M | M | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 47 | |
| INTEGUMENTARY SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Mammary Gland | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |

* .. Total animals with tissue examined microscopically; Total animals with tumor
 + .. Tissue examined microscopically
 X .. Lesion present
 I .. Insufficient tissue

M .. Missing tissue
 A .. Autolysis precludes evaluation
 BLANK .. Not examined microscopically

Experiment Number: 60311 - 05
 Test Type: CHRONIC
 Route: RESPIRATORY EXPOSURE WHOLE BODY
 Species/Strain: RATS/F344/N Tac

P17: NEOPLASMS BY INDIVIDUAL ANIMAL (SYSTEMIC LESIONS ABRIDGED)

Cobalt

CAS Number: 7440-48-4

Date Report Requested: 01/18/2012

Time Report Requested: 14:48:12

First Dose M/F: 05/08/06 / 05/08/06

Lab: BNW

| FISCHER 344-TACONIC RATS
FEMALE
Control | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | | | * TOTALS | |
|---|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------|----|
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| ANIMAL ID | 0
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9 | 0
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8 | | |
| Adenoma | | | | | | | | | | | | | | | | | X | | | | | | | | | 1 | |
| Carcinoma | | | | X | | | | | | | | | | | | | | | | | | | | | | | 2 |
| Fibroadenoma | | | X | X | X | | | | X | X | | | X | X | X | | | | | X | X | X | | | | | 17 |
| Fibroadenoma, Multiple | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| Skin | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Basal Cell Adenoma | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | |
| Squamous Cell Papilloma | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | |
| Subcutaneous Tissue, Fibroma | | | | | | | | | | | | | | | | | | | | | | | X | | | 2 | |
| Subcutaneous Tissue, Fibrous Histiocytoma | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | |
| Subcutaneous Tissue, Lipoma | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | |
| Subcutaneous Tissue, Schwannoma Malignant | | | | | | | | | | | | | | | | | | | | | | X | | | | 1 | |
| MUSCULOSKELETAL SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Bone | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Skeletal Muscle | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | |
| Carcinoma, Metastatic, Islets, Pancreatic | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | |
| NERVOUS SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Brain | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| RESPIRATORY SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Larynx | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Lung | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Alveolar/Bronchiolar Adenoma | | | | | | | | | | | | | | | | | | | | | | | | | | 2 | |
| Carcinoma, Metastatic, Islets, Pancreatic | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | |
| Fibrous Histiocytoma, Metastatic, Skin | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | |

* .. Total animals with tissue examined microscopically; Total animals with tumor
 + .. Tissue examined microscopically
 X .. Lesion present
 I .. Insufficient tissue

M .. Missing tissue
 A .. Autolysis precludes evaluation
 BLANK .. Not examined microscopically

Experiment Number: 60311 - 05
 Test Type: CHRONIC
 Route: RESPIRATORY EXPOSURE WHOLE BODY
 Species/Strain: RATS/F344/N Tac

P17: NEOPLASMS BY INDIVIDUAL ANIMAL (SYSTEMIC LESIONS ABRIDGED)
 Cobalt
 CAS Number: 7440-48-4

Date Report Requested: 01/18/2012
 Time Report Requested: 14:48:12
 First Dose M/F: 05/08/06 / 05/08/06
 Lab: BNW

| FISCHER 344-TACONIC RATS
FEMALE
Control | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | | * TOTALS | |
|--|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|--|
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| Mediastinum, Fibrous Histiocytoma, Metastatic, Skin | | | | | | | | | | | | | | | | | | | | | | | | | 1 | |
| Nose | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Trachea | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| SPECIAL SENSES SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Ear | | | | | | | | | | | + | | | | | | | | + | | | + | | | 4 | |
| Eye | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Harderian Gland | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| URINARY SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Kidney | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Urinary Bladder
Carcinoma, Metastatic, Islets, Pancreatic | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50
1 | |
| SYSTEMIC LESIONS | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Multiple Organ
Leukemia Mononuclear | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50
16 | |
| | | X | | X | X | X | | | X | X | | | X | | | X | | X | | | | X | | | | |

* .. Total animals with tissue examined microscopically; Total animals with tumor
 + .. Tissue examined microscopically
 X .. Lesion present
 I .. Insufficient tissue

M .. Missing tissue
 A .. Autolysis precludes evaluation
 BLANK .. Not examined microscopically

Experiment Number: 60311 - 05
 Test Type: CHRONIC
 Route: RESPIRATORY EXPOSURE WHOLE BODY
 Species/Strain: RATS/F344/N Tac

P17: NEOPLASMS BY INDIVIDUAL ANIMAL (SYSTEMIC LESIONS ABRIDGED)

Cobalt
 CAS Number: 7440-48-4

Date Report Requested: 01/18/2012
 Time Report Requested: 14:48:12
 First Dose M/F: 05/08/06 / 05/08/06
 Lab: BNW

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|-------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|----------------------|
| FISCHER 344-TACONIC RATS
FEMALE
1.25 mg/m3 | DAY ON TEST | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | females
(cont...) |
| | | 4 | 5 | 5 | 5 | 5 | 5 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 7 | 7 | 7 | 7 | 7 | 7 | | |
| | | 2 | 1 | 7 | 9 | 9 | 9 | 9 | 1 | 1 | 2 | 2 | 4 | 4 | 4 | 7 | 8 | 8 | 8 | 9 | 9 | 0 | 0 | 0 | 1 | 3 | | |
| | | 2 | 6 | 8 | 0 | 3 | 8 | 8 | 1 | 8 | 4 | 4 | 1 | 6 | 6 | 0 | 1 | 4 | 6 | 1 | 7 | 2 | 8 | 9 | 6 | 0 | | |
| | ANIMAL ID | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | |
| | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | |
| | | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | | |
| | | 4 | 1 | 4 | 0 | 1 | 2 | 3 | 2 | 4 | 0 | 3 | 0 | 3 | 0 | 2 | 0 | 4 | 1 | 0 | 2 | 3 | 2 | 4 | 0 | 0 | | |
| | | 1 | 6 | 6 | 4 | 5 | 7 | 6 | 2 | 3 | 2 | 0 | 8 | 7 | 5 | 0 | 9 | 8 | 1 | 8 | 2 | 6 | 7 | 3 | 6 | 6 | | |

ALIMENTARY SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Esophagus | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | |
| Intestine Large, Cecum | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | |
| Intestine Large, Colon | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | |
| Intestine Large, Rectum | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | |
| Intestine Small, Duodenum | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | |
| Intestine Small, Ileum | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | |
| Intestine Small, Jejunum | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | |
| Liver | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | |
| Fibrous Histiocytoma, Metastatic, Skin | | | | | | | | | | | | | | | | | | | | | | | | | | X | |
| Hepatocellular Adenoma | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Hepatocellular Carcinoma | | | | | | | | | | | | | X | | | | | | | | | | | | | | |
| Mesentery | | | | | | | | + | + | + | + | | + | + | | | + | + | | | | | | | | + | |
| Pancreas | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Salivary Glands | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Stomach, Forestomach | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Stomach, Glandular | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |

CARDIOVASCULAR SYSTEM

* .. Total animals with tissue examined microscopically; Total animals with tumor
 + .. Tissue examined microscopically
 X .. Lesion present
 I .. Insufficient tissue

M .. Missing tissue
 A .. Autolysis precludes evaluation
 BLANK .. Not examined microscopically

Experiment Number: 60311 - 05
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P17: NEOPLASMS BY INDIVIDUAL ANIMAL (SYSTEMIC LESIONS ABRIDGED)

Cobalt

CAS Number: 7440-48-4

Date Report Requested: 01/18/2012

Time Report Requested: 14:48:12

First Dose M/F: 05/08/06 / 05/08/06

Lab: BNW

| FISCHER 344-TACONIC RATS
FEMALE
1.25 mg/m3 | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | | ANIMAL ID | females
(cont...) |
|--|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|-----------------------|-----------|----------------------|
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| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0
0
3
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1 | | |

Blood Vessel
 Alveolar/Bronchiolar Carcinoma, Metastatic, Lung
 Aorta, Alveolar/Bronchiolar Carcinoma, Metastatic, Lung

Heart +

ENDOCRINE SYSTEM

Adrenal Cortex +

Adrenal Medulla
 Pheochromocytoma Benign + + + + + X + + X + + + + + + + X X + + +
 Pheochromocytoma Malignant
 Bilateral, Pheochromocytoma Benign X X
 Bilateral, Pheochromocytoma Malignant

Islets, Pancreatic +

Parathyroid Gland + + + + + + + + + + + + + + + + + + + M M + + +

Pituitary Gland
 Pars Distalis, Adenoma + + + + X X + + X + + X X + + X X X + + +
 Pars Distalis, Carcinoma X X

Thyroid Gland
 C-cell, Adenoma + + + + + + + + + + + + + + X + + + + + X
 C-cell, Carcinoma

GENERAL BODY SYSTEM

* .. Total animals with tissue examined microscopically; Total animals with tumor
 + .. Tissue examined microscopically
 X .. Lesion present
 I .. Insufficient tissue

M .. Missing tissue
 A .. Autolysis precludes evaluation
 BLANK .. Not examined microscopically

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Lab: BNW

| FISCHER 344-TACONIC RATS
FEMALE
1.25 mg/m3 | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | | ANIMAL ID | females
(cont...) |
|--|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|-----------------------|-----------|----------------------|
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Peritoneum
 Fibrous Histiocytoma, Metastatic, Skin

+
 X

GENITAL SYSTEM

Clitoral Gland
 Adenoma
 Carcinoma
 Bilateral, Adenoma

+
 X
 X X
 X X X
 X

Ovary
 Cystadenocarcinoma

+ +

Uterus
 Carcinoma
 Leiomyoma
 Polyp Stromal

+
 X X
 X

HEMATOPOIETIC SYSTEM

Bone Marrow

+ +

Lymph Node

+ +

Lymph Node, Bronchial

M + M + + + + + + + M M + + + M M M M + M + M + +

Lymph Node, Mandibular

+ + M + + + + + + + + + + + + + + + + M + +

Lymph Node, Mediastinal

M + + + + + + + + + + M + + + + + + + + + + M

Lymph Node, Mesenteric

+ +

* .. Total animals with tissue examined microscopically; Total animals with tumor
 + .. Tissue examined microscopically
 X .. Lesion present
 I .. Insufficient tissue

M .. Missing tissue
 A .. Autolysis precludes evaluation
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Lab: BNW

| FISCHER 344-TACONIC RATS
FEMALE
1.25 mg/m3 | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | | | ANIMAL ID | females
(cont...) |
|--|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|-----------------------|----------------------|
| | 0
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6 | 0
5
7
8 | 0
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9
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3 | 0
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4 | 0
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1 | 0
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4 | 0
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6 | 0
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| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0
0
3
4
1 | |

| | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Spleen | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | |
| Thymus | M | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | M |

INTEGUMENTARY SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|--|
| Mammary Gland | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | |
| Adenoma | | | | | | | | | X | | | | | | | | | | | | | | | | | |
| Carcinoma | | | X | | | | | | | | | | | | | | | | | | | X | | | | |
| Fibroadenoma | | | | X | | | X | | | | X | | | | | | X | | | | | | X | X | | |
| Fibroadenoma, Multiple | | X | | | | | | | | | | | | | | | | | | | | | | | | |
| Skin | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | |
| Papilloma | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Subcutaneous Tissue, Fibroma | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Subcutaneous Tissue, Fibrous Histiocytoma | X | | | | | | | | | | | | | | | | | | | | | | | X | | |

MUSCULOSKELETAL SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-----------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|--|
| Bone | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | |
| Skeletal Muscle | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Lipoma | | | | | | | | | | | | | | | | | | | | | | | | | | |

NERVOUS SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|--|
| Brain | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | |
| Carcinoma, Metastatic, Pituitary Gland | | | X | | | | X | | | | | | | | | | | | | | | | | | | |

RESPIRATORY SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|--|
| Larynx | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | |
|--------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|--|

* .. Total animals with tissue examined microscopically; Total animals with tumor
 + .. Tissue examined microscopically
 X .. Lesion present
 I .. Insufficient tissue

M .. Missing tissue
 A .. Autolysis precludes evaluation
 BLANK .. Not examined microscopically

Experiment Number: 60311 - 05
 Test Type: CHRONIC
 Route: RESPIRATORY EXPOSURE WHOLE BODY
 Species/Strain: RATS/F344/N Tac

P17: NEOPLASMS BY INDIVIDUAL ANIMAL (SYSTEMIC LESIONS ABRIDGED)

Cobalt

CAS Number: 7440-48-4

Date Report Requested: 01/18/2012

Time Report Requested: 14:48:12

First Dose M/F: 05/08/06 / 05/08/06

Lab: BNW

| FISCHER 344-TACONIC RATS
FEMALE
1.25 mg/m3 | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | | ANIMAL ID | females
(cont...) |
|--|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|-----------------------|-----------|----------------------|
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1 | 0
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7 | 0
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9 | 0
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6 | 0
7
3
0 | | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0
0
3
4
1 | | |

| | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|--|
| Lung | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | |
| Alveolar/Bronchiolar Adenoma | | | | X | | | | | | X | | | | | | | | | | | | | X | |
| Alveolar/Bronchiolar Adenoma, Multiple | | | | | | | | | | | | | | | | | | | | | | | | |
| Alveolar/Bronchiolar Carcinoma | | | | | | | | | | | | | | | | | | | | | | | | |
| Alveolar/Bronchiolar Carcinoma, Multiple | | | | | | | | | | | | | | | | | | | | | | | | |
| Cystic Keratinizing Epithelioma | | | | | | | | | | | | | | | | | | | | | | | | |
| Mediastinum, Alveolar/Bronchiolar Carcinoma, Metastatic, Lung | | | | | | | | | | | | | | | | | | | | | | | | |
| Nose | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | |
| Trachea | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | |

SPECIAL SENSES SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | | |
|------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|--|
| Ear | | | | | | | | | | | | | | | | | | | | | | | | |
| Eye | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | |
| Harderian Gland | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | |
| Zymbal's Gland Adenoma | | | | | | | | | | | | | | | | | | | | | | | | |

URINARY SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | | |
|------------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|--|
| Kidney | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | |
| Transitional Epithelium, Papilloma | | | | | | | | | | | | | | | | | | | | | | | X | |
| Urinary Bladder | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | |

SYSTEMIC LESIONS

* .. Total animals with tissue examined microscopically; Total animals with tumor
 + .. Tissue examined microscopically
 X .. Lesion present
 I .. Insufficient tissue

M .. Missing tissue
 A .. Autolysis precludes evaluation
 BLANK .. Not examined microscopically

Experiment Number: 60311 - 05
 Test Type: CHRONIC
 Route: RESPIRATORY EXPOSURE WHOLE BODY
 Species/Strain: RATS/F344/N Tac

P17: NEOPLASMS BY INDIVIDUAL ANIMAL (SYSTEMIC LESIONS ABRIDGED)
 Cobalt
 CAS Number: 7440-48-4

Date Report Requested: 01/18/2012
 Time Report Requested: 14:48:12
 First Dose M/F: 05/08/06 / 05/08/06
 Lab: BNW

| | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
|--------------------------|--|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DAY ON TEST | | 4 | 5 | 5 | 5 | 5 | 5 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 7 | 7 | 7 | 7 | 7 | |
| FISCHER 344-TACONIC RATS | | 2 | 1 | 7 | 9 | 9 | 9 | 1 | 1 | 2 | 2 | 4 | 4 | 4 | 7 | 8 | 8 | 8 | 8 | 8 | 9 | 9 | 0 | 0 | 0 | 1 | 3 |
| FEMALE | | 2 | 6 | 8 | 0 | 3 | 8 | 8 | 1 | 8 | 4 | 4 | 1 | 6 | 6 | 0 | 1 | 4 | 6 | 1 | 7 | 2 | 8 | 9 | 6 | 0 | |
| 1.25 mg/m3 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| ANIMAL ID | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | |
| | | 4 | 1 | 4 | 0 | 1 | 2 | 3 | 2 | 4 | 0 | 3 | 0 | 0 | 2 | 2 | 0 | 4 | 1 | 0 | 2 | 3 | 2 | 4 | 0 | 0 | |
| | | 1 | 6 | 6 | 4 | 5 | 7 | 6 | 2 | 3 | 2 | 0 | 8 | 7 | 5 | 0 | 9 | 9 | 8 | 1 | 8 | 2 | 6 | 7 | 3 | 6 | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Multiple Organ | | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | |
| Leukemia Mononuclear | | | | | X | X | X | | X | X | | X | X | X | X | X | | X | X | | | | X | X | X | | |

females
(cont...)

* .. Total animals with tissue examined microscopically; Total animals with tumor
 + .. Tissue examined microscopically
 X .. Lesion present
 I .. Insufficient tissue

M .. Missing tissue
 A .. Autolysis precludes evaluation
 BLANK .. Not examined microscopically

Experiment Number: 60311 - 05
 Test Type: CHRONIC
 Route: RESPIRATORY EXPOSURE WHOLE BODY
 Species/Strain: RATS/F344/N Tac

P17: NEOPLASMS BY INDIVIDUAL ANIMAL (SYSTEMIC LESIONS ABRIDGED)

Cobalt

CAS Number: 7440-48-4

Date Report Requested: 01/18/2012

Time Report Requested: 14:48:12

First Dose M/F: 05/08/06 / 05/08/06

Lab: BNW

| FISCHER 344-TACONIC RATS
FEMALE
1.25 mg/m3 | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | | * TOTALS |
|--|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|----------|
| | 0730 | 0730 | 0730 | 0730 | 0730 | 0730 | 0730 | 0730 | 0730 | 0730 | 0730 | 0730 | 0730 | 0730 | 0730 | 0730 | 0730 | 0730 | 0730 | 0730 | 0730 | 0730 | 0730 | 0730 | |
| ANIMAL ID | 00319 | 00314 | 00308 | 00302 | 00304 | 00305 | 00300 | 00301 | 00301 | 00301 | 00301 | 00301 | 00301 | 00301 | 00301 | 00301 | 00301 | 00301 | 00301 | 00301 | 00301 | 00301 | 00301 | 00301 | 00301 |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 |
| | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |

ALIMENTARY SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|----|
| Esophagus | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Intestine Large, Cecum | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Intestine Large, Colon | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Intestine Large, Rectum | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Intestine Small, Duodenum | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Intestine Small, Ileum | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Intestine Small, Jejunum | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Liver | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Fibrous Histiocytoma, Metastatic, Skin | | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| Hepatocellular Adenoma | | | | | | | | | | | | | | | | X | | | | | | | | | 1 |
| Hepatocellular Carcinoma | | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| Mesentery | | | | + | | | | | | | | | | | + | | | | | | | | + | + | 15 |
| Pancreas | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Salivary Glands | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Stomach, Forestomach | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Stomach, Glandular | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |

CARDIOVASCULAR SYSTEM

* .. Total animals with tissue examined microscopically; Total animals with tumor
 + .. Tissue examined microscopically
 X .. Lesion present
 I .. Insufficient tissue

M .. Missing tissue
 A .. Autolysis precludes evaluation
 BLANK .. Not examined microscopically

Experiment Number: 60311 - 05
 Test Type: CHRONIC
 Route: RESPIRATORY EXPOSURE WHOLE BODY
 Species/Strain: RATS/F344/N Tac

P17: NEOPLASMS BY INDIVIDUAL ANIMAL (SYSTEMIC LESIONS ABRIDGED)
 Cobalt
 CAS Number: 7440-48-4

Date Report Requested: 01/18/2012
 Time Report Requested: 14:48:12
 First Dose M/F: 05/08/06 / 05/08/06
 Lab: BNW

| FISCHER 344-TACONIC RATS
FEMALE
1.25 mg/m3 | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | | | * TOTALS | |
|---|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|----------|----|
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| ANIMAL ID | 0
3
1
9 | 0
3
3
4 | 0
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8 | 0
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| Blood Vessel | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Alveolar/Bronchiolar Carcinoma, Metastatic, Lung | | | | | | | | | | | | | | | | | | | | | | | | | | X | |
| Aorta, Alveolar/Bronchiolar Carcinoma, Metastatic, Lung | | | | | | | | | | | | | | | | | | | | | | | | | | X | |
| Heart | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| ENDOCRINE SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Adrenal Cortex | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Adrenal Medulla | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Pheochromocytoma Benign | | | | | | | | | | | | | | | | | | | | | | | | | | X | |
| Pheochromocytoma Malignant | | | | | | | | | | | | | | | | | | | | | | | | | | X | |
| Bilateral, Pheochromocytoma Benign | | | | | | | | | | | | | | | | | | | | | | | | | | X | |
| Bilateral, Pheochromocytoma Malignant | | | | | | | | | | | | | | | | | | | | | | | | | | X | |
| Islets, Pancreatic | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Parathyroid Gland | + | + | + | + | + | + | + | + | + | M | + | + | + | M | + | + | + | + | + | + | + | + | + | + | M | 45 | |
| Pituitary Gland | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Pars Distalis, Adenoma | X | | X | X | X | X | | X | | X | | X | | X | | X | | X | | X | | X | X | X | X | 23 | |
| Pars Distalis, Carcinoma | | | | | | | | | | | | | | | | | | | | | | | | | | X | |
| Thyroid Gland | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | M | 49 |
| C-cell, Adenoma | X | | | | | | | | | | | | | | | | | | | | | | | | | | X |
| C-cell, Carcinoma | | | | | | | | | | | | | | | | | | | | | | | | | | X | |

GENERAL BODY SYSTEM

* .. Total animals with tissue examined microscopically; Total animals with tumor
 + .. Tissue examined microscopically
 X .. Lesion present
 I .. Insufficient tissue

M .. Missing tissue
 A .. Autolysis precludes evaluation
 BLANK .. Not examined microscopically

Experiment Number: 60311 - 05
 Test Type: CHRONIC
 Route: RESPIRATORY EXPOSURE WHOLE BODY
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Cobalt

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First Dose M/F: 05/08/06 / 05/08/06

Lab: BNW

| FISCHER 344-TACONIC RATS
FEMALE
1.25 mg/m3 | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | | | * TOTALS |
|--|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|----------|
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2 | 0
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2 | 0
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2 | | | |
| ANIMAL ID | 0
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9 | 0
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4 | 0
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8 | 0
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4 | 0
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5 | 0
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7 | 0
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5 | 0
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2
2 | 0
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3
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9 | 0
0
3
3
1 | 0
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3
3
3 | 0
0
3
3
9 | 0
0
3
3
4 | |

Peritoneum 1
 Fibrous Histiocytoma, Metastatic, Skin 1

GENITAL SYSTEM

Clitoral Gland + + + + + M + + + + + M + + + + + + M + + + 47
 Adenoma X 4
 Carcinoma X 5
 Bilateral, Adenoma 1

Ovary + X 50
 Cystadenocarcinoma 1

Uterus + 50
 Carcinoma 1
 Leiomyoma X 1
 Polyp Stromal X X X 7

HEMATOPOIETIC SYSTEM

Bone Marrow + 50

Lymph Node + 3

Lymph Node, Bronchial M + + M M M M M M M M M M M M M M M M + M M M M M M 18

Lymph Node, Mandibular + 48

Lymph Node, Mediastinal M M + + + M + + + + + + + + + + M + + + + + 43

Lymph Node, Mesenteric + 50

* .. Total animals with tissue examined microscopically; Total animals with tumor
 + .. Tissue examined microscopically
 X .. Lesion present
 I .. Insufficient tissue

M .. Missing tissue
 A .. Autolysis precludes evaluation
 BLANK .. Not examined microscopically

Experiment Number: 60311 - 05
 Test Type: CHRONIC
 Route: RESPIRATORY EXPOSURE WHOLE BODY
 Species/Strain: RATS/F344/N Tac

P17: NEOPLASMS BY INDIVIDUAL ANIMAL (SYSTEMIC LESIONS ABRIDGED)

Cobalt

CAS Number: 7440-48-4

Date Report Requested: 01/18/2012

Time Report Requested: 14:48:12

First Dose M/F: 05/08/06 / 05/08/06

Lab: BNW

| FISCHER 344-TACONIC RATS
FEMALE
1.25 mg/m3 | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | | | * TOTALS | |
|--|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|----------|------|
| | 0730 | 0730 | 0730 | 0730 | 0730 | 0730 | 0730 | 0730 | 0730 | 0730 | 0730 | 0730 | 0730 | 0730 | 0730 | 0730 | 0730 | 0730 | 0730 | 0730 | 0730 | 0730 | 0730 | 0730 | 0730 | | 0730 |
| ANIMAL ID | 00319 | 00334 | 00338 | 00342 | 00348 | 00350 | 00355 | 00360 | 00361 | 00362 | 00363 | 00363 | 00363 | 00363 | 00363 | 00363 | 00363 | 00363 | 00363 | 00363 | 00363 | 00363 | 00363 | 00363 | 00363 | 00363 | |
| Spleen | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Thymus | + | + | + | + | + | + | + | M | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | M | 46 | |
| INTEGUMENTARY SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Mammary Gland | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Adenoma | | | | | | | | | | | | | | | | | | | | | | | | X | | 2 | |
| Carcinoma | | | | | | | | | | | | X | X | | | | | | | | | | X | | | 5 | |
| Fibroadenoma | X | X | | X | X | | X | X | | X | X | | X | X | | | | X | | | | X | X | | X | 21 | |
| Fibroadenoma, Multiple | | | | | | | | | | | | | | | | | | | | | | | | | X | 1 | |
| Skin | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Papilloma | | | | | | | | | | | | | | | | | | X | | | | | | | | 1 | |
| Subcutaneous Tissue, Fibroma | | | | | | | | | | | | | | | | | | | | | | | | X | | 1 | |
| Subcutaneous Tissue, Fibrous Histiocytoma | | | | | | | | | | | | | | | | | | | | | | | | | | 2 | |
| MUSCULOSKELETAL SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Bone | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Skeletal Muscle | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | |
| Lipoma | | | | | | | | | | | | | | | | | | | | | | | | | X | 1 | |
| NERVOUS SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Brain | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Carcinoma, Metastatic, Pituitary Gland | | | | | | | | | | | | | | | | | | | | | | | | | X | 3 | |
| RESPIRATORY SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Larynx | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |

* .. Total animals with tissue examined microscopically; Total animals with tumor
 + .. Tissue examined microscopically
 X .. Lesion present
 I .. Insufficient tissue

M .. Missing tissue
 A .. Autolysis precludes evaluation
 BLANK .. Not examined microscopically

Experiment Number: 60311 - 05
 Test Type: CHRONIC
 Route: RESPIRATORY EXPOSURE WHOLE BODY
 Species/Strain: RATS/F344/N Tac

P17: NEOPLASMS BY INDIVIDUAL ANIMAL (SYSTEMIC LESIONS ABRIDGED)

Cobalt

CAS Number: 7440-48-4

Date Report Requested: 01/18/2012

Time Report Requested: 14:48:12

First Dose M/F: 05/08/06 / 05/08/06

Lab: BNW

| FISCHER 344-TACONIC RATS
FEMALE
1.25 mg/m3 | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | | | * TOTALS | |
|---|-------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|----------|------|
| | 0730 | 0733 | 0730 | 0733 | 0730 | 0733 | 0730 | 0733 | 0730 | 0733 | 0730 | 0733 | 0730 | 0733 | 0730 | 0733 | 0730 | 0733 | 0730 | 0733 | 0730 | 0733 | 0730 | 0733 | 0730 | | 0733 |
| ANIMAL ID | 0031 | 0033 | 0034 | 0038 | 0042 | 0044 | 0048 | 0050 | 0055 | 0060 | 0061 | 0062 | 0063 | 0064 | 0065 | 0067 | 0068 | 0069 | 0070 | 0071 | 0072 | 0073 | 0074 | 0075 | 0076 | 0077 | |
| Lung | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Alveolar/Bronchiolar Adenoma | | | | | | | | | | | X | | | | | X | | | | | | X | | | | 6 | |
| Alveolar/Bronchiolar Adenoma, Multiple | | | | | | | | | | | | | | | | | | | | | | | X | | | 1 | |
| Alveolar/Bronchiolar Carcinoma | | | | X | X | X | | | | | | | | X | | | X | | | | | | | | | 5 | |
| Alveolar/Bronchiolar Carcinoma, Multiple | | X | | | | | | | | | | X | | | X | | | | | | | | | X | | 4 | |
| Cystic Keratinizing Epithelioma | | | | | | | | X | | | | | X | | | X | | X | | | | | | | | 4 | |
| Mediastinum, Alveolar/Bronchiolar Carcinoma, Metastatic, Lung | | | | | | | X | | | | | | | | | | | | | | | | X | | | 2 | |
| Nose | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Trachea | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| SPECIAL SENSES SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Ear | | | | | | | | | | | + | | | | | | | | | | | | | | | 4 | |
| Eye | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Harderian Gland | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Zymbal's Gland | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | |
| Adenoma | | | | | | | | | | | | | | | | | | | | | | | | | X | 1 | |
| URINARY SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Kidney | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Transitional Epithelium, Papilloma | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | |
| Urinary Bladder | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| SYSTEMIC LESIONS | | | | | | | | | | | | | | | | | | | | | | | | | | | |

* .. Total animals with tissue examined microscopically; Total animals with tumor
 + .. Tissue examined microscopically
 X .. Lesion present
 I .. Insufficient tissue

M .. Missing tissue
 A .. Autolysis precludes evaluation
 BLANK .. Not examined microscopically

Experiment Number: 60311 - 05

P17: NEOPLASMS BY INDIVIDUAL ANIMAL (SYSTEMIC LESIONS ABRIDGED)

Date Report Requested: 01/18/2012

Test Type: CHRONIC

Cobalt

Time Report Requested: 14:48:12

Route: RESPIRATORY EXPOSURE WHOLE BODY

CAS Number: 7440-48-4

First Dose M/F: 05/08/06 / 05/08/06

Species/Strain: RATS/F344/N Tac

Lab: BNW

| | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|-------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|----|
| FISCHER 344-TACONIC RATS
FEMALE
1.25 mg/m3 | DAY ON TEST | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | ANIMAL ID | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 |
| | | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| | | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| | | 1 | 3 | 3 | 4 | 4 | 5 | 0 | 1 | 1 | 1 | 2 | 2 | 3 | 3 | 4 | 4 | 1 | 1 | 2 | 2 | 3 | 3 | 3 | 3 | 3 | 4 |
| | | 9 | 4 | 8 | 2 | 8 | 0 | 5 | 0 | 1 | 2 | 3 | 3 | 4 | 5 | 7 | 4 | 5 | 4 | 7 | 1 | 9 | 1 | 3 | 9 | 0 | 0 |
| * TOTALS | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Multiple Organ | | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Leukemia Mononuclear | | X | | X | | | X | X | | | X | | X | | X | X | X | X | X | | | X | X | X | | | 29 |

* .. Total animals with tissue examined microscopically; Total animals with tumor
 + .. Tissue examined microscopically
 X .. Lesion present
 I .. Insufficient tissue

M .. Missing tissue
 A .. Autolysis precludes evaluation
 BLANK .. Not examined microscopically

Experiment Number: 60311 - 05
Test Type: CHRONIC
Route: RESPIRATORY EXPOSURE WHOLE BODY
Species/Strain: RATS/F344/N Tac

P17: NEOPLASMS BY INDIVIDUAL ANIMAL (SYSTEMIC LESIONS ABRIDGED)

Cobalt

CAS Number: 7440-48-4

Date Report Requested: 01/18/2012
Time Report Requested: 14:48:12
First Dose M/F: 05/08/06 / 05/08/06
Lab: BNW

| | | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | females
(cont...) | | | | | | | | |
|--|-----------|-------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|----------------------|---|---|---|---|---|---|---|---|
| | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| FISCHER 344-TACONIC RATS
FEMALE
2.5 mg/m3 | | 1 | 2 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | |
| | | 7 | 9 | 2 | 4 | 8 | 8 | 9 | 9 | 9 | 9 | 0 | 1 | 1 | 2 | 3 | 3 | 5 | 6 | 6 | 7 | 7 | 7 | 7 | 7 | 8 | 8 | 9 | 9 | 0 | 0 |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | ANIMAL ID | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

ALIMENTARY SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Esophagus | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Intestine Large, Cecum | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | A | + | + | + | + | + | + | + | + |
| Intestine Large, Colon | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | A | + | + | + | + | + | + | + | + |
| Intestine Large, Rectum | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Intestine Small, Duodenum | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Intestine Small, Ileum | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | A | A | + | + | + | + | + | + | + |
| Intestine Small, Jejunum | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | A | A | + | + | + | + | + | + | + |
| Liver | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Mesentery | | + | | | | | + | + | + | | | | | + | | | | | | | | | | | | | | | |
| Pancreas | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Salivary Glands | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Stomach, Forestomach | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Stomach, Glandular | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Tongue | | | | | | | | | | | | | | | | | | | | | | | | | | | | | + |
| Squamous Cell Carcinoma | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X |
| Tooth | | | | | | | | | | | | | | + | | | | | | | | | | | | | | | |

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

Experiment Number: 60311 - 05

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/F344/N Tac

P17: NEOPLASMS BY INDIVIDUAL ANIMAL (SYSTEMIC LESIONS ABRIDGED)

Cobalt

CAS Number: 7440-48-4

Date Report Requested: 01/18/2012

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First Dose M/F: 05/08/06 / 05/08/06

Lab: BNW

| FISCHER 344-TACONIC RATS
FEMALE
2.5 mg/m3 | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | ANIMAL ID | females
(cont...) | | | |
|---|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
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3 | 0
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4 | 0
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9 | 0
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2 | 0
0
4
2
0 | 0
0
4
1
6 |

CARDIOVASCULAR SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|----------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Heart | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Schwannoma Malignant | | | | | | | | | | | | | | | | | | | X | | | | | | | | |

ENDOCRINE SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---------------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Adrenal Cortex | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Adrenal Medulla | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Pheochromocytoma Benign | | | | | | | X | | X | | | | | | | | | | X | | | | | | | | |
| Pheochromocytoma Malignant | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Bilateral, Pheochromocytoma Benign | | | | | | | | | | | | | | | | | | | | X | | | X | | | X | X |
| Bilateral, Pheochromocytoma Malignant | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Islets, Pancreatic | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Parathyroid Gland | + | + | + | + | + | M | + | + | + | + | M | + | M | + | + | + | M | + | + | + | M | M | + | M | + | + | |
| Pituitary Gland | + | + | + | + | + | + | + | + | + | + | + | + | + | M | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Pars Distalis, Adenoma | | | X | | | | | | | X | X | | | X | | | | | | X | X | | | | | | X |
| Pars Distalis, Carcinoma | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Thyroid Gland | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | M | + | + | + | + | + | + | + | + | + |
| Bilateral, C-cell, Adenoma | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| C-cell, Adenoma | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| C-cell, Carcinoma | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Follicular Cell, Adenoma | | | | | | | | | | | | | | | | | | | | | | | | | | | |

GENERAL BODY SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| NONE | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|

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

Experiment Number: 60311 - 05
 Test Type: CHRONIC
 Route: RESPIRATORY EXPOSURE WHOLE BODY
 Species/Strain: RATS/F344/N Tac

P17: NEOPLASMS BY INDIVIDUAL ANIMAL (SYSTEMIC LESIONS ABRIDGED)
 Cobalt
 CAS Number: 7440-48-4

Date Report Requested: 01/18/2012
 Time Report Requested: 14:48:12
 First Dose M/F: 05/08/06 / 05/08/06
 Lab: BNW

| FISCHER 344-TACONIC RATS
FEMALE
2.5 mg/m3 | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | | females
(cont...) |
|---|-------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|----------------------|
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | 1 | 2 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 7 | 7 | |
| ANIMAL ID | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | |
| | 3 | 1 | 1 | 2 | 1 | 3 | 2 | 4 | 2 | 3 | 3 | 2 | 4 | 4 | 1 | 0 | 3 | 2 | 0 | 0 | 1 | 0 | 4 | 2 | |
| | 2 | 1 | 8 | 9 | 2 | 0 | 7 | 5 | 6 | 5 | 6 | 4 | 6 | 1 | 7 | 9 | 1 | 3 | 3 | 6 | 0 | 5 | 9 | 0 | |

GENITAL SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Clitoral Gland
Adenoma
Carcinoma | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | M | + | + |
| | | | | | | | | | | | | X | | | | | | | | | | | | X |
| Ovary
Granulosa Cell Tumor Malignant | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Uterus
Carcinoma
Polyp Stromal | + | + | + | + | + | + | + | + | + | X | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| | | | | | | | | | | | | | | | | | | | X | | | | | X |

HEMATOPOIETIC SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | | | |
|-------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Bone Marrow | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | |
| Lymph Node | | + | + | | + | | | | | | + | | | | | | | + | | | | | | | |
| Lymph Node, Bronchial | M | + | + | + | M | + | M | M | + | M | + | M | M | M | + | + | M | M | + | + | M | M | M | + | + |
| Lymph Node, Mandibular | + | + | + | + | + | + | + | M | + | M | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Lymph Node, Mediastinal | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Lymph Node, Mesenteric | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Spleen | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Thymus | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |

INTEGUMENTARY SYSTEM

* .. Total animals with tissue examined microscopically; Total animals with tumor
 + .. Tissue examined microscopically
 X .. Lesion present
 I .. Insufficient tissue

M .. Missing tissue
 A .. Autolysis precludes evaluation
 BLANK .. Not examined microscopically

Experiment Number: 60311 - 05
 Test Type: CHRONIC
 Route: RESPIRATORY EXPOSURE WHOLE BODY
 Species/Strain: RATS/F344/N Tac

P17: NEOPLASMS BY INDIVIDUAL ANIMAL (SYSTEMIC LESIONS ABRIDGED)
 Cobalt
 CAS Number: 7440-48-4

Date Report Requested: 01/18/2012
 Time Report Requested: 14:48:12
 First Dose M/F: 05/08/06 / 05/08/06
 Lab: BNW

| FISCHER 344-TACONIC RATS
FEMALE
2.5 mg/m3 | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | | females
(cont...) |
|---|-------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|----------------------|
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | |
| | 1 | 2 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 7 | 7 | |
| | | | | | | | | | | | | | | | | | | | | | | | | | |
| ANIMAL ID | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | |
| | 3 | 1 | 1 | 2 | 1 | 3 | 2 | 4 | 2 | 3 | 3 | 3 | 2 | 4 | 4 | 1 | 0 | 3 | 2 | 0 | 0 | 1 | 0 | 4 | 2 |
| | 2 | 1 | 8 | 9 | 2 | 0 | 7 | 5 | 6 | 5 | 6 | 4 | 6 | 1 | 7 | 9 | 1 | 3 | 3 | 6 | 1 | 0 | 5 | 9 | 0 |

| | | | | | | | | | | | | | | | | | | | | | | | | |
|--|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mammary Gland
Adenocarcinoma
Adenoma
Fibroadenoma | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Skin
Keratoacanthoma
Squamous Cell Papilloma | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |

MUSCULOSKELETAL SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | | |
|------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Bone | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
|------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

NERVOUS SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Brain
Carcinoma, Metastatic, Pituitary Gland
Glioma Malignant | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

RESPIRATORY SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Larynx | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Lung
Alveolar/Bronchiolar Adenoma
Alveolar/Bronchiolar Adenoma, Multiple
Alveolar/Bronchiolar Carcinoma
Alveolar/Bronchiolar Carcinoma, Multiple
Cystic Keratinizing Epithelioma | + | + | + | + | X | + | + | + | + | + | + | + | + | + | + | + | + | + | + | X | | X | X | X |
| Nose | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | I | + | + | + |

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

Experiment Number: 60311 - 05

P17: NEOPLASMS BY INDIVIDUAL ANIMAL (SYSTEMIC LESIONS ABRIDGED)

Date Report Requested: 01/18/2012

Test Type: CHRONIC

Cobalt

Time Report Requested: 14:48:12

Route: RESPIRATORY EXPOSURE WHOLE BODY

CAS Number: 7440-48-4

First Dose M/F: 05/08/06 / 05/08/06

Species/Strain: RATS/F344/N Tac

Lab: BNW

| | | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|-----------|-------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|-------------------|---|
| FISCHER 344-TACONIC RATS
FEMALE
2.5 mg/m3 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | |
| | | 1 | 2 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 7 | 7 | |
| | | 1 | 9 | 2 | 4 | 8 | 8 | 9 | 9 | 9 | 9 | 9 | 0 | 1 | 1 | 2 | 3 | 3 | 5 | 6 | 7 | 8 | 8 | 9 | 9 | 0 | 0 | | |
| | | 7 | 1 | 3 | 1 | 7 | 9 | 0 | 0 | 1 | 3 | 5 | 8 | 8 | 8 | 2 | 3 | 4 | 1 | 7 | 7 | 8 | 8 | 0 | 5 | 2 | 9 | | |
| | ANIMAL ID | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | |
| | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | | |
| | 3 | 1 | 1 | 2 | 1 | 3 | 2 | 4 | 2 | 3 | 3 | 3 | 2 | 4 | 4 | 1 | 0 | 3 | 2 | 0 | 1 | 0 | 4 | 2 | 1 | 2 | 1 | | |
| | 2 | 1 | 8 | 9 | 2 | 0 | 7 | 5 | 6 | 3 | 6 | 4 | 6 | 1 | 7 | 9 | 1 | 3 | 3 | 6 | 0 | 5 | 9 | 0 | 6 | 0 | 6 | females (cont...) | |
| Trachea | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | | |
| SPECIAL SENSES SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Eye | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | A | + | + | + | + |
| Harderian Gland | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | |
| URINARY SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Kidney | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | |
| Urinary Bladder | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | |
| SYSTEMIC LESIONS | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Multiple Organ | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | |
| Leukemia Mononuclear | X | | X | X | | X | X | | X | X | X | | | X | | X | X | X | | | X | | | X | | X | X | | |

* .. Total animals with tissue examined microscopically; Total animals with tumor
 + .. Tissue examined microscopically
 X .. Lesion present
 I .. Insufficient tissue

M .. Missing tissue
 A .. Autolysis precludes evaluation
 BLANK .. Not examined microscopically

Experiment Number: 60311 - 05
 Test Type: CHRONIC
 Route: RESPIRATORY EXPOSURE WHOLE BODY
 Species/Strain: RATS/F344/N Tac

P17: NEOPLASMS BY INDIVIDUAL ANIMAL (SYSTEMIC LESIONS ABRIDGED)

Cobalt

CAS Number: 7440-48-4

Date Report Requested: 01/18/2012

Time Report Requested: 14:48:12

First Dose M/F: 05/08/06 / 05/08/06

Lab: BNW

| FISCHER 344-TACONIC RATS
FEMALE
2.5 mg/m3 | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | | | * TOTALS | |
|---|-------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|----------|------|
| | 0715 | 0713 | 0710 | 0707 | 0704 | 0701 | 0628 | 0625 | 0622 | 0619 | 0616 | 0613 | 0610 | 0607 | 0604 | 0601 | 0528 | 0525 | 0522 | 0519 | 0516 | 0513 | 0510 | 0507 | 0504 | | 0501 |
| ANIMAL ID | 0050 | 0051 | 0053 | 0054 | 0055 | 0059 | 0052 | 0055 | 0054 | 0052 | 0058 | 0053 | 0054 | 0058 | 0053 | 0057 | 0058 | 0052 | 0057 | 0059 | 0053 | 0054 | 0052 | 0057 | 0059 | 0054 | 0050 |

ALIMENTARY SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|----|
| Esophagus | + | + | + | + | + | + | + | + | + | + | + | + | + | + | M | + | + | + | + | + | + | + | + | + | + | + | + | 49 |
| Intestine Large, Cecum | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 49 |
| Intestine Large, Colon | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 49 |
| Intestine Large, Rectum | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Intestine Small, Duodenum | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Intestine Small, Ileum | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 48 |
| Intestine Small, Jejunum | A | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 47 |
| Liver | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Mesentery | | | | | | | | | | | | + | | | | | | | | | | | | | + | | | 8 |
| Pancreas | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Salivary Glands | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Stomach, Forestomach | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Stomach, Glandular | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Tongue | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| Squamous Cell Carcinoma | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| Tooth | | | | | | | | | | | | | | | | | | | | | | | | | | | + | 2 |

* .. Total animals with tissue examined microscopically; Total animals with tumor
 + .. Tissue examined microscopically
 X .. Lesion present
 I .. Insufficient tissue

M .. Missing tissue
 A .. Autolysis precludes evaluation
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Experiment Number: 60311 - 05

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/F344/N Tac

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Cobalt

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Lab: BNW

| FISCHER 344-TACONIC RATS
FEMALE
2.5 mg/m3 | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | | | * TOTALS |
|---|-------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|----------|
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | |
| ANIMAL ID | 5 | 0 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | |
| | 8 | 0 | 1 | 3 | 4 | 5 | 9 | 1 | 2 | 2 | 0 | 4 | 2 | 2 | 3 | 3 | 4 | 3 | 7 | 8 | 2 | 7 | 9 | 3 | 3 | |

CARDIOVASCULAR SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | | | | |
|----------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|----|
| Heart | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Schwannoma Malignant | | | | | | | | | | | | | | | | | | | | | | | | | | 1 |

ENDOCRINE SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---------------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|----|
| Adrenal Cortex | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Adrenal Medulla | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Pheochromocytoma Benign | X | | | X | X | X | X | | | | | X | | | X | | | X | X | X | X | | | | | 14 |
| Pheochromocytoma Malignant | X | | | | | | | | | | | | | | | | | | | X | | | | | | 2 |
| Bilateral, Pheochromocytoma Benign | | X | | | | | | | X | | | | | X | | | | | | | | | | | | 8 |
| Bilateral, Pheochromocytoma Malignant | | | | | | | | | | | | | | | | | | | | | | | | X | | 1 |
| Islets, Pancreatic | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Parathyroid Gland | M | + | + | M | + | + | + | + | M | M | + | + | + | + | M | + | + | + | + | + | + | + | + | + | + | 38 |
| Pituitary Gland | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 49 |
| Pars Distalis, Adenoma | | | X | | | X | X | X | X | X | X | X | | | | | | | X | X | | X | X | | | 26 |
| Pars Distalis, Carcinoma | | | | | | | | | | | | | | | | | | | | | | | X | | | 1 |
| Thyroid Gland | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 49 |
| Bilateral, C-cell, Adenoma | | | | X | | | | | | | | | | | X | | | | | | | | | | | 2 |
| C-cell, Adenoma | | | | | | | | | | | | | | | | X | | | | | | | | X | | 2 |
| C-cell, Carcinoma | | | | | | | | | | X | | | | | | | | | | | | | | | | 1 |
| Follicular Cell, Adenoma | | | | | | | | | | | | | X | | | | | | | | | | | | | 1 |

GENERAL BODY SYSTEM

NONE

* .. Total animals with tissue examined microscopically; Total animals with tumor
 + .. Tissue examined microscopically
 X .. Lesion present
 I .. Insufficient tissue

M .. Missing tissue
 A .. Autolysis precludes evaluation
 BLANK .. Not examined microscopically

Experiment Number: 60311 - 05
 Test Type: CHRONIC
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Cobalt

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Lab: BNW

| FISCHER 344-TACONIC RATS
FEMALE
2.5 mg/m3 | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | | * TOTALS |
|---|-------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|----------|
| | 0715 | 0713 | 0730 | 0733 | 0735 | 0737 | 0739 | 0741 | 0743 | 0745 | 0747 | 0749 | 0751 | 0753 | 0755 | 0757 | 0759 | 0801 | 0803 | 0805 | 0807 | 0809 | 0811 | 0813 | |
| ANIMAL ID | 0050 | 0051 | 0053 | 0054 | 0055 | 0059 | 0061 | 0062 | 0064 | 0065 | 0068 | 0069 | 0070 | 0071 | 0072 | 0073 | 0074 | 0075 | 0076 | 0077 | 0079 | 0080 | 0082 | 0084 | 0085 |

GENITAL SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | | | |
|--------------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|----|
| Clitoral Gland Adenoma | + | + | + | + | + | + | + | + | + | + | + | + | M | + | + | + | + | + | + | + | M | + | + | + | 47 |
| Clitoral Gland Carcinoma | | | X | | X | | | X | | | | | | | X | | | X | | | | | | | 6 |
| Ovary Granulosa Cell Tumor Malignant | | | | | | | | | | | | | X | | | | | | | | | | | | 50 |
| Uterus Carcinoma | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Uterus Polyp Stromal | | | | | | | | | | | | | | | | | | X | | | X | X | | | 6 |

HEMATOPOIETIC SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | | | |
|-------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|----|
| Bone Marrow | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Lymph Node | | | | | | | | | | | | | | | | | | | | | | | | | 7 |
| Lymph Node, Bronchial | M | M | + | + | + | + | M | + | + | M | M | M | + | M | M | M | + | M | M | + | M | M | M | M | 22 |
| Lymph Node, Mandibular | + | M | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 47 |
| Lymph Node, Mediastinal | + | + | + | + | + | + | M | + | + | + | + | + | + | + | + | + | + | + | + | + | + | M | + | + | 48 |
| Lymph Node, Mesenteric | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Spleen | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Thymus | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | M | M | + | + | + | M | + | + | + | 46 |

INTEGUMENTARY SYSTEM

* .. Total animals with tissue examined microscopically; Total animals with tumor
 + .. Tissue examined microscopically
 X .. Lesion present
 I .. Insufficient tissue

M .. Missing tissue
 A .. Autolysis precludes evaluation
 BLANK .. Not examined microscopically

Experiment Number: 60311 - 05
 Test Type: CHRONIC
 Route: RESPIRATORY EXPOSURE WHOLE BODY
 Species/Strain: RATS/F344/N Tac

P17: NEOPLASMS BY INDIVIDUAL ANIMAL (SYSTEMIC LESIONS ABRIDGED)

Cobalt

CAS Number: 7440-48-4

Date Report Requested: 01/18/2012

Time Report Requested: 14:48:12

First Dose M/F: 05/08/06 / 05/08/06

Lab: BNW

| FISCHER 344-TACONIC RATS
FEMALE
2.5 mg/m3 | DAY ON TEST | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | |
|---|-------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|----|----|
| | ANIMAL ID | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | |
| | | 1 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | |
| | | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | |
| | | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 0 | 2 | 2 | 2 | 3 | 3 | 3 | 4 | 4 | 4 | 4 | 0 | 0 | 3 | 3 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | |
| | | 8 | 1 | 3 | 4 | 5 | 9 | 1 | 2 | 5 | 4 | 2 | 2 | 8 | 3 | 4 | 8 | 3 | 7 | 8 | 2 | 7 | 7 | 9 | 3 | 4 | 0 | 4 | 4 | 0 | 4 | 4 | 0 | 0 | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Mammary Gland | | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Adenocarcinoma | | | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | |
| Adenoma | | | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | |
| Fibroadenoma | | X | | | | | | X | | X | | | X | | X | | X | X | X | | | | | | | X | | X | | | | | | | 15 | |
| Skin | | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Keratoacanthoma | | | | | | | | X | | | | | | | | | | | | | | | | X | | | | | | | | | | | 2 | |
| Squamous Cell Papilloma | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | | | 1 | |
| MUSCULOSKELETAL SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Bone | | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| NERVOUS SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Brain | | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Carcinoma, Metastatic, Pituitary Gland | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | | | 1 |
| Glioma Malignant | | | | | | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| RESPIRATORY SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Larynx | | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Lung | | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Alveolar/Bronchiolar Adenoma | | X | | | X | | | | | | | | | | | | X | X | | | | | | | | | | | | | | X | | | 6 | |
| Alveolar/Bronchiolar Adenoma, Multiple | | | | | | | X | | | | | | | | | | | | X | | | | | | | | | | | | | | | | 3 | |
| Alveolar/Bronchiolar Carcinoma | | | | X | X | | X | | X | X | | | | X | | X | | X | X | X | | | | | | | | | | X | | | | | 14 | |
| Alveolar/Bronchiolar Carcinoma, Multiple | | | | | | X | | X | | | | | | | | | | | X | | | | | | | | | | | | | | | | | 3 |
| Cystic Keratinizing Epithelioma | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | | | | | | 1 | |
| Nose | | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 49 | |

* .. Total animals with tissue examined microscopically; Total animals with tumor
 + .. Tissue examined microscopically
 X .. Lesion present
 I .. Insufficient tissue

M .. Missing tissue
 A .. Autolysis precludes evaluation
 BLANK .. Not examined microscopically

Experiment Number: 60311 - 05
 Test Type: CHRONIC
 Route: RESPIRATORY EXPOSURE WHOLE BODY
 Species/Strain: RATS/F344/N Tac

P17: NEOPLASMS BY INDIVIDUAL ANIMAL (SYSTEMIC LESIONS ABRIDGED)

Cobalt

CAS Number: 7440-48-4

Date Report Requested: 01/18/2012

Time Report Requested: 14:48:12

First Dose M/F: 05/08/06 / 05/08/06

Lab: BNW

| FISCHER 344-TACONIC RATS
FEMALE
2.5 mg/m3 | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | | | * TOTALS |
|---|-------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|----------|
| | 0715 | 0713 | 0703 | 0703 | 0703 | 0703 | 0703 | 0703 | 0703 | 0703 | 0703 | 0703 | 0703 | 0703 | 0703 | 0703 | 0703 | 0703 | 0703 | 0703 | 0703 | 0703 | 0703 | 0703 | 0703 | |
| ANIMAL ID | 0058 | 0051 | 0053 | 0054 | 0055 | 0059 | 0052 | 0055 | 0055 | 0055 | 0055 | 0055 | 0055 | 0055 | 0055 | 0055 | 0055 | 0055 | 0055 | 0055 | 0055 | 0055 | 0055 | 0055 | 0055 | |
| Trachea | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| SPECIAL SENSES SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Eye | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 49 | |
| Harderian Gland | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| URINARY SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Kidney | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Urinary Bladder | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| SYSTEMIC LESIONS | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Multiple Organ | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Leukemia Mononuclear | X | | X | | | X | | X | | X | X | | | X | X | X | | | | X | | | X | X | 28 | |

* .. Total animals with tissue examined microscopically; Total animals with tumor
 + .. Tissue examined microscopically
 X .. Lesion present
 I .. Insufficient tissue

M .. Missing tissue
 A .. Autolysis precludes evaluation
 BLANK .. Not examined microscopically

Experiment Number: 60311 - 05
 Test Type: CHRONIC
 Route: RESPIRATORY EXPOSURE WHOLE BODY
 Species/Strain: RATS/F344/N Tac

P17: NEOPLASMS BY INDIVIDUAL ANIMAL (SYSTEMIC LESIONS ABRIDGED)
 Cobalt
 CAS Number: 7440-48-4

Date Report Requested: 01/18/2012
 Time Report Requested: 14:48:12
 First Dose M/F: 05/08/06 / 05/08/06
 Lab: BNW

| | | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | | |
|--|------------------|------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|------------------------------|--|
| FISCHER 344-TACONIC RATS
FEMALE | | 0
4
7
1 | 0
4
7
3 | 0
4
7
8 | 0
4
8
9 | 0
5
0
6 | 0
5
3
0 | 0
5
7
9 | 0
5
7
9 | 0
5
9
0 | 0
6
0
0 | 0
6
1
3 | 0
6
2
1 | 0
6
3
4 | 0
6
4
1 | 0
6
7
0 | 0
6
7
0 | 0
6
7
4 | 0
6
9
1 | 0
7
1
2 | 0
7
1
7 | 0
7
1
7 | 0
7
2
5 | 0
7
2
6 | females
(cont...) | |
| | 5.0 mg/m3 | ANIMAL ID | 0
0
7
2
8 | 0
0
7
0
6 | 0
0
7
0
4 | 0
0
7
1
7 | 0
0
7
1
6 | 0
0
7
3
7 | 0
0
7
4
2 | 0
0
7
3
1 | 0
0
7
0
7 | 0
0
7
2
7 | 0
0
7
3
4 | 0
0
7
4
9 | 0
0
7
3
3 | 0
0
7
3
5 | 0
0
7
3
9 | 0
0
7
3
9 | 0
0
7
4
4 | 0
0
7
2
4 | 0
0
7
1
4 | 0
0
7
4
3 | 0
0
7
4
8 | 0
0
7
0
8 | | |

ALIMENTARY SYSTEM

| | |
|---|---|
| Esophagus | + + + + + + + M + + + + + + + + + + + + + + + + M |
| Intestine Large, Cecum | + |
| Intestine Large, Colon | + |
| Intestine Large, Rectum | + M + |
| Intestine Small, Duodenum | + |
| Intestine Small, Ileum | + |
| Intestine Small, Jejunum | + |
| Liver | + |
| Mesentery | + |
| Pancreas | + |
| Salivary Glands | + |
| Stomach, Forestomach
Squamous Cell Papilloma | + |
| Stomach, Glandular | + |
| Tooth | + |

CARDIOVASCULAR SYSTEM

* .. Total animals with tissue examined microscopically; Total animals with tumor
 + .. Tissue examined microscopically
 X .. Lesion present
 I .. Insufficient tissue

M .. Missing tissue
 A .. Autolysis precludes evaluation
 BLANK .. Not examined microscopically

Experiment Number: 60311 - 05
Test Type: CHRONIC
Route: RESPIRATORY EXPOSURE WHOLE BODY
Species/Strain: RATS/F344/N Tac

P17: NEOPLASMS BY INDIVIDUAL ANIMAL (SYSTEMIC LESIONS ABRIDGED)

Cobalt

CAS Number: 7440-48-4

Date Report Requested: 01/18/2012
Time Report Requested: 14:48:12
First Dose M/F: 05/08/06 / 05/08/06
Lab: BNW

| FISCHER 344-TACONIC RATS
FEMALE
5.0 mg/m3 | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | | ANIMAL ID | females
(cont...) |
|---|-------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|---|-----------|----------------------|
| | 0471 | 0473 | 0478 | 0479 | 0506 | 0509 | 0509 | 0509 | 0509 | 0509 | 0509 | 0509 | 0509 | 0509 | 0509 | 0509 | 0509 | 0509 | 0509 | 0509 | 0509 | 0509 | 0509 | | | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | |
| | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | | |
| | 2 | 0 | 0 | 0 | 1 | 1 | 3 | 4 | 3 | 0 | 2 | 3 | 4 | 3 | 3 | 1 | 3 | 4 | 2 | 1 | 1 | 4 | 4 | 0 | | |
| | 8 | 6 | 4 | 2 | 7 | 6 | 7 | 2 | 1 | 7 | 4 | 9 | 3 | 5 | 9 | 9 | 4 | 6 | 4 | 5 | 3 | 8 | 8 | 1 | | |

NONE

GENITAL SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | |
|--|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Clitoral Gland
Adenoma
Carcinoma | + | + | + | + | + | + | + | + | M | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Ovary
Thecoma Benign | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Uterus
Polyp Stromal | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |

HEMATOPOIETIC SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | | |
|--|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Bone Marrow | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | |
| Lymph Node | + | + | + | | | + | | | | | + | | | | | | | | | | | | | |
| Lymph Node, Bronchial
Alveolar/Bronchiolar Carcinoma, Metastatic,
Lung | + | M | M | + | M | + | M | M | M | + | + | M | M | M | M | + | M | M | M | M | + | M | M | M |
| Lymph Node, Mandibular | + | + | + | + | + | M | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Lymph Node, Mediastinal | + | + | + | + | + | + | + | + | + | + | + | + | + | + | M | + | M | + | + | + | + | + | + | + |
| Lymph Node, Mesenteric | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Spleen | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |

* .. Total animals with tissue examined microscopically; Total animals with tumor
+ .. Tissue examined microscopically
X .. Lesion present
I .. Insufficient tissue

M .. Missing tissue
A .. Autolysis precludes evaluation
BLANK .. Not examined microscopically

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Cobalt

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Lab: BNW

| FISCHER 344-TACONIC RATS
FEMALE
5.0 mg/m3 | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | females
(cont...) |
|---|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| | 0
4
7
1 | 0
4
7
3 | 0
4
7
8 | 0
4
7
9 | 0
5
8
6 | 0
5
0
0 | 0
5
7
9 | 0
5
7
9 | 0
5
9
0 | 0
6
0
0 | 0
6
1
3 | 0
6
2
8 | 0
6
3
1 | 0
6
4
6 | 0
6
7
0 | 0
6
7
0 | 0
6
7
4 | 0
6
9
1 | 0
7
1
2 | 0
7
1
7 | 0
7
1
7 | 0
7
2
5 | |
| ANIMAL ID | 0
0
7
2
8 | 0
0
7
0
6 | 0
0
7
0
4 | 0
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7
1
7 | 0
0
7
1
6 | 0
0
7
3
7 | 0
0
7
4
2 | 0
0
7
3
7 | 0
0
7
4
1 | 0
0
7
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7 | 0
0
7
2
7 | 0
0
7
3
4 | 0
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7
4
9 | 0
0
7
3
3 | 0
0
7
3
5 | 0
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7
1
9 | 0
0
7
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9 | 0
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4
4 | 0
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7
1
4 | 0
0
7
1
3 | 0
0
7
4
8 | 0
0
7
0
8 | 0
0
7
0
1 |

Thymus
 Alveolar/Bronchiolar Carcinoma, Metastatic,
 Lung

+ + + + + + + + + M + + + + + + + + + + + + + + +

INTEGUMENTARY SYSTEM

Mammary Gland
 Adenoma
 Carcinoma
 Fibroadenoma

+ +

Skin
 Keratoacanthoma
 Subcutaneous Tissue, Fibroma
 Subcutaneous Tissue, Schwannoma Malignant

+
 X

MUSCULOSKELETAL SYSTEM

Bone
 Skeletal Muscle
 Schwannoma Malignant, Metastatic, Skin

+
 +
 X

NERVOUS SYSTEM

Brain
 Carcinoma, Metastatic, Pituitary Gland

+ +

RESPIRATORY SYSTEM

Larynx

+ +

* .. Total animals with tissue examined microscopically; Total animals with tumor
 + .. Tissue examined microscopically
 X .. Lesion present
 I .. Insufficient tissue

M .. Missing tissue
 A .. Autolysis precludes evaluation
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 Cobalt
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| FISCHER 344-TACONIC RATS
FEMALE
5.0 mg/m3 | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | | ANIMAL ID | females
(cont...) | | |
|---|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|-----------|-----------------------|----------------------|--|
| | 0
4
7
1 | 0
4
7
3 | 0
4
7
8 | 0
4
8
9 | 0
5
0
6 | 0
5
3
0 | 0
5
7
9 | 0
5
7
9 | 0
5
9
0 | 0
6
0
0 | 0
6
0
3 | 0
6
1
8 | 0
6
2
1 | 0
6
3
4 | 0
6
4
1 | 0
6
7
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6 | |
| Lung | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 0
0
7
2
8 | females
(cont...) | |
| Alveolar/Bronchiolar Adenoma | | | | | | | | X | | | X | | | | | | | | | | | | | | | | | |
| Alveolar/Bronchiolar Adenoma, Multiple | | | | | | | | | | | | | | | | | | | X | | | | | | | | | |
| Alveolar/Bronchiolar Carcinoma | X | | | | | | | | | | X | | | | | | | | | | | | | | | | | |
| Alveolar/Bronchiolar Carcinoma, Multiple | | | | | X | | | | | | | | | | | | | | | | | | | | | | | |
| Cystic Keratinizing Epithelioma | | | | | | | | | | | X | | | | | | | | | | | | | | | | | |
| Pheochromocytoma Malignant, Metastatic, Adrenal Medulla | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Squamous Cell Carcinoma | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Mediastinum, Alveolar/Bronchiolar Carcinoma, Metastatic, Lung | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Nose | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | | | |
| Trachea | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | | | |
| SPECIAL SENSES SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Ear | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Eye | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | | | |
| Harderian Gland | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | | | |
| URINARY SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Kidney | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | | | |
| Urinary Bladder | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | | | |
| Schwannoma Malignant, Metastatic, Skin | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

* .. Total animals with tissue examined microscopically; Total animals with tumor
 + .. Tissue examined microscopically
 X .. Lesion present
 I .. Insufficient tissue

M .. Missing tissue
 A .. Autolysis precludes evaluation
 BLANK .. Not examined microscopically

Experiment Number: 60311 - 05
 Test Type: CHRONIC
 Route: RESPIRATORY EXPOSURE WHOLE BODY
 Species/Strain: RATS/F344/N Tac

P17: NEOPLASMS BY INDIVIDUAL ANIMAL (SYSTEMIC LESIONS ABRIDGED)

Cobalt
 CAS Number: 7440-48-4

Date Report Requested: 01/18/2012
 Time Report Requested: 14:48:12
 First Dose M/F: 05/08/06 / 05/08/06
 Lab: BNW

| FISCHER 344-TACONIC RATS
FEMALE
5.0 mg/m3 | DAY ON TEST | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | ANIMAL ID | females
(cont...) | | | |
|---|-------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|-----------|----------------------|---|---|--|
| | 4 | 4 | 4 | 4 | 5 | 5 | 5 | 5 | 5 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 7 | 7 | 7 | 7 | 7 | 7 | | | 7 | 7 | |
| | 7 | 7 | 7 | 8 | 0 | 3 | 7 | 7 | 9 | 0 | 0 | 1 | 2 | 3 | 4 | 4 | 7 | 7 | 7 | 9 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | | | |
| | 1 | 3 | 8 | 9 | 6 | 0 | 9 | 9 | 0 | 0 | 3 | 8 | 1 | 4 | 1 | 6 | 0 | 0 | 4 | 1 | 2 | 7 | 7 | 5 | 6 | 6 | 6 | | | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | |
| | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | | |
| | 2 | 0 | 0 | 2 | 1 | 1 | 3 | 4 | 3 | 0 | 2 | 3 | 4 | 3 | 3 | 1 | 3 | 4 | 2 | 1 | 1 | 4 | 4 | 0 | 0 | 0 | 0 | | | |
| | 8 | 6 | 4 | 1 | 7 | 6 | 7 | 2 | 1 | 7 | 7 | 4 | 9 | 3 | 5 | 9 | 9 | 4 | 4 | 6 | 4 | 5 | 3 | 8 | 8 | 1 | 1 | | | |
| Multiple Organ | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | | | |
| Leukemia Mononuclear | | X | | X | | | X | X | X | | X | X | X | | X | | | X | X | X | X | | | | X | | | | | |

* .. Total animals with tissue examined microscopically; Total animals with tumor
 + .. Tissue examined microscopically
 X .. Lesion present
 I .. Insufficient tissue

M .. Missing tissue
 A .. Autolysis precludes evaluation
 BLANK .. Not examined microscopically

Experiment Number: 60311 - 05
 Test Type: CHRONIC
 Route: RESPIRATORY EXPOSURE WHOLE BODY
 Species/Strain: RATS/F344/N Tac

P17: NEOPLASMS BY INDIVIDUAL ANIMAL (SYSTEMIC LESIONS ABRIDGED)
 Cobalt
 CAS Number: 7440-48-4

Date Report Requested: 01/18/2012
 Time Report Requested: 14:48:12
 First Dose M/F: 05/08/06 / 05/08/06
 Lab: BNW

| FISCHER 344-TACONIC RATS
FEMALE
5.0 mg/m3 | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | * TOTALS | | | |
|---|-------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|----------|---|---|---|
| | ANIMAL ID | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | |
| | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | |
| | 0 | 0 | 3 | 3 | 4 | 0 | 0 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 3 | 3 | 4 | 4 | 0 | 1 | 2 | 2 | 2 | 4 | 5 | |
| | 2 | 5 | 2 | 8 | 7 | 1 | 3 | 0 | 1 | 2 | 3 | 4 | 0 | 6 | 0 | 6 | 9 | 8 | 0 | 2 | 2 | 5 | 9 | 0 | | |

ALIMENTARY SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | | | |
|---------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|----|
| Esophagus | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 48 |
| Intestine Large, Cecum | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Intestine Large, Colon | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Intestine Large, Rectum | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 49 |
| Intestine Small, Duodenum | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Intestine Small, Ileum | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Intestine Small, Jejunum | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Liver | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Mesentery | | | | | + | | | | + | + | | | | | | + | | | + | | | | | | 9 |
| Pancreas | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Salivary Glands | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Stomach, Forestomach | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Squamous Cell Papilloma | X | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| Stomach, Glandular | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Tooth | | | + | | | | | | | | | | | | | | | | | | | | | | 2 |

CARDIOVASCULAR SYSTEM

* .. Total animals with tissue examined microscopically; Total animals with tumor
 + .. Tissue examined microscopically
 X .. Lesion present
 I .. Insufficient tissue

M .. Missing tissue
 A .. Autolysis precludes evaluation
 BLANK .. Not examined microscopically

Experiment Number: 60311 - 05
 Test Type: CHRONIC
 Route: RESPIRATORY EXPOSURE WHOLE BODY
 Species/Strain: RATS/F344/N Tac

P17: NEOPLASMS BY INDIVIDUAL ANIMAL (SYSTEMIC LESIONS ABRIDGED)

Cobalt

CAS Number: 7440-48-4

Date Report Requested: 01/18/2012

Time Report Requested: 14:48:12

First Dose M/F: 05/08/06 / 05/08/06

Lab: BNW

| FISCHER 344-TACONIC RATS
FEMALE
5.0 mg/m3 | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | | * TOTALS | | |
|---|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|----|--|
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0 | | |
| Heart | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Pheochromocytoma Malignant, Metastatic, Adrenal Medulla | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | |
| Pericardium, Rhabdomyosarcoma, Metastatic, Uncertain Primary Site | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | |
| ENDOCRINE SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Adrenal Cortex | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Adrenal Medulla | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Pheochromocytoma Benign | X | X | | | X | X | | | | | | | | | X | X | | X | | | | | X | X | | 17 | |
| Pheochromocytoma Malignant | | | X | | | X | | | | | | | | | X | X | | X | | | | | X | | | 7 | |
| Bilateral, Pheochromocytoma Benign | | | | X | X | | X | | X | X | | X | X | | | X | | X | | X | X | X | | | | 19 | |
| Bilateral, Pheochromocytoma Malignant | | | | | | | | X | | | X | | | | | | | | | | | | X | | | 4 | |
| Islets, Pancreatic | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Adenoma | | | | | | | | | | X | | | | | | | | | | | | | | | | 1 | |
| Carcinoma | | | | | | | | | | X | | | | | | | | | | | | | | | | 3 | |
| Parathyroid Gland | M | + | + | + | + | + | + | + | + | M | + | + | + | + | + | M | + | + | + | + | + | + | + | + | + | 45 | |
| Pituitary Gland | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Pars Distalis, Adenoma | X | | | | | X | | | X | X | | X | X | | X | | | | X | X | X | | X | | | 22 | |
| Pars Distalis, Carcinoma | | | | | | | | | | | | | | | | | | | X | | | | | | | 1 | |
| Thyroid Gland | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| C-cell, Adenoma | | | | | | | | | | | | | | | | | | | | | | X | | | | 2 | |
| C-cell, Carcinoma | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | |
| Follicular Cell, Adenoma | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | |

GENERAL BODY SYSTEM

* .. Total animals with tissue examined microscopically; Total animals with tumor
 + .. Tissue examined microscopically
 X .. Lesion present
 I .. Insufficient tissue

M .. Missing tissue
 A .. Autolysis precludes evaluation
 BLANK .. Not examined microscopically

Experiment Number: 60311 - 05
 Test Type: CHRONIC
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 Species/Strain: RATS/F344/N Tac

P17: NEOPLASMS BY INDIVIDUAL ANIMAL (SYSTEMIC LESIONS ABRIDGED)
 Cobalt
 CAS Number: 7440-48-4

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 Lab: BNW

| FISCHER 344-TACONIC RATS
FEMALE
5.0 mg/m3 | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | | | * TOTALS |
|---|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|--|----------|
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NONE

GENITAL SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|----------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|-----------|-----------|
| Clitoral Gland | M | + | + | + | + | + | + | + | + | + | + | + | + | + | + | M | + | + | + | + | M | + | + | + | + | | 46 |
| Adenoma | | | | | | | | | | | | | | | | | | | | | | | | X | | | 2 |
| Carcinoma | | | | | | | | | | | | | | X | X | | | | | | | | | | | | 4 |
| Ovary | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | | 50 |
| Thecoma Benign | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| Uterus | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | | 50 |
| Polyp Stromal | | | | X | | | X | | | | | | | X | X | | | | X | | | X | | | | 10 | |

HEMATOPOIETIC SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|--|-----------|
| Bone Marrow | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | | 50 |
| Lymph Node | | | | | | | | | | | | | | | | | | | | | | | | | | | 5 |
| Lymph Node, Bronchial | M | M | M | M | M | + | + | + | + | M | M | + | + | + | M | M | M | M | + | M | + | M | + | M | M | | 17 |
| Alveolar/Bronchiolar Carcinoma, Metastatic, Lung | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| Lymph Node, Mandibular | + | + | + | + | + | + | + | + | + | + | M | + | + | + | + | + | + | + | + | + | + | + | + | + | M | | 47 |
| Lymph Node, Mediastinal | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | | 48 |
| Lymph Node, Mesenteric | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | | 50 |
| Spleen | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | | 50 |

* .. Total animals with tissue examined microscopically; Total animals with tumor
 + .. Tissue examined microscopically
 X .. Lesion present
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Cobalt

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| FISCHER 344-TACONIC RATS
FEMALE
5.0 mg/m3 | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | | * TOTALS | |
|---|-------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|----------|--|
| | 0730 | 0733 | 0730 | 0733 | 0730 | 0733 | 0730 | 0733 | 0730 | 0733 | 0730 | 0733 | 0730 | 0733 | 0730 | 0733 | 0730 | 0733 | 0730 | 0733 | 0730 | 0733 | 0730 | 0733 | | |
| ANIMAL ID | 0070 | 0075 | 0072 | 0078 | 0077 | 0071 | 0073 | 0070 | 0071 | 0072 | 0073 | 0074 | 0075 | 0076 | 0077 | 0078 | 0079 | 0080 | 0081 | 0082 | 0083 | 0084 | 0085 | 0086 | | |
| Thymus
Alveolar/Bronchiolar Carcinoma, Metastatic,
Lung | + | + | + | + | + | + | + | + | M | + | + | + | + | + | + | M | + | + | + | + | + | + | + | + | 47
1 | |
| INTEGUMENTARY SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Mammary Gland
Adenoma | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50
1 | |
| Carcinoma | | | | | | | | | X | | X | | | | | | | | | | | | X | | 3 | |
| Fibroadenoma | X | | | X | | | X | | | | | X | | | | | | X | | | | | | | 5 | |
| Skin
Keratoacanthoma | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50
1 | |
| Subcutaneous Tissue, Fibroma | | | | | | | | | | | | | | | | | | | | | | | X | | 1 | |
| Subcutaneous Tissue, Schwannoma Malignant | | | | | | | | | | | | | | | | | | | | | | | | | 1 | |
| MUSCULOSKELETAL SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Bone | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Skeletal Muscle
Schwannoma Malignant, Metastatic, Skin | | | | | | | | | | | | | | | | | | | | | | | | | 1
1 | |
| NERVOUS SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Brain
Carcinoma, Metastatic, Pituitary Gland | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50
1 | |
| RESPIRATORY SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Larynx | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |

* .. Total animals with tissue examined microscopically; Total animals with tumor
 + .. Tissue examined microscopically
 X .. Lesion present
 I .. Insufficient tissue

M .. Missing tissue
 A .. Autolysis precludes evaluation
 BLANK .. Not examined microscopically

Experiment Number: 60311 - 05
 Test Type: CHRONIC
 Route: RESPIRATORY EXPOSURE WHOLE BODY
 Species/Strain: RATS/F344/N Tac

P17: NEOPLASMS BY INDIVIDUAL ANIMAL (SYSTEMIC LESIONS ABRIDGED)

Cobalt

CAS Number: 7440-48-4

Date Report Requested: 01/18/2012

Time Report Requested: 14:48:12

First Dose M/F: 05/08/06 / 05/08/06

Lab: BNW

| FISCHER 344-TACONIC RATS
FEMALE
5.0 mg/m3 | DAY ON TEST | | | | | | | | | | | | | | | | | | | | * TOTALS | |
|---|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|----|
| | 0
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0 | 0
7
3
0 | | |
| ANIMAL ID | 0
7
0
2 | 0
7
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5 | 0
7
3
2 | 0
7
3
8 | 0
7
4
7 | 0
7
0
1 | 0
7
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3 | 0
7
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0 | 0
7
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1 | 0
7
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1 | 0
7
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1 | 0
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2 | 0
7
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3 | 0
7
2
2 | 0
7
2
3 | 0
7
3
0 | 0
7
3
4 | 0
7
4
0 | 0
7
4
6 | 0
7
7
9 | 0
7
7
8 | |
| Lung | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Alveolar/Bronchiolar Adenoma | | | | | | | | | | | | X | | | | | X | | | | X | 9 |
| Alveolar/Bronchiolar Adenoma, Multiple | X | X | | | | | | | | | | | | | | | | | X | | | 4 |
| Alveolar/Bronchiolar Carcinoma | X | | X | X | | | | | | | | X | | | | | X | X | | | | 12 |
| Alveolar/Bronchiolar Carcinoma, Multiple | | | | | X | X | X | X | X | X | | | X | X | X | | | | X | X | X | 18 |
| Cystic Keratinizing Epithelioma | | | | | | X | | | | | | | | | | | | | | | | 2 |
| Pheochromocytoma Malignant, Metastatic, Adrenal Medulla | | | | | | | | | | | | | | | | | | | | | | 1 |
| Squamous Cell Carcinoma | | | | | | | | | | | | | | | | | | X | | | | 1 |
| Mediastinum, Alveolar/Bronchiolar Carcinoma, Metastatic, Lung | | | | | | | | | | | X | | | | | | | | | | | 1 |
| Nose | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Trachea | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| SPECIAL SENSES SYSTEM | | | | | | | | | | | | | | | | | | | | | | |
| Ear | | | + | | | | | | | | | | | + | | | | | | | + | 3 |
| Eye | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Harderian Gland | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| URINARY SYSTEM | | | | | | | | | | | | | | | | | | | | | | |
| Kidney | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Urinary Bladder | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Schwannoma Malignant, Metastatic, Skin | | | | | | | | | | | | | | | | | | | | | | 1 |
| SYSTEMIC LESIONS | | | | | | | | | | | | | | | | | | | | | | |

* .. Total animals with tissue examined microscopically; Total animals with tumor
 + .. Tissue examined microscopically
 X .. Lesion present
 I .. Insufficient tissue

M .. Missing tissue
 A .. Autolysis precludes evaluation
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Experiment Number: 60311 - 05
 Test Type: CHRONIC
 Route: RESPIRATORY EXPOSURE WHOLE BODY
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Cobalt
 CAS Number: 7440-48-4

Date Report Requested: 01/18/2012
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 First Dose M/F: 05/08/06 / 05/08/06
 Lab: BNW

| FISCHER 344-TACONIC RATS
FEMALE
5.0 mg/m3 | DAY ON TEST | | ANIMAL ID | | | | | | | | | | | | | | | | | | | | * TOTALS | | | |
|---|-------------|------|-----------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|----------|------|------|-----------|
| | 0730 | 0730 | 0730 | 0730 | 0730 | 0730 | 0730 | 0730 | 0730 | 0730 | 0730 | 0730 | 0730 | 0730 | 0730 | 0730 | 0730 | 0730 | 0730 | 0730 | 0730 | 0730 | | 0730 | 0730 | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | |
| | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | |
| | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | |
| | 0 | 0 | 3 | 3 | 4 | 0 | 0 | 1 | 1 | 1 | 1 | 2 | 2 | 3 | 3 | 4 | 4 | 0 | 1 | 2 | 2 | 2 | 2 | 4 | 5 | |
| | 2 | 5 | 2 | 8 | 7 | 1 | 3 | 0 | 1 | 2 | 3 | 3 | 4 | 0 | 6 | 0 | 6 | 9 | 8 | 0 | 2 | 5 | 9 | 5 | 0 | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | 50 |
| Multiple Organ | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 27 |
| Leukemia Mononuclear | | X | X | | | X | X | X | | | | | | X | | X | X | | X | X | | X | X | X | | |

*** END OF REPORT ***

* .. Total animals with tissue examined microscopically; Total animals with tumor
 + .. Tissue examined microscopically
 X .. Lesion present
 I .. Insufficient tissue

M .. Missing tissue
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 BLANK .. Not examined microscopically