

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

P04: NEOPLASMS BY INDIVIDUAL ANIMAL
Cobalt
CAS Number: 7440-48-4

Date Report Requested: 01/18/2012
Time Report Requested: 14:48:11
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

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FISCHER 344-TACONIC RATS MALE	DAY ON TEST																									males (cont...)
	0383	0681	0662	0669	0722	0681	0663	0737	0672	0664	0574	0733	0722	0562	0728	0675	0773	0668	0575	0778	0680	0711	0666	0668		
Control	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000		
ANIMAL ID	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000	0000		
	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	

Spinal Cord +

RESPIRATORY SYSTEM

Larynx	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Lung	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Alveolar/Bronchiolar Adenoma		X																						
Alveolar/Bronchiolar Adenoma, Multiple																			X					
Leukemia Mononuclear				X	X	X			X	X			X						X		X	X		
Pheochromocytoma Malignant, Metastatic, Adrenal Medulla																								
Squamous Cell Carcinoma, Metastatic, Skin																								
Nose	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	I	+	+	+	+	+
Leukemia Mononuclear				X					X													X		
Trachea	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+

SPECIAL SENSES SYSTEM

Ear																								+
Eye	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Harderian Gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Zymbal's Gland	+						+			+														
Adenoma																								
Carcinoma	X						X			X														

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FISCHER 344-TACONIC RATS MALE Control		DAY ON TEST																							* TOTALS
		0730	0729	0728	0727	0726	0725	0724	0723	0722	0721	0720	0719	0718	0717	0716	0715	0714	0713	0712	0711	0710	0709	0708	
ANIMAL ID		0026	0027	0028	0029	0030	0031	0032	0033	0034	0035	0036	0037	0038	0039	0040	0041	0042	0043	0044	0045	0046	0047	0048	0049

ALIMENTARY SYSTEM

Esophagus	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
Intestine Large, Cecum	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	49
Intestine Large, Colon	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
Intestine Large, Rectum	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
Intestine Small, Duodenum	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
Intestine Small, Ileum	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	48
Intestine Small, Jejunum	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	48
Liver	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
Leukemia Mononuclear		X		X		X	X	X	X	X							X		X	X					21
Mesentery	+		+							+	+				+		+		+						18
Leukemia Mononuclear																	X								1
Mesothelioma Malignant										X					X										2
Pancreas	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
Leukemia Mononuclear														X						X					3
Mixed Tumor Malignant									X																1
Salivary Glands	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
Adenoma, Tubular																X									1
Stomach, Forestomach	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50

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	0730	0732	0739	0739	0739	0739	0739	0739	0739	0739	0739	0739	0739	0739	0739	0739	0739	0739	0739	0739	0739	0739	0739	
ANIMAL ID	0026	0007	0008	0009	0000	0001	0002	0003	0004	0005	0006	0007	0008	0009	0010	0011	0012	0013	0014	0015	0016	0017	0018	
Leukemia Mononuclear																							1	
Stomach, Glandular Leukemia Mononuclear	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50 1	
CARDIOVASCULAR SYSTEM																								
Blood Vessel																						+	1	
Heart	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50	
Leukemia Mononuclear						X					X												6	
Schwannoma Malignant																							1	
ENDOCRINE SYSTEM																								
Adrenal Cortex	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50	
Leukemia Mononuclear						X				X	X						X						8	
Adrenal Medulla	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50	
Leukemia Mononuclear						X				X	X						X						8	
Pheochromocytoma Benign			X					X		X	X				X		X		X	X			11	
Pheochromocytoma Malignant																X							2	
Bilateral, Pheochromocytoma Benign																						X	4	
Islets, Pancreatic	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50	
Carcinoma																						X	2	
Parathyroid Gland	+	+	+	+	+	M	+	+	+	+	+	M	M	+	+	+	+	+	+	+	M	+	45	
Leukemia Mononuclear											X												1	
Pituitary Gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50	

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	070	073	077	079	072	075	076	078	079	082	083	086	087	089	091	092	094	095	096	097	098	099	100	103		
Control	0026	0007	0008	0009	0000	0001	0002	0003	0004	0005	0006	0007	0008	0009	0010	0011	0012	0013	0014	0015	0016	0017	0018	0019		

Leukemia Mononuclear										X																2	
Pars Distalis, Adenoma						X	X	X	X				X		X	X			X	X			X	X			27
Thyroid Gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	M	+	+	+	49	
Leukemia Mononuclear													X													1	
C-cell, Adenoma						X			X										X							4	
C-cell, Carcinoma																				X						1	
Follicular Cell, Carcinoma																										2	

GENERAL BODY SYSTEM

NONE

GENITAL SYSTEM

Epididymis	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
Mesothelioma Malignant										X						X										2
Preputial Gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
Adenoma			X																							1
Carcinoma																		X								2
Prostate	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
Adenoma																				X						1
Leukemia Mononuclear															X											3
Mesothelioma Malignant										X																1
Seminal Vesicle	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
Testes	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
Leukemia Mononuclear																										1

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	0730	0722	0722	0722	0722	0713	0708	0706	0706	0706	0702	0701	0701	0701	0701	0701	0701	0701	0701	0701	0701	0701	0701		
Control	00026	00027	00028	00029	00030	00031	00032	00033	00034	00035	00036	00037	00038	00039	00040	00041	00042	00043	00044	00045	00046	00047	00048	00049	00050

Mesothelioma Malignant									X							X									2
Bilateral, Interstitial Cell, Adenoma	X		X	X	X				X	X		X				X	X	X			X		X		23
Interstitial Cell, Adenoma		X				X	X	X				X									X		X		12

HEMATOPOIETIC SYSTEM

Bone Marrow	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50	
Leukemia Mononuclear																							X		1	
Lymph Node		+							+													+		+	+	12
Axillary, Deep Cervical, Renal, Leukemia Mononuclear																									1	
Lumbar, Renal, Leukemia Mononuclear																									1	
Pancreatic, Renal, Leukemia Mononuclear										X															3	
Renal, Leukemia Mononuclear		X																				X			3	
Lymph Node, Bronchial	M	+	M	M	+	+	+	+	M	M	+	+	+	+	+	+	+	+	+	+	+	+	+	+	27	
Leukemia Mononuclear						X		X														X			7	
Lymph Node, Mandibular	M	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	48	
Leukemia Mononuclear		X						X		X												X			9	
Lymph Node, Mediastinal	+	+	+	+	M	+	+	+	+	+	+	+	+	+	+	M	+	+	+	+	+	+	+	+	46	
Leukemia Mononuclear								X		X												X			8	
Lymph Node, Mesenteric	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	M	+	+	49
Leukemia Mononuclear						X		X		X												X			7	
Spleen	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50	
Leukemia Mononuclear		X		X		X	X	X	X	X	X											X	X	X	21	

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

Thymus	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	M	+	46
Leukemia Mononuclear																		X								4

INTEGUMENTARY SYSTEM

Mammary Gland	+	M	M	+	+	M	M	M	M	+	M	+	M	+	+	+	M	+	+	+	+	+	+	+	M	31
Carcinoma																										1
Fibroadenoma																										1

Skin	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
Basal Cell Adenoma																					X					2
Hamartoma										X																1
Keratoacanthoma																					X				X	4
Leukemia Mononuclear																										1
Squamous Cell Carcinoma													X													1
Trichoepithelioma																										2
Subcutaneous Tissue, Fibroma								X																		2
Subcutaneous Tissue, Lipoma																										2

MUSCULOSKELETAL SYSTEM

Bone	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
Skeletal Muscle																										1
Mesothelioma Malignant										X																1

NERVOUS SYSTEM

Brain	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
Astrocytoma Malignant																										1

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

Spinal Cord 1

RESPIRATORY SYSTEM

Larynx 50

Lung 50

Alveolar/Bronchiolar Adenoma 1

Alveolar/Bronchiolar Adenoma, Multiple 1

Leukemia Mononuclear 18

Pheochromocytoma Malignant, Metastatic, Adrenal Medulla 1

Squamous Cell Carcinoma, Metastatic, Skin 1

Nose 48

Leukemia Mononuclear 6

Trachea 50

SPECIAL SENSES SYSTEM

Ear 1

Eye 50

Harderian Gland 50

Zymbal's Gland 4

Adenoma 1

Carcinoma 3

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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
FISCHER 344-TACONIC RATS MALE Control		7	7	7	7	7	6	6	6	7	6	5	7	7	5	4	7	6	6	7	7	6	7	5	6	3
		3	2	2	2	2	1	8	6	2	9	1	2	2	1	4	2	9	7	3	2	7	2	9	7	6
	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
		2	2	2	2	3	3	3	3	3	3	3	3	3	3	4	4	4	4	4	4	4	4	4	4	5
		6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0
* TOTALS																										

URINARY SYSTEM

Kidney	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
Leukemia Mononuclear										X								X								7
Urinary Bladder	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
Leukemia Mononuclear																										2
Mesothelioma Malignant										X																1

SYSTEMIC LESIONS

Multiple Organ	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50	
Leukemia Mononuclear		X		X		X	X	X	X	X								X		X	X					21
Mesothelioma Malignant									X					X												2

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

P04: NEOPLASMS BY INDIVIDUAL ANIMAL
Cobalt
CAS Number: 7440-48-4

Date Report Requested: 01/18/2012
Time Report Requested: 14:48:11
First Dose M/F: 05/08/06 / 05/08/06
Lab: BNW

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

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	X																								
Leukemia Mononuclear	X	X	X			X	X			X	X	X	X	X						X	X	X			
Mesentery			+																						+
Pancreas	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Leukemia Mononuclear																									
Acinus, Adenoma																									
Salivary Glands	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Stomach, Forestomach	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Squamous Cell Papilloma																									

* .. 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

P04: NEOPLASMS BY INDIVIDUAL ANIMAL
 Cobalt
 CAS Number: 7440-48-4

Date Report Requested: 01/18/2012
 Time Report Requested: 14:48:11
 First Dose M/F: 05/08/06 / 05/08/06
 Lab: BNW

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

Stomach, Glandular

+ +

Tooth

+

CARDIOVASCULAR SYSTEM

Blood Vessel

+

Heart

+ +

Alveolar/Bronchiolar Carcinoma, Metastatic,
Lung

X X

Leukemia Mononuclear
Schwannoma Malignant

X X

ENDOCRINE SYSTEM

Adrenal Cortex

+ +

Leukemia Mononuclear

X X

Adrenal Medulla

+ +

Leukemia Mononuclear

X X

Pheochromocytoma Benign

X X

Pheochromocytoma Malignant

X X

Bilateral, Pheochromocytoma Benign

X X

Islets, Pancreatic

+ +

Adenoma

X X

Carcinoma

X X

Parathyroid Gland

+ 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
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Experiment Number: 60311 - 05
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 Cobalt
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 Lab: BNW

| FISCHER 344-TACONIC RATS MALE | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | | | males
(cont...) |
|-------------------------------|-------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|--------------------|
| | 0540 | 0730 | 0772 | 0622 | 0708 | 0678 | 0776 | 0677 | 0776 | 0777 | 0676 | 0777 | 0777 | 0676 | 0666 | 0575 | 0776 | 0666 | 0666 | 0666 | 0575 | 0666 | 0677 | 0677 | | |
| 1.25 mg/m3 | ANIMAL ID | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | | |
| | 2200 | 2200 | 2200 | 2200 | 2200 | 2200 | 2200 | 2200 | 2200 | 2200 | 2200 | 2200 | 2200 | 2200 | 2200 | 2200 | 2200 | 2200 | 2200 | 2200 | 2200 | 2200 | 2200 | 2200 | | |
| | 0001 | 0002 | 0003 | 0004 | 0005 | 0006 | 0007 | 0008 | 0009 | 0010 | 0011 | 0012 | 0013 | 0014 | 0015 | 0016 | 0017 | 0018 | 0019 | 0020 | 0021 | 0022 | 0023 | 0024 | 0025 | |

| | | | | | | | | | | | | | | | | | | | | | | | | | |
|----------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Pituitary Gland | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | |
| Leukemia Mononuclear | | | | | | | | | | | | | | | | | | | | | | | | | |
| Pars Distalis, Adenoma | | | | X | X | | X | X | X | X | | | | | X | X | X | X | | X | | | X | X | X |
| Pars Intermedia, Adenoma | | | | | | | | | | | | | | | | | | | | | | | | | |
| Thyroid Gland | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | |
| C-cell, Adenoma | | | | | | | | | | | | | | | | | | | | | | | | | |
| C-cell, Carcinoma | | | | | | | | | X | X | | | | | | | | | | | | | | X | |
| Follicular Cell, Carcinoma | | | | | | | | | | | | | X | | | | | | | | | | | | |

GENERAL BODY SYSTEM

NONE

GENITAL SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | | |
|------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Epididymis | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Mesothelioma Malignant | | | | | | | | | | | | | | | | | | | | | | | X | X |
| Penis | | | | | | | | | | | | | | | | | | | | | | | | |
| Preputial Gland | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Adenoma | | | | | | | | | | | | | | | | | | | | | | | | X |
| Prostate | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Leukemia Mononuclear | | | | | | | | | | | | | | | | | | | | | | | | |
| Seminal Vesicle | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Leukemia Mononuclear | | | | | | | | | | | | | | | | | | | | | | | | |
| Testes | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |

* .. 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
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 Species/Strain: RATS/F344/N Tac

P04: NEOPLASMS BY INDIVIDUAL ANIMAL
 Cobalt
 CAS Number: 7440-48-4

Date Report Requested: 01/18/2012
 Time Report Requested: 14:48:11
 First Dose M/F: 05/08/06 / 05/08/06
 Lab: BNW

| FISCHER 344-TACONIC RATS MALE | | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | | | males
(cont...) |
|---|--|-------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|--------------------|
| 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 | | 5 | 7 | 7 | 6 | 7 | 6 | 7 | 6 | 7 | 7 | 6 | 7 | 7 | 6 | 6 | 5 | 7 | 6 | 6 | 6 | 6 | 6 | 5 | 6 | 7 | |
| Mesothelioma Malignant | | | | | | | | | | | | | | | | | | | | X | | X | | | | | |
| Bilateral, Interstitial Cell, Adenoma | | | X | X | | X | | | | | X | X | X | X | | | X | | | X | | | | X | X | | |
| Interstitial Cell, Adenoma | | X | | | X | | X | X | X | | | | | X | | | | | X | X | X | | | | | | |
| HEMATOPOIETIC SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Bone Marrow | | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | | |
| Leukemia Mononuclear | | | | | | | | | | | | | | | | | | | | | X | | | | | | |
| Lymph Node | | | | | | + | + | | | | | | | | | | | + | | | | | | | | | |
| Lumbar, Leukemia Mononuclear | | | | | | | | | | | | | | | | | | | | | | | | X | | | |
| Pancreatic, Leukemia Mononuclear | | | | | | | | X | | | | | | | | | | | | | | | | X | | | |
| Pancreatic, Renal, Leukemia Mononuclear | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Renal, Leukemia Mononuclear | | | | | | | | | | | | | | | | | | | | | | | | | X | | |
| Lymph Node, Bronchial | | + | + | + | + | M | M | + | M | + | M | M | + | M | M | M | M | + | M | + | M | M | + | + | M | M | |
| Leukemia Mononuclear | | | | | | | | X | | | | | | | | | | | | | | | | X | | | |
| Lymph Node, Mandibular | | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | M | + | + | |
| Carcinoma, Metastatic, Zymbal'S Gland | | | | | | X | | | | | | | | | | | | | | | | | | | | | |
| Leukemia Mononuclear | | | | | | | | X | X | | | | | | | | | | | | X | | X | | | | |
| Lymph Node, Mediastinal | | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | M | + | + | + | + | + | + | + | + | | |
| Leukemia Mononuclear | | | | | | | | X | | | | | X | | | | | | | | X | | X | | | | |
| Lymph Node, Mesenteric | | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | | |
| Leukemia Mononuclear | | | | | | | | | | | | | | | | | | | | | X | | X | | | | |
| Spleen | | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | | |
| 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

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 Cobalt
CAS Number: 7440-48-4

Date Report Requested: 01/18/2012
Time Report Requested: 14:48:11
First Dose M/F: 05/08/06 / 05/08/06
Lab: BNW

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

* .. Total animals with tissue examined microscopically; Total animals with tumor
 + .. Tissue examined microscopically
 X .. Lesion present
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| FISCHER 344-TACONIC RATS MALE
1.25 mg/m3 | DAY ON TEST | | | | | | | | | | | | | | | | | | | | ANIMAL ID | males
(cont...) | | | | | |
|---|-------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-----------|--------------------|------|------|------|------|------|
| | 0540 | 0730 | 0772 | 0622 | 0708 | 0663 | 0778 | 0675 | 0779 | 0779 | 0664 | 0770 | 0779 | 0669 | 0664 | 0553 | 0773 | 0667 | 0666 | 0663 | | | 0577 | 0664 | 0667 | 0558 | 0668 |
| Lung | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Alveolar/Bronchiolar Adenoma | | | | | | | | X | | | | | | | X | X | | | | | | | | | | X | |
| Alveolar/Bronchiolar Adenoma, Multiple | | | | | | | | | | | X | | | | | | | | | | | | | | | | X |
| Alveolar/Bronchiolar Carcinoma | | | | | X | | | | | | | | | | X | | | | | | | | | | | | |
| Alveolar/Bronchiolar Carcinoma, Multiple | | | X | | | | | | | | | | | | | | | | | | | | | | | | |
| Carcinoma, Metastatic, Zymbal'S Gland | | | | | X | | | | | | | | | | | | | | | | | | | | | | |
| Cystic Keratinizing Epithelioma | | | | | X | | | | | | | | | | | | | | | | | | | | | | |
| Leukemia Mononuclear | X | X | | | | X | X | | | X | X | X | X | X | | | | X | | X | X | X | | | | | |
| Mediastinum, Alveolar/Bronchiolar Carcinoma, Metastatic, Lung | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Nose | + | + | + | + | + | + | + | I | + | + | + | A | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Leukemia Mononuclear | X | | | | | X | | | | | | | | | | | | | | | | | | | | | |
| Trachea | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| SPECIAL SENSES SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Ear | | | | | | | | | | | | | | | | | | | | | | | | | | | + |
| Eye | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Harderian Gland | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Zymbal's Gland Carcinoma | | | | | | + | | | | | | | | | + | | | | | | | | | | | | X |
| URINARY SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Kidney | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Leukemia Mononuclear | | | | | | | | | | | | | X | | | | | | | | | | | | | | |

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

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| | | | | | | | | | | | | | | | | | | | | | | | | | |
|-------------------------------|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------------------|-------|
| FISCHER 344-TACONIC RATS MALE | DAY ON TEST | 0540 | 0730 | 0722 | 0624 | 0708 | 0673 | 0725 | 0779 | 0779 | 0722 | 0684 | 0729 | 0669 | 0664 | 0533 | 0704 | 0667 | 0667 | 0663 | 0577 | 0684 | 0729 | males
(cont...) | |
| | 1.25 mg/m3 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | | |
| | ANIMAL ID | 02001 | 00003 | 00004 | 00005 | 00006 | 00007 | 00008 | 00009 | 00010 | 00011 | 00012 | 00013 | 00014 | 00015 | 00016 | 00017 | 00018 | 00019 | 00020 | 00021 | 00022 | 00023 | 00024 | 00025 |

Renal Tubule, Adenoma

Urinary Bladder

+ +

SYSTEMIC LESIONS

Multiple Organ
 Leukemia Mononuclear
 Mesothelioma Malignant

+
 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

P04: NEOPLASMS BY INDIVIDUAL ANIMAL
 Cobalt
 CAS Number: 7440-48-4

Date Report Requested: 01/18/2012
 Time Report Requested: 14:48:11
 First Dose M/F: 05/08/06 / 05/08/06
 Lab: BNW

| DAY ON TEST | FISCHER 344-TACONIC RATS MALE | | | | | | | | | | | | | | | | | | | | | | | | * TOTALS |
|-------------|-------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|
| | 0729 | 0729 | 0729 | 0730 | 0730 | 0715 | 0715 | 0629 | 0629 | 0500 | 0500 | 0500 | 0500 | 0500 | 0500 | 0500 | 0500 | 0500 | 0500 | 0500 | 0500 | 0500 | 0500 | 0500 | |
| 1.25 mg/m3 | 002226 | 000222 | 000222 | 000222 | 000223 | 000223 | 000223 | 000223 | 000223 | 000223 | 000223 | 000223 | 000223 | 000223 | 000223 | 000223 | 000223 | 000223 | 000223 | 000223 | 000223 | 000223 | 000223 | 000223 | 000223 |
| ANIMAL ID | 002226 | 000222 | 000222 | 000222 | 000223 | 000223 | 000223 | 000223 | 000223 | 000223 | 000223 | 000223 | 000223 | 000223 | 000223 | 000223 | 000223 | 000223 | 000223 | 000223 | 000223 | 000223 | 000223 | 000223 | 000223 |

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 |
| Leukemia Mononuclear | | X | | X | | | | X | | | | | | | | | | | X | | X | | | X | 19 |
| Mesentery | | | | | | | + | | | | | | | | | | | | | | | | | | 4 |
| Pancreas | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Leukemia Mononuclear | | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| Acinus, Adenoma | | | | | | | | | | | | | | | | | | | | | X | | | | 1 |
| Salivary Glands | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Stomach, Forestomach | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Squamous Cell Papilloma | | | | | | | | | | | 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
 BLANK .. Not examined microscopically

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

P04: NEOPLASMS BY INDIVIDUAL ANIMAL
 Cobalt
 CAS Number: 7440-48-4

Date Report Requested: 01/18/2012
 Time Report Requested: 14:48:11
 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 | |
|---|-------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|--|
| | 0729 | 0729 | 0729 | 0730 | 0730 | 0731 | 0731 | 0731 | 0731 | 0731 | 0731 | 0731 | 0731 | 0731 | 0731 | 0731 | 0731 | 0731 | 0731 | 0731 | 0731 | 0731 | 0731 | 0731 | | |
| ANIMAL ID | 002266 | 002267 | 002268 | 002269 | 002270 | 002271 | 002272 | 002273 | 002274 | 002275 | 002276 | 002277 | 002278 | 002279 | 002280 | 002281 | 002282 | 002283 | 002284 | 002285 | 002286 | 002287 | 002288 | 002289 | 002290 | |
| Pituitary Gland | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Leukemia Mononuclear | | | | | | | | | | | | | | | | | | | | | | | | | 4 | |
| Pars Distalis, Adenoma | | | X | X | | X | X | X | | X | X | | X | X | X | X | X | X | X | | X | X | | | 32 | |
| Pars Intermedia, Adenoma | | | | | | | | | | | | | | | | | | | | | | | | | 1 | |
| Thyroid Gland | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| C-cell, Adenoma | | X | X | X | | | | | | | | X | | | | | X | | | | | | | | 8 | |
| C-cell, Carcinoma | X | | | | | | | | | | | | | | | | | | | | | | | | 2 | |
| Follicular Cell, Carcinoma | | | | | | | | | | X | | | | | | | | | | | X | | | | 2 | |
| GENERAL BODY SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | |
| NONE | | | | | | | | | | | | | | | | | | | | | | | | | | |
| GENITAL SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Epididymis | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Mesothelioma Malignant | | | | | | | | | | | | | X | | | | | | | | | | | | 3 | |
| Penis | | | | | | | | | | | | | | | | | | | | | | | | | 1 | |
| Preputial Gland | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Adenoma | | | | | | | | | | | | | | | | | | | | | | | | | 1 | |
| Prostate | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Leukemia Mononuclear | | X | | | | | | | | | | | | | | | | | | | | | | | 1 | |
| Seminal Vesicle | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Leukemia Mononuclear | | X | | | | | | | | | | | | | | | | | | | | | | | 1 | |
| Testes | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 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

P04: NEOPLASMS BY INDIVIDUAL ANIMAL
Cobalt
CAS Number: 7440-48-4

Date Report Requested: 01/18/2012
Time Report Requested: 14:48:11
First Dose M/F: 05/08/06 / 05/08/06
Lab: BNW

| | | 07 | 07 | 07 | 07 | 07 | 07 | 06 | 07 | 05 | 06 | 05 | 07 | 07 | 07 | 06 | 06 | 05 | 06 | 04 | 07 | 04 | 07 | 07 | 06 | 05 | |
|-------------------------------|--|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|--|
| DAY ON TEST | | 7 | 7 | 7 | 7 | 7 | 7 | 6 | 7 | 5 | 6 | 5 | 7 | 7 | 7 | 6 | 6 | 5 | 6 | 4 | 7 | 4 | 7 | 7 | 6 | 5 | |
| FISCHER 344-TACONIC RATS MALE | | 29 | 29 | 29 | 30 | 30 | 30 | 29 | 29 | 28 | 30 | 29 | 29 | 29 | 29 | 28 | 28 | 27 | 26 | 24 | 23 | 23 | 22 | 21 | 20 | 19 | |
| 1.25 mg/m3 | | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | |
| ANIMAL ID | | 22 | 22 | 22 | 22 | 22 | 22 | 22 | 22 | 22 | 22 | 22 | 22 | 22 | 22 | 22 | 22 | 22 | 22 | 22 | 22 | 22 | 22 | 22 | 22 | 22 | |
| | | 22 | 22 | 22 | 22 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 55 | |
| | | 66 | 77 | 88 | 99 | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | | | | | | | | | | | | |

| | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---------------------------------------|---|---|---|---|---|---|--|---|---|--|--|---|---|---|---|--|---|---|--|---|--|---|---|--|--|--|-----------|
| Mesothelioma Malignant | | | | | | | | | | | | | X | | | | | | | | | | | | | | 3 |
| Bilateral, Interstitial Cell, Adenoma | | 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 | |
| Leukemia Mononuclear | | | | | | | | | | | | | | | | | | | | | | | | | X | | 2 |
| Lymph Node | | | | + | + | | | | | | | | | | | | | | | | | | + | + | | + | 9 |
| Lumbar, Leukemia Mononuclear | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| Pancreatic, Leukemia Mononuclear | | | | | | | | | | | | | | | | | | | | | | | | | | | 2 |
| Pancreatic, Renal, Leukemia Mononuclear | | | | | | | | | | | | | | | | | | | | | | | | | X | | 1 |
| Renal, Leukemia Mononuclear | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| Lymph Node, Bronchial | + | M | + | M | M | + | M | + | + | + | M | M | M | + | + | M | M | + | M | + | M | + | + | + | + | 25 | |
| Leukemia Mononuclear | | | | | | | | | | | | | | | | | | | | | | | | | X | | 3 |
| Lymph Node, Mandibular | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 49 |
| Carcinoma, Metastatic, Zymbal'S Gland | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| Leukemia Mononuclear | | | | | | | | | | | | | | | | | | X | X | | | | | | X | | 7 |
| Lymph Node, Mediastinal | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | | M | + | + | + | + | 48 | |
| Leukemia Mononuclear | | | | | | | | | | | | | | | | | | | X | | | | | | X | | 6 |
| Lymph Node, Mesenteric | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Leukemia Mononuclear | | X | | | | | | | | | | | | | | | | | | | | X | | | | 4 | |
| Spleen | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Leukemia Mononuclear | X | X | | X | | | X | | | | | | X | | | | | X | X | | X | | | X | | 25 | |

* .. 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

P04: NEOPLASMS BY INDIVIDUAL ANIMAL
 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 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 | 07 | 07 | 07 | |
| 1.25 mg/m3 | 29 | 29 | 29 | 29 | 29 | 29 | 29 | 29 | 29 | 29 | 29 | 29 | 29 | 29 | 29 | 29 | 29 | 29 | 29 | 29 | 29 | 29 | 29 | 29 | |
| ANIMAL ID | 002226 | 000022 | 000022 | 000022 | 000022 | 000022 | 000022 | 000022 | 000022 | 000022 | 000022 | 000022 | 000022 | 000022 | 000022 | 000022 | 000022 | 000022 | 000022 | 000022 | 000022 | 000022 | 000022 | 000022 | |

| | | | | | | | | | | | | | | | | | | | | | | | | | | |
|----------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|----|
| Thymus | + | + | + | + | M | + | + | M | + | + | M | + | + | + | + | + | + | + | M | + | + | + | + | M | + | 44 |
| Leukemia Mononuclear | | X | | | | | | | | | | | | | | | | | | | | | | | | 2 |

INTEGUMENTARY SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | | | | |
|------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|----|
| Mammary Gland | + | M | M | + | M | + | + | + | + | M | + | + | + | + | M | + | M | M | M | M | M | + | + | M | + | 32 |
| Fibroadenoma | | | | | | | | | | | | | X | | | | | | | | | | | | | 1 |
| Skin | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Keratoacanthoma | X | | | | X | | | | X | | | | | | | | | | | X | | | | | | 6 |
| Squamous Cell Papilloma | | | | | | | | | | | | | | | | | X | | | | | | | | | 1 |
| Lip, Squamous Cell Papilloma | | | | | | | | | | | | | | | X | | | | | | | | | | | 1 |
| Pinna, Neural Crest Tumor | | | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| Subcutaneous Tissue, Fibroma | | | | X | | | | | | | | | | | | | | | | | | | | | | 3 |
| Subcutaneous Tissue, Lipoma | | | | | | | | | | | | | | | | | | | | X | | | | | | 1 |

MUSCULOSKELETAL SYSTEM

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

NERVOUS SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---------------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|----|
| Brain | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Carcinoma, Metastatic, Zymbal'S Gland | | | | | | | | | | | X | | | | | | | | | | | | | | | 1 |
| Leukemia Mononuclear | | | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| Oligodendroglioma Malignant | | | | | | | | X | | | | | | | 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

P04: NEOPLASMS BY INDIVIDUAL ANIMAL
 Cobalt
 CAS Number: 7440-48-4

Date Report Requested: 01/18/2012
 Time Report Requested: 14:48:11
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 Lab: BNW

| FISCHER 344-TACONIC RATS MALE
1.25 mg/m3 | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | | * TOTALS |
|---|-------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|
| | 0729 | 0729 | 0729 | 0730 | 0730 | 0731 | 0731 | 0732 | 0732 | 0733 | 0733 | 0734 | 0734 | 0735 | 0735 | 0736 | 0736 | 0737 | 0737 | 0738 | 0738 | 0739 | 0739 | | |
| ANIMAL ID | 002226 | 002227 | 002228 | 002229 | 002230 | 002231 | 002232 | 002233 | 002234 | 002235 | 002236 | 002237 | 002238 | 002239 | 002240 | 002241 | 002242 | 002243 | 002244 | 002245 | 002246 | 002247 | 002248 | 002249 | |
| Lung | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Alveolar/Bronchiolar Adenoma | | | | | | | | | | | X | | | | | | | X | | X | | | | 7 | |
| Alveolar/Bronchiolar Adenoma, Multiple | | | | X | | | | | | | | | | | | | | | | | | | | 3 | |
| Alveolar/Bronchiolar Carcinoma | | | X | | X | X | | | X | X | | | X | X | | | | | | | | X | | 10 | |
| Alveolar/Bronchiolar Carcinoma, Multiple | X | | | | | | | X | | | | | | X | | | | | | X | X | | | 6 | |
| Carcinoma, Metastatic, Zymbal'S Gland | | | | | | | | | | | | | | | | | | | | | | | | 1 | |
| Cystic Keratinizing Epithelioma | X | | | | | | | | | | | | | | | | | | | | | | | 1 | |
| Leukemia Mononuclear | | X | | X | | | | | | | | | | | | | X | | X | | | | X | 18 | |
| Mediastinum, Alveolar/Bronchiolar Carcinoma, Metastatic, Lung | | | | | | | | | | | | | | X | | | | | | | X | | | 2 | |
| Nose | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 47 | |
| Leukemia Mononuclear | | | | | | | | | | | | | | | | | | | | | | | X | 3 | |
| Trachea | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| SPECIAL SENSES SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | |
| Ear | | | | | + | | | | | | | + | | | | | | | + | | | | + | 5 | |
| Eye | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Harderian Gland | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Zymbal's Gland | | | | | | | | | | | | | | | | | | | | | | | | 3 | |
| Carcinoma | | | | | | | | | | | | | | | | | | | | | | | X | 3 | |
| URINARY SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | |
| Kidney | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Leukemia Mononuclear | | | | | | | | | | | | | | | | | | | | | | | 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

P04: NEOPLASMS BY INDIVIDUAL ANIMAL

Date Report Requested: 01/18/2012

Test Type: CHRONIC

Cobalt

Time Report Requested: 14:48:11

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 MALE
1.25 mg/m3 | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | | | * TOTALS | | |
|---|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------|--|----|
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29 | 07
29 | 07
23 | 07
33 | 07
15 | 07
11 | 07
09 | 06
09 | 07
08 | 05
03 | 05
06 | 07
02 | 07
02 | 07
00 | 06
01 | 06
05 | 05
02 | 06
01 | 07
03 | 06
03 | 07
02 | 07
01 | 06
03 | 05
03 | | | |
| ANIMAL ID | 00
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06 | 00
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| Renal Tubule, Adenoma | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| Urinary Bladder | | | | | | | | | | | | | | | | | | | | | | | | | | | | 50 |
| SYSTEMIC LESIONS | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Multiple Organ | | | | | | | | | | | | | | | | | | | | | | | | | | | | 50 |
| Leukemia Mononuclear | 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
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

P04: NEOPLASMS BY INDIVIDUAL ANIMAL
 Cobalt
 CAS Number: 7440-48-4

Date Report Requested: 01/18/2012
 Time Report Requested: 14:48:11
 First Dose M/F: 05/08/06 / 05/08/06
 Lab: BNW

| FISCHER 344-TACONIC RATS MALE | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | | | males
(cont...) |
|-------------------------------|-------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|--------------------|
| | 0719 | 0705 | 0667 | 0729 | 0779 | 0663 | 0779 | 0662 | 0752 | 0621 | 0788 | 0630 | 0700 | 0622 | 0643 | 0738 | 0673 | 0773 | 0663 | 0721 | 0662 | 0558 | 0554 | 0665 | | |
| 2.5 mg/m3 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | | |
| ANIMAL ID | 4001 | 4002 | 4003 | 4004 | 4005 | 4006 | 4007 | 4008 | 4009 | 4010 | 4011 | 4012 | 4013 | 4014 | 4015 | 4016 | 4017 | 4018 | 4019 | 4020 | 4021 | 4022 | 4023 | 4024 | 4025 | |

ALIMENTARY SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Esophagus | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Intestine Large, Cecum | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Intestine Large, Colon
Carcinoma | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Intestine Large, Rectum | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Intestine Small, Duodenum | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Intestine Small, Ileum | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Intestine Small, Jejunum | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Liver
Leukemia Mononuclear | + | + | + | + | + | X | + | + | X | + | + | + | + | + | + | + | + | X | X | X | X | + | X | + |
| Mesentery
Lipoma | | | | | | + | | | + | | | | | + | | | | | | | | | + | |
| Pancreas
Leukemia Mononuclear | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | X |
| Salivary Glands
Schwannoma Malignant | + | + | + | + | + | + | + | + | + | + | X | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Stomach, Forestomach | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |

* .. 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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 Route: RESPIRATORY EXPOSURE WHOLE BODY
 Species/Strain: RATS/F344/N Tac

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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 MALE
2.5 mg/m3 | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | | | 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 | | | | | |
| | 7 | 7 | 6 | 7 | 7 | 6 | 7 | 6 | 7 | 6 | 7 | 6 | 7 | 6 | 6 | 7 | 6 | 7 | 6 | 7 | 6 | 7 | 6 | 5 | 5 | | 6 | | | |
| ANIMAL ID | 1 | 0 | 6 | 2 | 2 | 8 | 2 | 5 | 2 | 1 | 8 | 3 | 0 | 0 | 2 | 4 | 2 | 3 | 8 | 3 | 5 | 8 | 5 | 2 | 8 | 4 | 5 | 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 | | |
| | 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 | 4 | 4 | | |
| | 0 | 0 | 0 | 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 | | |
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | | |
| Stomach, Glandular | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | | |
| CARDIOVASCULAR SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Heart | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | | |
| Alveolar/Bronchiolar Carcinoma, Metastatic | | | | | | | | | | | | | | | | | | | X | | | | | | | | | | | |
| Leukemia Mononuclear | | | | | | X | | | X | | | | | | | | | | | | | X | | | | | | | | |
| Schwannoma Malignant | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ENDOCRINE SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Adrenal Cortex | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | | |
| Leukemia Mononuclear | | | | | | X | | | X | | | | | | | | | | | | | | | | X | | | | | |
| Adrenal Medulla | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | | |
| Leukemia Mononuclear | | | | | | X | | | X | | | | | | | | | | | | | X | | | | X | | | | |
| Pheochromocytoma Benign | | | | | | | X | | | | X | | | | | X | X | | | | X | | | X | X | | | X | | |
| Pheochromocytoma Malignant | | | | | | | | | | | | | | X | X | | | | | | | | | | | | | | | |
| Bilateral, Pheochromocytoma Benign | | | | X | X | | | X | X | X | | | X | | | | | X | X | | X | X | | X | X | | | | | |
| Islets, Pancreatic | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | | |
| Adenoma | X | X | | | | | | | X | | | | | | | | | | | | | | | | M | + | + | + | + | |
| Carcinoma | | | | | | | | X | | | | | | | | | | | X | 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 | | | | X | X | | | | | |
| Thyroid Gland | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | | |
| C-cell, Adenoma | | | | | | | | | 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

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 Cobalt
 CAS Number: 7440-48-4

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 Lab: BNW

| FISCHER 344-TACONIC RATS MALE | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | | | males
(cont...) |
|-------------------------------|-------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|---|--------------------|
| | 0719 | 0715 | 0677 | 0677 | 0676 | 0677 | 0676 | 0677 | 0676 | 0677 | 0676 | 0677 | 0676 | 0677 | 0676 | 0677 | 0676 | 0677 | 0676 | 0677 | 0676 | 0677 | 0676 | 0677 | | |
| 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 | | |
| ANIMAL ID | 0040 | 0004 | 0004 | 0004 | 0004 | 0004 | 0004 | 0004 | 0004 | 0004 | 0004 | 0004 | 0004 | 0004 | 0004 | 0004 | 0004 | 0004 | 0004 | 0004 | 0004 | 0004 | 0004 | 0004 | | |
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | |
| C-cell, Carcinoma | | | | | | | | | | | | | | | | | | | | | | | | | | |

GENERAL BODY SYSTEM
 NONE

GENITAL SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | | |
|--|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Epididymis | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Preputial Gland
Carcinoma | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Prostate
Pheochromocytoma Malignant, Metastatic,
Adrenal Medulla | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| 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 | | |

HEMATOPOIETIC SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Bone Marrow
Leukemia Mononuclear | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Lymph Node
Iliac, Leukemia Mononuclear | | | | | | | | | | | | | | | | | | | | | | | | |
| Pancreatic, 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

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 Species/Strain: RATS/F344/N Tac

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 Cobalt
 CAS Number: 7440-48-4

Date Report Requested: 01/18/2012
 Time Report Requested: 14:48:11
 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 | |
|-------------------------------|--|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FISCHER 344-TACONIC RATS MALE | | 7 | 7 | 6 | 7 | 7 | 6 | 7 | 6 | 7 | 6 | 7 | 6 | 6 | 7 | 6 | 7 | 6 | 7 | 6 | 7 | 6 | 7 | 6 | 5 | 5 | 6 | 6 | |
| 2.5 mg/m3 | | 1 | 0 | 6 | 2 | 2 | 8 | 2 | 5 | 2 | 8 | 3 | 0 | 0 | 2 | 4 | 2 | 3 | 8 | 3 | 8 | 3 | 2 | 1 | 2 | 8 | 4 | 5 | |
| ANIMAL ID | | 9 | 5 | 7 | 9 | 9 | 3 | 9 | 2 | 1 | 8 | 0 | 9 | 3 | 8 | 6 | 9 | 0 | 8 | 0 | 5 | 8 | 5 | 2 | 8 | 4 | 8 | 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 |
| | | 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 | 4 | |
| | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | |
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 5 | |

males
(cont...)

Pancreatic, Renal, Leukemia Mononuclear

Lymph Node, Bronchial
Histiocytic Sarcoma

Lymph Node, Mandibular
Leukemia Mononuclear

Lymph Node, Mediastinal
Histiocytic Sarcoma
Leukemia Mononuclear

Lymph Node, Mesenteric
Leukemia Mononuclear

Spleen
Leukemia Mononuclear

Thymus

INTEGUMENTARY SYSTEM

Mammary Gland

Skin
Basal Cell Adenoma
Basal Cell Carcinoma
Keratoacanthoma
Sebaceous Gland, Adenoma
Subcutaneous Tissue, Fibroma

| | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| M | M | M | + | M | M | M | M | + | M | + | M | + | + | M | M | M | M | + | M | + | M | M | + | M | | | |
| | | | | | | | | | | | | | | | | | | | X | | | | | | | | |
| + | + | + | + | + | + | + | + | + | + | X | + | + | + | + | + | + | + | + | + | + | + | X | | X | | + | + |
| + | M | M | + | + | + | + | + | + | + | + | M | + | + | + | M | + | + | | + | + | + | X | | | | | |
| | | | | | | | | | | | | | | | | | | | | X | | | | | | | |
| + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | M | + | + | + | + | + | + | + | + |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 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

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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 | |
|--|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|----------------------------|
| | 7 | 7 | 6 | 7 | 7 | 6 | 7 | 6 | 7 | 6 | 7 | 6 | 7 | 6 | 6 | 7 | 7 | 6 | 7 | 7 | 6 | 6 | 5 | 5 | 6 | |
| FISCHER 344-TACONIC RATS MALE | 1 | 0 | 6 | 2 | 2 | 8 | 2 | 5 | 2 | 8 | 3 | 0 | 0 | 2 | 4 | 2 | 3 | 8 | 3 | 2 | 1 | 2 | 8 | 4 | 5 | |
| 2.5 mg/m3 | 9 | 5 | 7 | 9 | 9 | 3 | 9 | 2 | 1 | 8 | 0 | 9 | 3 | 8 | 6 | 9 | 0 | 8 | 0 | 5 | 8 | 5 | 2 | 8 | 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 | 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 | 4 | 4 | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | |
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | males
(cont...) |
| Harderian Gland | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | |
| URINARY SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Kidney | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | |
| Alveolar/Bronchiolar Carcinoma, Metastatic, Lung | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Leukemia Mononuclear | | | | | | X | | | | | | | | | | | | | | | | | X | | | |
| Urinary Bladder | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | |
| SYSTEMIC LESIONS | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Multiple Organ | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | |
| Histiocytic Sarcoma | | | | | | | | | | | | | | | | | | | | | | | X | | | |
| Leukemia Mononuclear | | | | | | 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
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 CAS Number: 7440-48-4

Date Report Requested: 01/18/2012
 Time Report Requested: 14:48:11
 First Dose M/F: 05/08/06 / 05/08/06
 Lab: BNW

| FISCHER 344-TACONIC RATS MALE | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | | * TOTALS | | |
|-------------------------------|-------------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----------|----|----|
| | 06 | 05 | 07 | 06 | 07 | 05 | 07 | 07 | 07 | 07 | 06 | 06 | 06 | 04 | 05 | 07 | 06 | 07 | 07 | 06 | 06 | 07 | 07 | 07 | | 07 | |
| 2.5 mg/m3 | 09 | 08 | 02 | 08 | 02 | 09 | 01 | 02 | 03 | 03 | 01 | 08 | 05 | 07 | 03 | 02 | 05 | 03 | 01 | 07 | 06 | 01 | 00 | 02 | 00 | 03 | 08 |
| 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 | 00 | 00 | 00 |
| | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 |
| | 22 | 22 | 22 | 22 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 45 |
| | 66 | 77 | 88 | 99 | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 00 | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 00 | 00 | 00 |

ALIMENTARY SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-------------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|----|---------|
| Esophagus | + | + | + | + | + | + | + | + | M | + | + | + | + | + | M | + | + | + | + | + | + | + | + | + | + | + | 48 |
| Intestine Large, Cecum | + | + | + | + | + | + | + | + | + | + | + | A | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 49 |
| Intestine Large, Colon
Carcinoma | + | + | + | + | + | + | + | + | + | + | + | A | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 49
1 |
| Intestine Large, Rectum | + | + | + | + | + | + | + | + | + | + | + | A | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 49 |
| Intestine Small, Duodenum | + | + | + | + | + | + | + | + | + | + | + | A | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 49 |
| Intestine Small, Ileum | + | + | + | A | + | + | + | + | + | + | + | A | + | + | + | + | + | + | + | A | + | + | + | + | + | + | 47 |
| Intestine Small, Jejunum | + | + | + | + | + | + | + | + | + | + | + | A | + | + | + | + | + | + | + | A | + | + | + | + | + | + | 48 |
| Liver | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Leukemia Mononuclear | X | | | X | X | | | | | X | X | | | | | X | X | | X | X | X | | | | X | 18 | |
| Mesentery | + | | | | | | | | | + | | | | | | + | + | | | | | | | | | | 9 |
| Lipoma | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| Pancreas | + | + | + | + | + | + | + | + | + | + | + | A | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 49 |
| Leukemia Mononuclear | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| Salivary Glands | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Schwannoma Malignant | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| Stomach, Forestomach | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 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

P04: NEOPLASMS BY INDIVIDUAL ANIMAL

Cobalt

CAS Number: 7440-48-4

Date Report Requested: 01/18/2012

Time Report Requested: 14:48:11

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 |
|--|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|----|----------|
| | 0698 | 0583 | 0729 | 0689 | 0729 | 0598 | 0776 | 0779 | 0770 | 0680 | 0668 | 0662 | 0457 | 0532 | 0759 | 0664 | 0771 | 0661 | 0774 | 0677 | 0775 | 0770 | 0773 | | |
| ANIMAL ID | 00426 | 00447 | 00408 | 00444 | 00444 | 00000 | 00000 | 00000 | 00000 | 00000 | 00000 | 00000 | 00000 | 00000 | 00000 | 00000 | 00000 | 00000 | 00000 | 00000 | 00000 | 00000 | 00000 | | |
| Stomach, Glandular | + | + | M | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 49 | |
| CARDIOVASCULAR SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | |
| Heart | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Alveolar/Bronchiolar Carcinoma, Metastatic | | | | | | | | | | | | | | | | | | | | | | | | 1 | |
| Leukemia Mononuclear | | | | | | | | | | X | | X | | | | | | | | X | | | | 6 | |
| Schwannoma Malignant | X | | | | | | | | | | | | | | | | | | | | | | | 1 | |
| ENDOCRINE SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | |
| Adrenal Cortex | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Leukemia Mononuclear | | | | X | | | | | | X | | X | | | | X | | | X | X | X | | | 10 | |
| Adrenal Medulla | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Leukemia Mononuclear | | | | X | | | | | | X | | X | | | | X | | | X | X | X | | | 11 | |
| Pheochromocytoma Benign | X | | | X | | | | X | X | | | X | | | | | | | | | | X | X | 15 | |
| Pheochromocytoma Malignant | X | | | X | | | X | X | | | X | | | | | | | | | | | X | X | 9 | |
| Bilateral, Pheochromocytoma Benign | | | X | | X | X | X | | | X | X | | X | | | X | X | X | | X | | | | 22 | |
| Islets, Pancreatic | + | + | + | + | + | + | + | + | + | + | + | A | + | + | + | + | + | + | + | + | + | + | + | 48 | |
| Adenoma | X | | | | | | | | | X | | | | | | | | | | | | X | | 6 | |
| Carcinoma | | | | | | | | | | | | | | | | | | | | | | 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 | 31 | |
| Thyroid Gland | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| C-cell, Adenoma | X | | X | | | X | | | X | | | | | | | | | | | | | | | 8 | |

* .. 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
 CAS Number: 7440-48-4

Date Report Requested: 01/18/2012
 Time Report Requested: 14:48:11
 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 | | | | | |
|---|-------------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----------|----|----|----|----|----|
| | 06 | 05 | 07 | 06 | 07 | 05 | 07 | 07 | 07 | 07 | 06 | 06 | 06 | 04 | 05 | 07 | 06 | 07 | 07 | 06 | | 07 | 07 | 07 | 07 | |
| 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 | | |
| Pancreatic, Renal, Leukemia Mononuclear | | | | | | | | | | | | | | | | | | | | | | | | | X | 1 |
| Lymph Node, Bronchial
Histiocytic Sarcoma | + | M | M | + | M | M | + | + | M | M | + | + | + | M | + | + | M | M | M | + | + | + | M | + | M | 21 |
| Lymph Node, Mandibular
Leukemia Mononuclear | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | X | 50 |
| Lymph Node, Mediastinal
Histiocytic Sarcoma | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 1 | |
| Lymph Node, Mediastinal
Leukemia Mononuclear | | | | | | | | | | | | | | | | | | | | | | | | | X | 2 |
| Lymph Node, Mesenteric
Leukemia Mononuclear | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | X | 49 |
| Spleen
Leukemia Mononuclear | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | X | 50 |
| Thymus | X | | X | X | X | | | | | X | X | | | | | X | X | X | X | X | X | | | X | 22 | |
| | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | M | 47 |
| INTEGUMENTARY SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Mammary Gland | M | + | M | + | M | + | + | + | M | + | + | + | M | + | + | + | + | M | + | + | M | + | M | + | M | 30 |
| Skin | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Basal Cell Adenoma | | | | | | | | | | | | | | | | | | | | | | | | | 1 | |
| Basal Cell Carcinoma | | | | | | | | | | | | | | X | | | | | | | | | | | 1 | |
| Keratoacanthoma | | | X | | | | X | | | | | | | | | | | X | | | | | | | 7 | |
| Sebaceous Gland, Adenoma | | | | | | | | | | X | | | | | | | | | | | | | | | 1 | |
| Subcutaneous Tissue, Fibroma | | | | | | | | | | | | | | | | | | | | | | | | | 3 | |

* .. 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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2.5 mg/m3 | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | | | * TOTALS |
|--|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--|----------|
| | 0698 | 0583 | 0729 | 0689 | 0729 | 0578 | 0776 | 0777 | 0777 | 0666 | 0666 | 0442 | 0557 | 0722 | 0654 | 0731 | 0676 | 0776 | 0661 | 0700 | 0729 | 0775 | 0770 | 0773 | | |
| ANIMAL ID | 00426 | 00447 | 00408 | 00409 | 00400 | 00400 | 00400 | 00400 | 00400 | 00400 | 00400 | 00400 | 00400 | 00400 | 00400 | 00400 | 00400 | 00400 | 00400 | 00400 | 00400 | 00400 | 00400 | 00400 | | |
| Harderian Gland | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | | |
| URINARY SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Kidney | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | | |
| Alveolar/Bronchiolar Carcinoma, Metastatic, Lung | | | | | | | | | | | | | | | | | | | X | | | | | 1 | | |
| Leukemia Mononuclear | | | | | | | | | | | X | | | | | | | | X | | | | | 4 | | |
| Urinary Bladder | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | | |
| SYSTEMIC LESIONS | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Multiple Organ | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | | |
| Histiocytic Sarcoma | | | | | | | | | | | | | | | | | | | | | | | | 1 | | |
| Leukemia Mononuclear | X | | X | 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
 X .. Lesion present
 I .. Insufficient tissue

M .. Missing tissue
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 Cobalt
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 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 |
|--------------------------------------|-----------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|------------------------|
| FISCHER 344-TACONIC RATS MALE | | 7 | 6 | 6 | 5 | 5 | 6 | 7 | 7 | 6 | 6 | 7 | 7 | 7 | 7 | 7 | 7 | 5 | 6 | 7 | 6 | 6 | 7 | 7 |
| | | 3 | 9 | 2 | 1 | 5 | 4 | 3 | 1 | 7 | 9 | 2 | 1 | 2 | 2 | 2 | 2 | 7 | 8 | 1 | 9 | 1 | 2 | 2 |
| 5.0 mg/m3 | | 0 | 1 | 8 | 6 | 2 | 6 | 0 | 7 | 9 | 8 | 3 | 3 | 2 | 9 | 9 | 9 | 2 | 9 | 7 | 1 | 9 | 9 | 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 |
| | | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 |
| | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 |
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 |
| | | | | | | | | | | | | | | | | | | | | | | | | males (cont...) |

ALIMENTARY SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | |
|--|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Esophagus | + | + | + | + | + | + | + | + | + | M | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Intestine Large, Cecum | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Intestine Large, Colon | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Intestine Large, Rectum | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Intestine Small, Duodenum | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Intestine Small, Ileum
Leukemia Mononuclear | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Intestine Small, Jejunum | + | + | + | + | + | + | + | + | + | A | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Liver | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Alveolar/Bronchiolar Carcinoma, Metastatic, Lung | | | | | | | | | | | | | | | | | | | | | X | | |
| Carcinoma, Metastatic, Kidney
Hemangiosarcoma | | | | | | | | | | | | | | | | | | | | | | | |
| Hepatocellular Adenoma
Leukemia Mononuclear | | | | | | | X | | | X | | | | | | | | | | | X | | X |
| Mesentery | | | | | | | | | | | | | | | | | | | | | | | |
| Leukemia Mononuclear | | | | | | | | | | | | | | | | + | | | | | | | + |
| Pancreas | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Carcinoma, Metastatic, Kidney | | | | | | | | | | | | | | | | | | | | | | | X |

* .. 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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| FISCHER 344-TACONIC RATS MALE | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | | | males
(cont...) |
|-------------------------------|-------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|--------------------|
| | 0730 | 0691 | 0628 | 0516 | 0554 | 0662 | 0777 | 0777 | 0666 | 0666 | 0777 | 0777 | 0777 | 0777 | 0777 | 0777 | 0555 | 0666 | 0777 | 0666 | 0666 | 0777 | 0777 | 0447 | 0777 | |
| 5.0 mg/m3 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | |
| ANIMAL ID | 6601 | 6602 | 6603 | 6604 | 6605 | 6606 | 6607 | 6608 | 6609 | 6610 | 6611 | 6612 | 6613 | 6614 | 6615 | 6616 | 6617 | 6618 | 6619 | 6620 | 6621 | 6622 | 6623 | 6624 | 6625 | |

Leukemia Mononuclear

X

Salivary Glands

+ +

Stomach, Forestomach

+ +

Stomach, Glandular

+ +

CARDIOVASCULAR SYSTEM

Heart

+ +

Alveolar/Bronchiolar Carcinoma, Metastatic

X

Alveolar/Bronchiolar Carcinoma, Metastatic, Lung

X X

Leukemia Mononuclear

Pheochromocytoma Malignant, Metastatic, Adrenal Medulla

X

Schwannoma Malignant

ENDOCRINE SYSTEM

Adrenal Cortex

+ +

Leukemia Mononuclear

X

X

Mesothelioma Malignant

X

Adrenal Medulla

+ +

Leukemia Mononuclear

X

X

Pheochromocytoma Benign

X

X X X X

Pheochromocytoma Malignant

X X X

Bilateral, Pheochromocytoma Benign

X X

X X X

X X

X X

X X X

X

Bilateral, Pheochromocytoma Malignant

X

X

X

* .. 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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| FISCHER 344-TACONIC RATS MALE
5.0 mg/m3 | DAY ON TEST | | | | | | | | | | | | | | | | | | | | ANIMAL ID | males
(cont...) | | |
|---|-------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-----------|--------------------|------|------|
| | 0730 | 0691 | 0628 | 0556 | 0554 | 0662 | 0777 | 0776 | 0666 | 0666 | 0777 | 0777 | 0777 | 0777 | 0777 | 0555 | 0666 | 0777 | 0666 | 0666 | | | 0777 | 0777 |
| Islets, Pancreatic
Adenoma
Carcinoma | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| | X | | | | | | | | | | | | | | | | | | | | | | X | |
| Parathyroid Gland | + | + | + | + | + | + | + | + | + | + | M | + | + | M | + | M | + | + | + | + | + | + | + | + |
| Pituitary Gland
Leukemia Mononuclear
Pars Distalis, Adenoma | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| | | X | | | | | X | X | X | | X | | X | | X | | | X | X | | | X | X | X |
| Thyroid Gland
Bilateral, C-cell, Adenoma
C-cell, Adenoma
C-cell, Carcinoma | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| | | | | | | | X | | | | | | | | | | | | | | | | X | |
| GENERAL BODY SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | |
| Peritoneum | | | | | | | | | | | | | | | | | | | | | | | | + |
| GENITAL SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | |
| Epididymis
Mesothelioma Malignant | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | X |
| Preputial Gland
Carcinoma | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | M | + | + |
| | | | | | | | | | | | X | | | | | | | X | | | | | | |
| Prostate
Leukemia Mononuclear | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| | | | X | | | | | | | | | | | | | | | | | | | | | |
| Seminal Vesicle | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |

* .. 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

P04: NEOPLASMS BY INDIVIDUAL ANIMAL
 Cobalt
 CAS Number: 7440-48-4

Date Report Requested: 01/18/2012
 Time Report Requested: 14:48:11
 First Dose M/F: 05/08/06 / 05/08/06
 Lab: BNW

| FISCHER 344-TACONIC RATS MALE | DAY ON TEST | | | | | | | | | | | | | | | | | | | | males
(cont...) | | | | | |
|-------------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|--------------------|----------------|----------------|----------------|----------------|----------------|
| | 07
30 | 06
91 | 06
28 | 05
16 | 05
52 | 06
46 | 07
30 | 07
71 | 06
67 | 06
98 | 07
23 | 07
73 | 07
72 | 07
22 | 07
22 | 07
22 | 05
79 | 06
82 | 07
19 | 06
61 | | 06
91 | 07
22 | 07
79 | 04
72 | 07
29 |
| 5.0 mg/m3 | 00
60
01 | 00
66
00 | 00
66
00 | 00
66
00 | 00
66
00 | 00
66
00 | 00
66
00 | 00
66
00 | 00
66
00 | 00
66
00 | 00
66
01 | 00
66
11 | 00
66
11 | 00
66
11 | 00
66
11 | 00
66
11 | 00
66
11 | 00
66
11 | 00
66
22 | 00
66
22 | 00
66
22 | 00
66
22 | 00
66
22 | 00
66
22 | 00
66
22 | 00
66
22 |

Carcinoma, Metastatic, Kidney

X

Testes
 Mesothelioma Malignant
 Bilateral, Interstitial Cell, Adenoma
 Interstitial Cell, Adenoma

+
 X
 X

HEMATOPOIETIC SYSTEM

Bone Marrow

+ +

Lymph Node
 Iliac, Renal, Leukemia Mononuclear
 Pancreatic, Leukemia Mononuclear
 Pancreatic, Renal, Leukemia Mononuclear
 Renal, Leukemia Mononuclear
 Renal, Pheochromocytoma Malignant,
 Metastatic, Adrenal Medulla

+
 X
 X

Lymph Node, Bronchial
 Leukemia Mononuclear

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

Lymph Node, Mandibular
 Leukemia Mononuclear

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

Lymph Node, Mediastinal
 Alveolar/Bronchiolar Carcinoma, Metastatic,
 Lung
 Leukemia Mononuclear

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

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
 BLANK .. Not examined microscopically

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 MALE | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | | | ANIMAL ID | males
(cont...) |
|-------------------------------|-------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-----------|--------------------|
| | 0730 | 0691 | 0628 | 0556 | 0554 | 0663 | 0777 | 0776 | 0666 | 0667 | 0777 | 0777 | 0777 | 0777 | 0777 | 0777 | 0552 | 0668 | 0771 | 0669 | 0661 | 0661 | 0772 | 0772 | 0470 | | |
| 5.0 mg/m3 | 0060 | 0066 | 0066 | 0066 | 0066 | 0066 | 0066 | 0066 | 0066 | 0066 | 0066 | 0066 | 0066 | 0066 | 0066 | 0066 | 0066 | 0066 | 0066 | 0066 | 0066 | 0066 | 0066 | 0066 | 0066 | 0066 | |

| | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Leukemia Mononuclear | X | | | | | | | | | | | | | | | | | | | | | | | | | |
| Spleen | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Leukemia Mononuclear | | | X | X | X | X | | X | X | | X | | | | | X | | | | X | | | | X | | |
| Thymus | + | + | + | + | + | M | + | + | + | M | + | + | + | + | + | M | + | + | + | + | + | + | + | + | + | + |
| Alveolar/Bronchiolar Carcinoma, Metastatic, Lung | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Leukemia Mononuclear | | | | | | | | | | | | | | | | | | | | | | | | | | |

INTEGUMENTARY SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mammary Gland | + | + | + | + | M | + | + | + | + | M | + | + | M | + | M | M | M | + | M | M | + | + | + | + | + | + | |
| Fibroadenoma | | | | | | | | | | | | | | | | | | | | | | | | | | | X |
| Skin | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | |
| Basal Cell Adenoma | | | | | | | | | | X | | | | | | | | | | | | | | | | | |
| Keratoacanthoma | X | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Trichoepithelioma | | | | | | | | | | | | | | | X | | | | | | | | | | | | |
| Subcutaneous Tissue, Fibrous Histiocytoma | | | | | X | | | | | | | | | | | | | | | | | | | | | | |

MUSCULOSKELETAL SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Bone | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | |
| Alveolar/Bronchiolar Carcinoma, Metastatic, Lung | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Skeletal Muscle | | | | | | | | | | | | | | | | + | | | | | | | | | | + | |
| Alveolar/Bronchiolar Carcinoma, Metastatic, Lung | | | | | | | | | | | | | | | | | | | | | | | | | | | X |
| Carcinoma, Metastatic, Kidney | | | | | | | | | | | | | | | | 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

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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 MALE | DAY ON TEST | | | | | | | | | | | | | | | | | | | | * TOTALS | | | | |
|-------------------------------|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|----------|-------|-------|-------|-------|
| | 0689 | 0729 | 0779 | 0775 | 0668 | 0478 | 0662 | 0772 | 0772 | 0770 | 0770 | 0561 | 0666 | 0664 | 0772 | 0668 | 0772 | 0779 | 0666 | 0668 | | 0770 | 0566 | 0665 | 0667 |
| 5.0 mg/m3 | 00626 | 00622 | 00622 | 00622 | 00633 | 00633 | 00633 | 00633 | 00633 | 00633 | 00633 | 00633 | 00633 | 00633 | 00644 | 00644 | 00644 | 00644 | 00644 | 00644 | 00644 | 00644 | 00644 | 00644 | 00644 |
| | 6789 | 6789 | 6789 | 6789 | 6789 | 6789 | 6789 | 6789 | 6789 | 6789 | 6789 | 6789 | 6789 | 6789 | 6789 | 6789 | 6789 | 6789 | 6789 | 6789 | 6789 | 6789 | 6789 | 6789 | 6789 |

ALIMENTARY SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---------|
| Esophagus | + | + | + | + | + | + | M | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 48 |
| Intestine Large, Cecum | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Intestine Large, Colon | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Intestine Large, Rectum | + | + | + | + | + | + | + | + | + | M | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 49 |
| Intestine Small, Duodenum | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Intestine Small, Ileum
Leukemia Mononuclear | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50
1 |
| Intestine Small, Jejunum | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 49 |
| Liver | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Alveolar/Bronchiolar Carcinoma, Metastatic,
Lung | | | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| Carcinoma, Metastatic, Kidney | | | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| Hemangiosarcoma | | | | | | | | | | | | | X | | | | | | | | | | | | | 1 |
| Hepatocellular Adenoma | | | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| Leukemia Mononuclear | | | X | | X | X | | | | | | | | X | X | | X | X | X | | | X | | X | X | 18 |
| Mesentery | | | | | | | | | | | | | | | | | | | | | | | | | | 3 |
| Leukemia Mononuclear | | | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| Pancreas | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Carcinoma, Metastatic, Kidney | | | | | | | | | | | | | | | | | | | | | | | | | | 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

P04: NEOPLASMS BY INDIVIDUAL ANIMAL
 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 MALE
5.0 mg/m3 | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | | * TOTALS | |
|---|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|----------|--|
| | 0689 | 0799 | 0799 | 0799 | 0678 | 0468 | 0662 | 0772 | 0772 | 0772 | 0772 | 0566 | 0666 | 0666 | 0477 | 0678 | 0772 | 0772 | 0666 | 0666 | 0756 | 0666 | 0566 | 0657 | | |
| ANIMAL ID | 00626 | 00662 | 00662 | 00662 | 00662 | 00662 | 00662 | 00662 | 00662 | 00662 | 00662 | 00662 | 00662 | 00662 | 00662 | 00662 | 00662 | 00662 | 00662 | 00662 | 00662 | 00662 | 00662 | 00662 | | |
| Leukemia Mononuclear | | | | | X | | | | | | | | | | | | | | | | | | | | 2 | |
| Salivary Glands | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Stomach, Forestomach | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Stomach, Glandular | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| CARDIOVASCULAR SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Heart | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Alveolar/Bronchiolar Carcinoma, Metastatic | | | | | | | | | | | | | | | | | | | | | | X | | | 2 | |
| Alveolar/Bronchiolar Carcinoma, Metastatic, Lung | | | | | | | | | | | | | X | | | | | | | | | | | | 1 | |
| Leukemia Mononuclear | | | | | X | | | | | | | X | X | | X | | | | | | | | X | | 7 | |
| Pheochromocytoma Malignant, Metastatic, Adrenal Medulla | | | | | | | | | | | | | | | | | | | | | | | | | 1 | |
| Schwannoma Malignant | | | X | | | | | | | | X | | | | | | | | | | | | | | 2 | |
| ENDOCRINE SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Adrenal Cortex | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Leukemia Mononuclear | | | | | X | | | | | | | X | X | | X | X | | | | | | | X | X | 9 | |
| Mesothelioma Malignant | | | | | | | | | | | | | | | | | | | | | | | | | 1 | |
| Adrenal Medulla | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Leukemia Mononuclear | | | | | X | | | | | | | X | X | | X | X | | | | | | | X | X | 9 | |
| Pheochromocytoma Benign | X | X | X | | | | | | X | X | | | | | X | X | | | | X | | | | X | 13 | |
| Pheochromocytoma Malignant | X | X | X | | | | | X | X | | | | | | X | | | | | | | | | | 9 | |
| Bilateral, Pheochromocytoma Benign | | | | X | | | X | X | | X | | | X | X | | | | | | | X | | X | | 21 | |
| Bilateral, Pheochromocytoma Malignant | | | | | | | | | | | | | | | | | X | X | X | X | | | | | 7 | |

* .. 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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5.0 mg/m3 | DAY ON TEST | | | | | | | | | | | | | | | | | | | | * TOTALS | | | |
|--|-------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|----------|------|------|------|
| | 0689 | 0799 | 0799 | 0799 | 0678 | 0467 | 0662 | 0772 | 0772 | 0772 | 0566 | 0666 | 0666 | 0477 | 0676 | 0776 | 0776 | 0666 | 0666 | 0756 | | 0665 | 0657 | 0657 |
| ANIMAL ID | 00626 | 0067 | 0068 | 0069 | 0060 | 0061 | 0062 | 0063 | 0064 | 0065 | 0066 | 0067 | 0068 | 0069 | 0060 | 0061 | 0062 | 0063 | 0064 | 0065 | 0066 | 0067 | 0068 | 0069 |
| Islets, Pancreatic | + | + | + | + | M | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 49 |
| Adenoma | | | | | | | | | | | | | | | | | | X | | | | | | 3 |
| Carcinoma | | | | | | | | | | X | | | | | | | | | X | | X | | | 6 |
| Parathyroid Gland | + | + | + | + | + | + | + | + | + | + | + | + | + | M | + | + | + | + | + | + | + | + | + | 46 |
| Pituitary Gland | + | + | M | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 49 |
| Leukemia Mononuclear | | | | | X | | | | | | | X | X | | | X | | | | | | | | 4 |
| Pars Distalis, Adenoma | | | | X | X | X | X | X | | | | X | X | | | | | X | | X | X | | X | 24 |
| Thyroid Gland | + | + | + | + | + | + | + | + | + | + | + | + | + | M | + | + | + | + | + | + | + | + | + | 49 |
| Bilateral, C-cell, Adenoma | | | | | | | | | | | | | | | | | | | | X | | | | 1 |
| C-cell, Adenoma | | | | | | | | X | | | X | | | | | | X | | | X | | | | 6 |
| C-cell, Carcinoma | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| GENERAL BODY SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | |
| Peritoneum | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| GENITAL SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | |
| Epididymis | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Mesothelioma Malignant | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| Preputial Gland | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | M | + | + | + | 48 |
| Carcinoma | | X | | | | | | | | | | | | | | | | | | | | | | 3 |
| Prostate | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Leukemia Mononuclear | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| Seminal Vesicle | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |

* .. Total animals with tissue examined microscopically; Total animals with tumor
 + .. Tissue examined microscopically
 X .. Lesion present
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| FISCHER 344-TACONIC RATS MALE | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | | | * TOTALS |
|--|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-----------|-----------|
| | 0689 | 0729 | 0779 | 0775 | 0648 | 0662 | 0772 | 0772 | 0772 | 0773 | 0566 | 0666 | 0641 | 0768 | 0672 | 0729 | 0669 | 0668 | 0671 | 0759 | 0666 | 0675 | 0667 | 0565 | 0667 | |
| 5.0 mg/m3 | ANIMAL ID | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 00626 | 00662 | 00668 | 00669 | 00660 | 00661 | 00662 | 00663 | 00664 | 00665 | 00666 | 00667 | 00668 | 00669 | 00670 | 00671 | 00672 | 00673 | 00674 | 00675 | 00676 | 00677 | 00678 | 00679 | 00680 | 1 |
| Carcinoma, Metastatic, Kidney | | | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| Testes | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Mesothelioma Malignant | | | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| Bilateral, Interstitial Cell, Adenoma | | | | | | | | X | X | X | | X | | | | | | | X | | | X | | | 12 | |
| Interstitial Cell, Adenoma | X | X | X | X | X | | | | | | | | X | | | X | X | | | X | | | | | 17 | |
| HEMATOPOIETIC SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Bone Marrow | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Lymph Node | | + | | | + | | | | | | | + | + | | | | | | | | | | | | | 9 |
| Iliac, Renal, Leukemia Mononuclear | | | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| Pancreatic, Leukemia Mononuclear | | | | | X | | | | | | | X | | | | | | | | | | | | | | 2 |
| Pancreatic, Renal, Leukemia Mononuclear | | | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| Renal, Leukemia Mononuclear | | | | | | | | | | | | | X | | | | | | | | | | | | | 1 |
| Renal, Pheochromocytoma Malignant, Metastatic, Adrenal Medulla | | | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| Lymph Node, Bronchial | M | + | + | M | + | M | M | + | + | + | + | + | M | M | M | + | + | M | + | M | M | M | M | M | M | 20 |
| Leukemia Mononuclear | | | X | | X | | | | | | | | | | | | | | | | | | | | | 4 |
| Lymph Node, Mandibular | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | M | 48 |
| Leukemia Mononuclear | | | X | | | | | | | | | | | | | X | X | | | | | | | | | 6 |
| Lymph Node, Mediastinal | + | + | + | + | + | M | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | | 48 |
| Alveolar/Bronchiolar Carcinoma, Metastatic, Lung | | | | | | | | | | | | | | X | | | | | | | | X | | | | 3 |
| Leukemia Mononuclear | | | X | | X | | | | | | | X | | | | | | | | | | | | | | 5 |
| Lymph Node, Mesenteric | + | + | + | + | + | + | M | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | | 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

P04: NEOPLASMS BY INDIVIDUAL ANIMAL
 Cobalt
 CAS Number: 7440-48-4

Date Report Requested: 01/18/2012
 Time Report Requested: 14:48:11
 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 | |
|--|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|----------|----|
| | 0689 | 0729 | 0779 | 0775 | 0660 | 0468 | 0662 | 0779 | 0779 | 0773 | 0773 | 0566 | 0661 | 0661 | 0492 | 0768 | 0779 | 0666 | 0668 | 0772 | 0560 | 0666 | 0567 | 0665 | | |
| ANIMAL ID | 00626 | 00662 | 00668 | 00669 | 00660 | 00661 | 00662 | 00663 | 00664 | 00665 | 00666 | 00667 | 00668 | 00669 | 00670 | 00671 | 00672 | 00673 | 00674 | 00675 | 00676 | 00677 | 00678 | 00679 | | |
| Leukemia Mononuclear | | | X | | X | | | | | | | X | X | | | | | | | | | | | | 5 | |
| Spleen | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Leukemia Mononuclear | | | X | | X | X | | | | X | | X | X | | X | X | X | | | X | | | X | X | 22 | |
| Thymus | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | M | + | + | + | 46 | |
| Alveolar/Bronchiolar Carcinoma, Metastatic, Lung | | | | | | | | | | | | | | X | | | | | | X | | | | 2 | | |
| Leukemia Mononuclear | | | | | | | | | | | | X | | | X | | | | | | | | | 2 | | |
| INTEGUMENTARY SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Mammary Gland | + | + | M | M | + | + | M | + | + | + | M | + | M | + | M | + | M | + | + | M | M | + | M | + | M | 31 |
| Fibroadenoma | | | | | | | | | | | | | | | | | | | | | | | | | 1 | |
| Skin | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Basal Cell Adenoma | X | | X | | | | | | | | | | | | | | | | | | | | | | 3 | |
| Keratoacanthoma | | | | | | | X | | | | | | | | | | | | | | | | | | 2 | |
| Trichoepithelioma | | | | | | | | | | | | | | | | | | | | | | | | | 1 | |
| Subcutaneous Tissue, Fibrous Histiocytoma | | | | | | | | | | | | | | | | | | | | | | X | | | 2 | |
| MUSCULOSKELETAL SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Bone | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Alveolar/Bronchiolar Carcinoma, Metastatic, Lung | | | | | | | | | | | | | | | | | | | | | | X | | | 1 | |
| Skeletal Muscle | | | | | | | | | | | | | | | | | | | | | | + | + | | 4 | |
| Alveolar/Bronchiolar Carcinoma, Metastatic, Lung | | | | | | | | | | | | | | | | | | | | | | X | | | 2 | |
| Carcinoma, Metastatic, Kidney | | | | | | | | | | | | | | | | | | | | | | | | | 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

P04: NEOPLASMS BY INDIVIDUAL ANIMAL
 Cobalt
 CAS Number: 7440-48-4

Date Report Requested: 01/18/2012
 Time Report Requested: 14:48:11
 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 |
|--|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--|----------|
| | 0689 | 0729 | 0779 | 0775 | 0648 | 0667 | 0772 | 0772 | 0773 | 0773 | 0566 | 0666 | 0664 | 0776 | 0668 | 0772 | 0779 | 0666 | 0668 | 0772 | 0775 | 0666 | 0667 | | |
| ANIMAL ID | 00626 | 00662 | 00662 | 00662 | 00663 | 00663 | 00663 | 00663 | 00663 | 00664 | 00665 | 00667 | 00668 | 00669 | 00670 | 00671 | 00672 | 00673 | 00674 | 00675 | 00678 | 00679 | 00680 | | |
| Trachea | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | | |
| SPECIAL SENSES SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | |
| Eye | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | | |
| Harderian Gland | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | | |
| Zymbal's Gland | | | | | | | | | | | | | | | | | | | | | | | 1 | | |
| Carcinoma | | | | | | | | | | | | | | | | | | | | | | | 1 | | |
| URINARY SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | |
| Kidney | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | | |
| Alveolar/Bronchiolar Carcinoma, Metastatic, Lung | | | | | | | | | | | | | | | | | | | | | | | 1 | | |
| Leukemia Mononuclear | | | | | | | | | | | | X | X | | | | | | | | | | 4 | | |
| Renal Tubule, Adenoma | | | | | | | | | X | | | | | | | | | | | | | | 2 | | |
| Renal Tubule, Adenoma, Multiple | | | | | | | | | | | | | | | | | | X | | | | | 1 | | |
| Renal Tubule, Carcinoma | | | | | | | | | | | | | | | | | X | | | | | | 2 | | |
| Urinary Bladder | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | | |
| SYSTEMIC LESIONS | | | | | | | | | | | | | | | | | | | | | | | | | |
| Multiple Organ | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | | |
| Leukemia Mononuclear | | | X | X | X | | | | X | X | X | X | X | X | | | X | | | X | X | | 22 | | |
| Mesothelioma Malignant | | | | | | | | | | | | | | | | | | | | | | | 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

P04: NEOPLASMS BY INDIVIDUAL ANIMAL
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

*** 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
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 Species/Strain: RATS/F344/N Tac

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 Cobalt
 CAS Number: 7440-48-4

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 Time Report Requested: 14:48:11
 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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| Adrenal Medulla | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | | | |
| Leukemia Mononuclear | | | | | | | | | | | | | | | | | | | | X | | | | | | | |
| Pheochromocytoma Benign | | X | | | | | | | | | | | | | | | | | | | X | | | | | | |
| Bilateral, Fibrous Histiocytoma, Metastatic, Skin | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Bilateral, Pheochromocytoma Benign | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Islets, Pancreatic | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | | | |
| Carcinoma | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Parathyroid Gland | + | + | + | + | + | + | + | + | M | M | M | + | + | + | + | + | + | + | + | + | M | + | + | M | | | |
| Pituitary Gland | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | | | |
| Pars Distalis, Adenoma | X | | X | | X | X | | | X | | X | X | | X | X | | X | X | X | | X | X | X | | | | |
| Thyroid Gland | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | | | |
| Bilateral, C-cell, Adenoma | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| C-cell, Adenoma | | | X | | | X | | | | X | X | | | | | | | | | | | | | | | | |
| C-cell, Carcinoma | X | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Follicular Cell, Carcinoma | | | | | | | | | | X | | | | | | | | | | | | | | | | | |
| GENERAL BODY SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Peritoneum | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Carcinoma, Metastatic, Islets, Pancreatic | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| GENITAL SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Clitoral Gland | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | | | |
| Adenoma | | | | | | | | | | | | | | | | | | | | | | | | | | | |

* .. 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

P04: NEOPLASMS BY INDIVIDUAL ANIMAL
 Cobalt
 CAS Number: 7440-48-4

Date Report Requested: 01/18/2012
 Time Report Requested: 14:48:11
 First Dose M/F: 05/08/06 / 05/08/06
 Lab: BNW

| FISCHER 344-TACONIC RATS
FEMALE
Control | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | | | females
(cont...) | |
|--|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|----------------------|--|
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| Carcinoma | X | | | X | | | | | | | | | X | | | | | | | | | | | | | | |
| Ovary | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | | |
| Carcinoma, Metastatic, Islets, Pancreatic | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Leukemia Mononuclear | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Uterus | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | | |
| Carcinoma, Metastatic, Islets, Pancreatic | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Hemangiosarcoma | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Leiomyoma | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Leukemia Mononuclear | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Polyp Stromal | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| HEMATOPOIETIC SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Bone Marrow | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | | |
| Lymph Node | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Deep Cervical, Fibrous Histiocytoma, Metastatic, Skin | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Lumbar, Renal, Carcinoma, Metastatic, Islets, Pancreatic | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Pancreatic, Renal, Leukemia Mononuclear | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Lymph Node, Bronchial | M | M | + | + | M | + | + | + | M | M | + | M | + | + | M | M | M | M | + | + | + | + | M | M | + | | |
| Fibrous Histiocytoma, Metastatic, Skin | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Leukemia Mononuclear | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Lymph Node, Mandibular | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | | |
| Fibrous Histiocytoma, 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
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 Route: RESPIRATORY EXPOSURE WHOLE BODY
 Species/Strain: RATS/F344/N Tac

P04: NEOPLASMS BY INDIVIDUAL ANIMAL
 Cobalt
 CAS Number: 7440-48-4

Date Report Requested: 01/18/2012
 Time Report Requested: 14:48:11
 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 |
| FISCHER 344-TACONIC RATS
FEMALE | | 7 | 7 | 7 | 7 | 6 | 7 | 7 | 7 | 5 | 7 | 7 | 6 | 7 | 7 | 7 | 2 | 7 | 5 | 7 | 6 | 7 | 7 | 6 | 6 | 7 | |
| | Control | 3 | 3 | 3 | 3 | 5 | 3 | 3 | 3 | 1 | 3 | 3 | 1 | 3 | 3 | 3 | 3 | 3 | 5 | 3 | 8 | 3 | 3 | 7 | 4 | 3 | |
| | | 2 | 1 | 0 | 1 | 4 | 2 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 2 | 2 | 4 | 0 | 0 | 1 | 3 | 1 | 1 | 4 | 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 | |
| | | 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 | |
| | | 0 | 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 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | 1 | 2 | 3 | 4 | 5 | |

Subcutaneous Tissue, Fibrous Histiocytoma
 Subcutaneous Tissue, Lipoma X
 Subcutaneous Tissue, Schwannoma Malignant

MUSCULOSKELETAL SYSTEM

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

NERVOUS SYSTEM

Brain +

RESPIRATORY SYSTEM

Larynx +
 Lung +
 Alveolar/Bronchiolar Adenoma X
 Carcinoma, Metastatic, Islets, Pancreatic X
 Fibrous Histiocytoma, Metastatic, Skin X
 Leukemia Mononuclear X X X
 Mediastinum, Fibrous Histiocytoma, Metastatic, Skin X
 Nose +
 Leukemia Mononuclear 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

P04: NEOPLASMS BY INDIVIDUAL ANIMAL
 Cobalt
 CAS Number: 7440-48-4

Date Report Requested: 01/18/2012
 Time Report Requested: 14:48:11
 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...) | | | | |
|---|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|----------------------|------------------|------------------|------------------|--|
| | 0
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2 | 0
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1 | 0
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0 | 0
7
3
1 | 0
6
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4 | 0
7
3
2 | 0
7
3
0 | 0
7
3
1 | 0
5
3
1 | 0
7
3
1 | 0
7
3
1 | 0
6
3
1 | 0
7
3
1 | 0
7
3
2 | 0
7
3
2 | 0
2
3
4 | 0
7
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0 | 0
5
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0 | 0
7
3
1 | 0
6
8
3 | 0
7
3
1 | 0
7
3
1 | | 0
6
7
4 | 0
6
4
6 | 0
7
3
0 | |
| Trachea | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | |
| SPECIAL SENSES SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Ear | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Eye | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | |
| Harderian Gland | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | |
| URINARY SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Kidney | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | |
| Leukemia Mononuclear | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Urinary Bladder | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | |
| Carcinoma, Metastatic, Islets, Pancreatic | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SYSTEMIC LESIONS | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Multiple Organ | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | |
| Leukemia Mononuclear | | | | 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

P04: NEOPLASMS BY INDIVIDUAL ANIMAL
 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
Control | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | | * TOTALS | |
|--|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|--|
| | 0
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8 | 0
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1 | | | |
| ANIMAL ID | 0
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7 | 0
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1
4
8 | 0
0
1
4
9 | |
| Pancreas
Acinus, Carcinoma, Metastatic, Islets,
Pancreatic | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50
1 | |
| Salivary Glands
Fibrous Histiocytoma, Metastatic, Skin | + | + | + | + | + | + | + | + | + | X | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 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
Leukemia Mononuclear | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50
1
1
1 | |
| ENDOCRINE SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Adrenal Cortex
Carcinoma, Metastatic, Islets, Pancreatic
Leukemia Mononuclear | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50
1
5 | |

* .. 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

P04: NEOPLASMS BY INDIVIDUAL ANIMAL
 Cobalt
 CAS Number: 7440-48-4

Date Report Requested: 01/18/2012
 Time Report Requested: 14:48:11
 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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6 | 0
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4
7 | 0
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8 | 0
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4
9 | 0
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1
5
0 |
| Adrenal Medulla | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Leukemia Mononuclear | | | X | | | | | | | | | | | | | | | | X | | | | X | X | | | 5 | |
| Pheochromocytoma Benign | | | | | | | | | | | | | | X | X | | | | | | | | | | | | 4 | |
| Bilateral, Fibrous Histiocytoma, Metastatic, Skin | | | | | | | | | | | | X | | | | | | | | | | | | | | | 1 | |
| Bilateral, Pheochromocytoma Benign | | | | | | | | | | | X | | | | | | | | X | | | | | | | | 2 | |
| Islets, Pancreatic Carcinoma | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50
1 | |
| Parathyroid Gland | + | + | + | + | M | + | + | + | + | + | M | M | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 42 | |
| Pituitary Gland Pars Distalis, Adenoma | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50
29 | |
| Thyroid Gland | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Bilateral, C-cell, Adenoma | | | | | | | | | | | | | | X | | | | | | | | | | | | | 1 | |
| C-cell, Adenoma | | | X | | X | | | | | | | | | | | | | | X | | | | X | | | | 7 | |
| C-cell, Carcinoma | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | |
| Follicular Cell, Carcinoma | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | |
| GENERAL BODY SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Peritoneum | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | |
| Carcinoma, Metastatic, Islets, Pancreatic | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | |
| GENITAL SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Clitoral Gland | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 49 | |
| Adenoma | | | | | | | | | | X | | | | | | | | | | 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
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 Cobalt
 CAS Number: 7440-48-4

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 Lab: BNW

| FISCHER 344-TACONIC RATS
FEMALE
Control | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | | * TOTALS |
|--|---|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
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6 | 0
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| ANIMAL ID | 0
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| Carcinoma | X | | | | | | | | | | | | | | | | | | | | | | | | 4 |
| Ovary | + | | | | | | | | | | | | | | | | | | | | | | | | 50 |
| Carcinoma, Metastatic, Islets, Pancreatic | | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| Leukemia Mononuclear | | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| Uterus | + | | | | | | | | | | | | | | | | | | | | | | | | 50 |
| Carcinoma, Metastatic, Islets, Pancreatic | | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| Hemangiosarcoma | | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| Leiomyoma | X | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| Leukemia Mononuclear | | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| Polyp Stromal | X X X X X | | | | | | | | | | | | | | | | | | | | | | | | 10 |
| HEMATOPOIETIC SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | |
| Bone Marrow | + | | | | | | | | | | | | | | | | | | | | | | | | 50 |
| Lymph Node | | | | | | | | | | | | | | | | | | | | | | | | | 4 |
| Deep Cervical, Fibrous Histiocytoma, Metastatic, Skin | X | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| Lumbar, Renal, Carcinoma, Metastatic, Islets, Pancreatic | | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| Pancreatic, Renal, Leukemia Mononuclear | | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| Lymph Node, Bronchial | + + M + + M M M + + + M M M + + + M + + M M M + M | | | | | | | | | | | | | | | | | | | | | | | | 26 |
| Fibrous Histiocytoma, Metastatic, Skin | X | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| Leukemia Mononuclear | | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| Lymph Node, Mandibular | + + + + + M + | | | | | | | | | | | | | | | | | | | | | | | | 48 |
| Fibrous Histiocytoma, Metastatic, Skin | 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
 BLANK .. Not examined microscopically

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| FISCHER 344-TACONIC RATS
FEMALE
Control | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | | * TOTALS | | |
|---|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
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| ANIMAL ID | 0
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| | | |
|---|---|---|
| Subcutaneous Tissue, Fibrous Histiocytoma | X | 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 | | | | | | | | | | | X | | | | | | | | | | | | | | | | | | 1 |
| Leukemia Mononuclear | | | X | | | X | | | | | | | | | | | X | | X | | | | X | X | | | | | 10 |
| Mediastinum, Fibrous Histiocytoma, Metastatic, Skin | | | | | | | | | | | X | | | | | | | | | | | | | | | | | | 1 |
| Nose | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Leukemia Mononuclear | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 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

P04: NEOPLASMS BY INDIVIDUAL ANIMAL
 Cobalt
 CAS Number: 7440-48-4

Date Report Requested: 01/18/2012
 Time Report Requested: 14:48:11
 First Dose M/F: 05/08/06 / 05/08/06
 Lab: BNW

| FISCHER 344-TACONIC RATS
FEMALE
Control | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | | | * TOTALS | |
|---|-------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|----------|------|
| | 0731 | 0731 | 0691 | 0732 | 0773 | 0773 | 0773 | 0773 | 0773 | 0773 | 0773 | 0773 | 0773 | 0773 | 0773 | 0773 | 0773 | 0773 | 0773 | 0773 | 0773 | 0773 | 0773 | 0773 | 0773 | | 0773 |
| ANIMAL ID | 0016 | 0007 | 0001 | 0002 | 0001 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | |
| Trachea | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| SPECIAL SENSES SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Ear | | | | + | | | | | | + | | | | | | | | | | + | | | | | | 4 | |
| Eye | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Harderian Gland | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| URINARY SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Kidney | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Leukemia Mononuclear | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | |
| Urinary Bladder | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Carcinoma, Metastatic, Islets, Pancreatic | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | |
| SYSTEMIC LESIONS | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Multiple Organ | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Leukemia Mononuclear | | X | X | | | X | | | | | | | | | X | | X | X | | X | | | X | X | X | 16 | |

* .. 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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 Species/Strain: RATS/F344/N Tac

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 Cobalt
 CAS Number: 7440-48-4

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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 | | | | | | | | | | | | | | | | | | | | ANIMAL ID | females
(cont...) | | |
|---|-------------|------|------|------|------|------|------|------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-----------|----------------------|--|--|
| | 0691 | 0692 | 0693 | 0694 | 0695 | 0696 | 0697 | 0698 | 0699 | 06910 | 06911 | 06912 | 06913 | 06914 | 06915 | 06916 | 06917 | 06918 | 06919 | 06920 | | | | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 003001 | | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 003002 | | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 003003 | | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 003004 | | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 003005 | | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 003006 | | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 003007 | | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 003008 | | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 003009 | | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 003010 | | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 003011 | | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 003012 | | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 003013 | | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 003014 | | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 003015 | | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 003016 | | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 003017 | | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 003018 | | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 003019 | | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 003020 | | |
| Cystic Keratinizing Epithelioma | | | | | X | | | | | | | | | | | X | | | | | | | | |
| Leukemia Mononuclear | | | | | | | X | | | | | | X | | | | | X | | X | | X | | |
| Mediastinum, Alveolar/Bronchiolar Carcinoma, Metastatic, Lung | | | | | X | | | | | | | | | | | | | | | | | | | |
| Nose | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | | |
| Trachea | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | | |
| SPECIAL SENSES SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | |
| Ear | | | | | | | | | | | | | | | | | | | | | | + | | |
| Eye | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | | |
| Harderian Gland | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | | |
| Zymbal's Gland | | | | | | | | | | | | | | | | | | | | | | | | |
| Adenoma | | | | | | | | | | | | | | | | | | | | | | X | | |
| URINARY SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | |
| Kidney | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | | |
| Transitional Epithelium, Papilloma | | | X | | | | | | | | | | | | | | | | | | | | | |
| Urinary Bladder | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | | |
| Leukemia Mononuclear | | | | | | | | | | | | | | | | | | | | | X | | | |
| SYSTEMIC LESIONS | | | | | | | | | | | | | | | | | | | | | | | | |
| Multiple Organ | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | | |

* .. 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
1.25 mg/m3 | DAY ON TEST | | ANIMAL ID | | | | | | | | | | | | | | | | | | | | females
(cont...) | | |
|--|-------------|------|-----------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|----------------------|------|------|
| | 0691 | 0674 | 0003 | 0003 | 0003 | 0003 | 0003 | 0003 | 0003 | 0003 | 0003 | 0003 | 0003 | 0003 | 0003 | 0003 | 0003 | 0003 | 0003 | 0003 | 0003 | 0003 | | 0003 | 0003 |
| Leukemia Mononuclear | 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
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| FISCHER 344-TACONIC RATS
FEMALE
1.25 mg/m3 | DAY ON TEST | | | | | | | | | | | | | | | | | | | | * TOTALS | | | |
|---|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|----------|-------|-------|-------|
| | 0708 | 0598 | 0697 | 0732 | 0674 | 0772 | 0772 | 0772 | 0772 | 0772 | 0593 | 0773 | 0773 | 0773 | 0773 | 0422 | 0731 | 0673 | 0773 | 0577 | | 0770 | 0773 | 0684 |
| ANIMAL ID | 00326 | 00032 | 00033 | 00033 | 00033 | 00033 | 00033 | 00033 | 00033 | 00033 | 00033 | 00033 | 00033 | 00033 | 00033 | 00033 | 00033 | 00033 | 00033 | 00033 | 00033 | 00033 | 00033 | 00033 |
| Leukemia Mononuclear | | | X | | | | | | | | | | | | | | | | | | | | | 1 |
| Stomach, Glandular | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| CARDIOVASCULAR SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | |
| Blood Vessel | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| Alveolar/Bronchiolar Carcinoma, Metastatic, Lung | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| Aorta, Alveolar/Bronchiolar Carcinoma, Metastatic, Lung | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| Heart | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Leukemia Mononuclear | | | | | | | | | | | | X | | | | | | | | | | | | 4 |
| ENDOCRINE SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | |
| Adrenal Cortex | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Leukemia Mononuclear | | | X | | X | | | | | X | | | | | X | | | | X | | | | X | 11 |
| Adrenal Medulla | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Leukemia Mononuclear | | | X | | X | | | | | X | | | | | X | | | | X | | | | X | 11 |
| Pheochromocytoma Benign | X | | | | | | X | | | | X | | | X | | | | | | | | | | 8 |
| Pheochromocytoma Malignant | | | | | | | | | | | | | X | | | | | | | | | | | 1 |
| Bilateral, Pheochromocytoma Benign | | | | | | | | | | | | | | | | | | | X | | | | | 4 |
| Bilateral, Pheochromocytoma Malignant | | | | | | | | | | X | | | | | | | | | | | | | | 1 |
| Islets, Pancreatic | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Parathyroid Gland | M | + | + | + | + | + | M | + | + | + | + | M | + | + | M | + | + | + | + | + | + | + | + | 45 |

* .. 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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Experiment Number: 60311 - 05
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 Cobalt
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 Lab: BNW

| FISCHER 344-TACONIC RATS
FEMALE
1.25 mg/m3 | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | | * TOTALS | |
|--|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|----------|------|
| | 0708 | 0588 | 0697 | 0732 | 0674 | 0772 | 0772 | 0772 | 0772 | 0772 | 0593 | 0733 | 0733 | 0733 | 0733 | 0422 | 0731 | 0678 | 0731 | 0731 | 0578 | 0770 | 0738 | 0684 | | 0730 |
| ANIMAL ID | 00326 | 00337 | 00338 | 00333 | 00333 | 00333 | 00333 | 00333 | 00333 | 00333 | 00333 | 00333 | 00333 | 00333 | 00333 | 00333 | 00333 | 00333 | 00333 | 00333 | 00333 | 00333 | 00333 | 00333 | 00333 | |
| Pituitary Gland | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Leukemia Mononuclear | | | | | | | | | | | | | | | | | | | | | | | | X | 3 | |
| Pars Distalis, Adenoma | X | X | | X | | X | X | X | | | | | X | X | | | X | | X | | X | X | X | X | 23 | |
| Pars Distalis, Carcinoma | | | | | | | | | | | X | | | | X | | | | | X | | | | | 3 | |
| Thyroid Gland | + | + | + | + | + | + | + | + | + | + | + | + | + | + | M | + | + | + | + | + | + | + | + | 49 | | |
| C-cell, Adenoma | | | | | | | | | | | X | | | | | | | | | | | | X | 6 | | |
| C-cell, Carcinoma | | | | X | | | | X | | | | | | | | | | | | | | | | 2 | | |
| GENERAL BODY SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Peritoneum | | | | | | | | | | | | | | | | | | | | | | | | | 1 | |
| Fibrous Histiocytoma, Metastatic, Skin | | | | | | | | | | | | | | | | | | | | | | | | | 1 | |
| GENITAL SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Clitoral Gland | + | + | + | + | + | M | + | + | + | M | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 47 | |
| Adenoma | | | X | | | | | | | | | | | | | | | | | | | | | | 4 | |
| Carcinoma | | | | | | | X | | | | | | | | | | | | | | | | | | 5 | |
| Bilateral, Adenoma | | | | | | | | | | | | | | | | | | | | | | | | | 1 | |
| Ovary | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Cystadenocarcinoma | | | | | | | | | | | | | | | X | | | | | | | | | | 1 | |
| Leukemia Mononuclear | | | | | | | | | | X | | | | | | | | X | | | | | | X | 6 | |
| Uterus | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Carcinoma | | | | | | | | | | | | | | | | | | | | | | | | | 1 | |
| Leiomyoma | | | | | | | | | | | | | | | | | | | | | | | | | 1 | |
| Leukemia Mononuclear | | | X | | | | | | | | | | | | | | | | | | | | X | | 2 | |

* .. 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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FEMALE
1.25 mg/m3 | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | | * TOTALS |
|--|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|----------|
| | 0708 | 0709 | 0709 | 0709 | 0709 | 0709 | 0709 | 0709 | 0709 | 0709 | 0709 | 0709 | 0709 | 0709 | 0709 | 0709 | 0709 | 0709 | 0709 | 0709 | 0709 | 0709 | 0709 | 0709 | |
| ANIMAL ID | 00326 | 00327 | 00328 | 00329 | 00330 | 00331 | 00332 | 00333 | 00334 | 00335 | 00336 | 00337 | 00338 | 00339 | 00340 | 00341 | 00342 | 00343 | 00344 | 00345 | 00346 | 00347 | 00348 | 00349 | 00350 |
| Polyp Stromal | X | | | X | X | | | | | | | | | X | | | X | | | | | | | | X |
| | | | | | | | | | | | | | | | | | | | | | | | | | |

HEMATOPOIETIC SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|----------|
| Bone Marrow | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Lymph Node
Renal, Leukemia Mononuclear | | | | | | | | | | | | | | + | | | | | | | | | | | 3
1 |
| Lymph Node, Bronchial
Leukemia Mononuclear | + | + | + | M | M | M | M | M | + | M | + | M | + | M | M | M | M | + | M | M | M | M | M | M | 18
2 |
| Lymph Node, Mandibular
Leukemia Mononuclear | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | M | M | + | + | 48
6 |
| Lymph Node, Mediastinal
Leukemia Mononuclear | + | + | + | + | + | + | + | + | M | + | + | + | + | + | + | M | + | + | + | + | + | + | + | M | 43
4 |
| Lymph Node, Mesenteric
Leukemia Mononuclear | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50
3 |
| Spleen
Leukemia Mononuclear | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50
29 |
| Thymus
Leukemia Mononuclear | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | M | M | + | + | + | + | + | + | + | 46
1 |

INTEGUMENTARY SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | | | |
|--------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---------|
| Mammary Gland
Adenoma | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50
2 |
|--------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---------|

* .. 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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 Route: RESPIRATORY EXPOSURE WHOLE BODY
 Species/Strain: RATS/F344/N Tac

P04: NEOPLASMS BY INDIVIDUAL ANIMAL
 Cobalt
 CAS Number: 7440-48-4

Date Report Requested: 01/18/2012
 Time Report Requested: 14:48:11
 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 | | | |
|--|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|----------|-------|-------|------|
| | 0708 | 0598 | 0697 | 0732 | 0674 | 0772 | 0772 | 0772 | 0772 | 0772 | 0578 | 0771 | 0773 | 0773 | 0422 | 0733 | 0671 | 0773 | 0578 | 0770 | | 0773 | 0684 | 0773 |
| ANIMAL ID | 00326 | 00337 | 00338 | 00339 | 00340 | 00341 | 00342 | 00343 | 00344 | 00345 | 00346 | 00347 | 00348 | 00349 | 00350 | 00351 | 00352 | 00353 | 00354 | 00355 | 00356 | 00357 | 00358 | |
| Carcinoma | | | | | | | | | | | | | | | | | | | | | X | X | | 5 |
| Fibroadenoma | | | | X | | | | | | X | X | X | | | X | X | | X | | | | X | | 21 |
| Fibroadenoma, Multiple | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| Leukemia Mononuclear | | | | | | | | | | | X | | | | | | | | | | | | | 2 |
| Skin | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Papilloma | | | | | | | | | | | | | | | | | | | | | X | | | 1 |
| Subcutaneous Tissue, Fibroma | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| Subcutaneous Tissue, Fibrous Histiocytoma | | | | | | | | | | | | | | | X | | | | | | | | | 2 |
| MUSCULOSKELETAL SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | |
| Bone | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Skeletal Muscle | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| Lipoma | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| NERVOUS SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | |
| Brain | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Carcinoma, Metastatic, Pituitary Gland | | | | | | | | | | | X | | | | X | | | | | | X | | | 3 |
| RESPIRATORY SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | |
| Larynx | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Lung | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Alveolar/Bronchiolar Adenoma | | | | X | | | | | | | | | X | | | | | | | | | | | 6 |
| Alveolar/Bronchiolar Adenoma, Multiple | | | | | | | | | | | | | | X | | | | | | | | | | 1 |
| Alveolar/Bronchiolar Carcinoma | | | | | | | | | | | | X | X | | | X | | | | | | X | | 5 |
| Alveolar/Bronchiolar Carcinoma, Multiple | | | | | | | | | | X | | | | | X | | | X | | | | | | 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
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FEMALE
1.25 mg/m3 | DAY ON TEST | | | | | | | | | | | | | | | | | | | | * TOTALS | | | | | |
|---|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|----------|-------|-------|-------|------|--|
| | 0708 | 0598 | 0697 | 0732 | 0624 | 0772 | 0772 | 0772 | 0772 | 0772 | 0578 | 0771 | 0773 | 0773 | 0773 | 0422 | 0733 | 0671 | 0773 | 0578 | | 0770 | 0773 | 0684 | 0773 | |
| ANIMAL ID | 00326 | 00337 | 00338 | 00333 | 00333 | 00333 | 00333 | 00333 | 00333 | 00333 | 00333 | 00333 | 00333 | 00333 | 00333 | 00333 | 00333 | 00333 | 00333 | 00333 | 00333 | 00333 | 00333 | 00333 | | |
| Cystic Keratinizing Epithelioma | | | | | | | | | | | | | | | | | | | | | | | | | 4 | |
| Leukemia Mononuclear | | X | X | | X | | | | | X | | | | | | | X | | X | | | | | X | 14 | |
| Mediastinum, Alveolar/Bronchiolar Carcinoma, Metastatic, Lung | | | | | | | | | | | | | | | | X | | | | | | | | | 2 | |
| Nose | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Trachea | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| SPECIAL SENSES SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Ear | | | | | | | | | | | | | | | | | | | | | | | | | 4 | |
| Eye | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Harderian Gland | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Zymbal's Gland | | | | | | | | | | | | | | | | | | | | | | | | | 1 | |
| Adenoma | | | | | | | | | | | | | | | | | | | | | | | | | 1 | |
| URINARY SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Kidney | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Transitional Epithelium, Papilloma | | | | | | | | | | | | | | | | | | | | | | | | | 1 | |
| Urinary Bladder | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Leukemia Mononuclear | | | X | | | | | | | | | | | | | | | | | | | | | X | 4 | |
| SYSTEMIC LESIONS | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Multiple Organ | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |

* .. 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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| FISCHER 344-TACONIC RATS
FEMALE
2.5 mg/m3 | DAY ON TEST | | | | | | | | | | | | | | | | | | | | ANIMAL ID | females
(cont...) | | |
|---|-------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-----------|----------------------|------|------|
| | 0730 | 0732 | 0737 | 0731 | 0739 | 0768 | 0773 | 0776 | 0766 | 0766 | 0721 | 0758 | 0773 | 0777 | 0777 | 0777 | 0766 | 0755 | 0777 | 0777 | | | 0777 | 0766 |
| | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 | 0000 |
| | 51 | 52 | 53 | 54 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 | 55 |

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 | + | A | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Liver | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Leukemia Mononuclear | | | | | | | | X | X | | | | X | | X | X | X | | X | X | | X | X | |
| Mesentery | | | | + | | | | | | | + | | | | | | | | | | | | | |
| Pancreas | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Leukemia Mononuclear | | | | | | | | | | | | | | | | | | | | | | | X | |
| Salivary Glands | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Stomach, Forestomach | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Stomach, Glandular | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |

* .. Total animals with tissue examined microscopically; Total animals with tumor
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FEMALE
2.5 mg/m3 | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | | ANIMAL ID | females
(cont...) | |
|---|-------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-----------|----------------------|------|
| | 0730 | 0732 | 0737 | 0731 | 0739 | 0738 | 0733 | 0731 | 0735 | 0733 | 0738 | 0731 | 0732 | 0735 | 0737 | 0733 | 0730 | 0732 | 0737 | 0737 | 0737 | 0733 | 0736 | 0736 | | | 0737 |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 00501 | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 00502 | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 00503 | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 00504 | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 00505 | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 00506 | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 00507 | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 00508 | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 00509 | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 00510 | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 00511 | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 00512 | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 00513 | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 00514 | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 00515 | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 00516 | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 00517 | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 00518 | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 00519 | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 00520 | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 00521 | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 00522 | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 00523 | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 00524 | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 00525 | |

Pars Distalis, Carcinoma

Thyroid Gland

Bilateral, C-cell, Adenoma

C-cell, Adenoma

C-cell, Carcinoma

Follicular Cell, Adenoma

+
 X
 X

GENERAL BODY SYSTEM

NONE

GENITAL SYSTEM

Clitoral Gland

Adenoma

Carcinoma

+
 X X X
 X

Ovary

Granulosa Cell Tumor Malignant

Leukemia Mononuclear

+
 X

Uterus

Carcinoma

Leukemia Mononuclear

Polyp Stromal

+
 X X X

HEMATOPOIETIC SYSTEM

Bone Marrow

+ +

* .. 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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2.5 mg/m3 | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | | * TOTALS |
|---|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|----------|
| | 0591 | 0590 | 0731 | 0754 | 0759 | 0764 | 0771 | 0773 | 0775 | 0779 | 0781 | 0783 | 0785 | 0787 | 0789 | 0791 | 0793 | 0795 | 0797 | 0799 | 0801 | 0803 | 0805 | 0807 | |
| ANIMAL ID | 00526 | 00527 | 00528 | 00529 | 00530 | 00531 | 00532 | 00533 | 00534 | 00535 | 00536 | 00537 | 00538 | 00539 | 00540 | 00541 | 00542 | 00543 | 00544 | 00545 | 00546 | 00547 | 00548 | 00549 | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 49 |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 49 |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 49 |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 50 |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 50 |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 48 |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 47 |
| Liver | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Leukemia Mononuclear | X | X | | | X | X | X | | | X | X | X | X | | | X | X | | | | X | | X | | 23 |
| Mesentery | + | + | | | | | | | | | | + | | | | | | | | + | + | + | | | 8 |
| Pancreas | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Leukemia Mononuclear | | | | | | | X | | | | | | | | | | | | | | | | | | 2 |
| Salivary Glands | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Stomach, Forestomach | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Stomach, Glandular | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |

* .. Total animals with tissue examined microscopically; Total animals with tumor
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|---|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|----------|-------|-------|-------|-------|-------|-------|------|
| | 0591 | 0590 | 0731 | 0754 | 0759 | 0764 | 0771 | 0773 | 0777 | 0779 | 0782 | 0783 | 0785 | 0786 | 0787 | 0788 | 0789 | 0790 | 0791 | 0792 | | 0793 | 0794 | 0795 | 0796 | 0797 | 0798 | 0799 |
| ANIMAL ID | 00526 | 00527 | 00528 | 00529 | 00530 | 00531 | 00532 | 00533 | 00534 | 00535 | 00536 | 00537 | 00538 | 00539 | 00540 | 00541 | 00542 | 00543 | 00544 | 00545 | 00546 | 00547 | 00548 | 00549 | 00550 | 00551 | 00552 | |
| Tongue Squamous Cell Carcinoma | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| Tooth | | | | | | | | | | | | | | | | | | | | | | | | | | | | 2 |

CARDIOVASCULAR SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|----------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|----|
| Heart | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Leukemia Mononuclear | | | | | X | | | | | | X | | | | | X | | | | | X | | | | | | | 7 |
| Schwannoma Malignant | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 |

ENDOCRINE SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---------------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|----|
| Adrenal Cortex | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Leukemia Mononuclear | | | X | | X | | | | | | X | | X | | | X | | | | X | | | | | | | | 12 |
| Adrenal Medulla | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Leukemia Mononuclear | | | X | | X | | | | | | X | | X | | | X | | | | X | | | | | | | | 12 |
| Pheochromocytoma Benign | X | X | | | | | | X | | | | X | | X | | | | | X | | | | | | | | | 14 |
| Pheochromocytoma Malignant | | | | | | | | | | | | X | | | | | | | | | | | | | | | | 2 |
| Bilateral, Pheochromocytoma Benign | | | | | | | | | | | | | X | | | | | | | | | | | | | | | 8 |
| Bilateral, Pheochromocytoma Malignant | | | | | | | | | | | | | | | | | | | | | | | | | | X | | 1 |
| Islets, Pancreatic | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Parathyroid Gland | + | + | + | + | M | M | + | + | + | + | M | + | + | + | + | + | + | + | M | + | + | M | + | + | + | + | + | 38 |
| Pituitary Gland | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 49 |
| Leukemia Mononuclear | | | | | X | | X | | | | | | | | | | | | | | | | | | X | | | 4 |
| Pars Distalis, Adenoma | X | | X | | | X | | X | X | X | | | | X | X | | | | X | | X | | | | | X | | 26 |

* .. 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

P04: NEOPLASMS BY INDIVIDUAL ANIMAL
 Cobalt
 CAS Number: 7440-48-4

Date Report Requested: 01/18/2012
 Time Report Requested: 14:48:11
 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 | | |
|---|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|----------|---|----|
| | 0591 | 0590 | 0731 | 0754 | 0589 | 0654 | 0171 | 0773 | 0771 | 0565 | 0672 | 0773 | 0773 | 0773 | 0773 | 0622 | 0733 | 0733 | 0590 | 0681 | 0773 | 0773 | 0665 | 0773 | | | |
| ANIMAL ID | 00526 | 00527 | 00528 | 00529 | 00530 | 00531 | 00532 | 00533 | 00534 | 00535 | 00536 | 00537 | 00538 | 00539 | 00540 | 00541 | 00542 | 00543 | 00544 | 00545 | 00546 | 00547 | 00548 | 00549 | 00550 | | |
| Pars Distalis, Carcinoma | | | | | | | | | | | | | | | | | | | | | | | | | | X | 1 |
| Thyroid Gland | + | + | + | + | + | M | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 49 |
| Bilateral, C-cell, Adenoma | | | | | | | | | | | X | | | | | | | | | | | | | | | | 2 |
| C-cell, Adenoma | | | | | | | | | | | | | | | | | | | | | | | | | X | | 2 |
| C-cell, Carcinoma | | | | | | | | | | | | | | | | | | | | | | | | | | X | 1 |
| Follicular Cell, Adenoma | | | | | | | | | | | X | | | | | | | | | | | | | | | | 1 |
| GENERAL BODY SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| NONE | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| GENITAL SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Clitoral Gland | + | + | + | + | + | + | + | + | M | + | + | + | + | + | M | + | + | + | + | + | + | + | + | + | M | + | 47 |
| Adenoma | | | | | | | | | | | | | | | X | | | | | | | | | | X | | 6 |
| Carcinoma | | | | | | | | | | X | | | | | | | | | | | | | | | | | 3 |
| Ovary | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Granulosa Cell Tumor Malignant | | | | | | | | | | | | | | | X | | | | | | | | | | | | 1 |
| Leukemia Mononuclear | | | | | | X | X | X | | | | | | X | | X | | | | | | | | X | | X | 8 |
| Uterus | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Carcinoma | X | | | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| Leukemia Mononuclear | | | | | | | X | | | | | | | | | | | | | | | | | | | | 2 |
| Polyp Stromal | | | | | | X | | | | | | | | | | | X | | X | | | | | | | | 6 |
| HEMATOPOIETIC SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Bone Marrow | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 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

P04: NEOPLASMS BY INDIVIDUAL ANIMAL
 Cobalt
 CAS Number: 7440-48-4

Date Report Requested: 01/18/2012
 Time Report Requested: 14:48:11
 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 | | | | | | |
|---|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|----------|-------|-------|-------|-------|-------|------|
| | 0591 | 0590 | 0731 | 0541 | 0559 | 0614 | 0717 | 0773 | 0513 | 0669 | 0733 | 0773 | 0773 | 0773 | 0622 | 0733 | 0773 | 0590 | 0668 | 0731 | | 0773 | 0665 | 0739 | 0733 | 0695 | 0732 |
| ANIMAL ID | 00526 | 00527 | 00528 | 00529 | 00530 | 00531 | 00532 | 00533 | 00534 | 00535 | 00536 | 00537 | 00538 | 00539 | 00540 | 00541 | 00542 | 00543 | 00544 | 00545 | 00546 | 00547 | 00548 | 00549 | 00550 | 00551 | |
| Lymph Node | | | | + | + | | | | | | | | | | | | | | | | | | | | | | |
| Deep Cervical, Lumbar, Leukemia Mononuclear | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Iliac, Pancreatic, Renal, Leukemia Mononuclear | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Lumbar, Pancreatic, Renal, Leukemia Mononuclear | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Renal, Leukemia Mononuclear | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Lymph Node, Bronchial Leukemia Mononuclear | + | M | M | + | + | M | M | M | M | M | + | M | + | + | M | M | M | M | M | M | M | M | M | M | M | M | M |
| Lymph Node, Mandibular Leukemia Mononuclear | + | + | + | + | + | + | + | + | + | M | + | + | + | + | + | + | + | + | M | + | + | + | + | + | + | + | + |
| Lymph Node, Mediastinal Leukemia Mononuclear | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | M | + | + | + | + | + | + | + | + | + | + |
| Lymph Node, Mesenteric Leukemia Mononuclear | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Spleen Leukemia Mononuclear | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Thymus Leukemia Mononuclear | + | + | + | + | + | + | + | + | + | + | + | + | + | M | + | + | + | + | + | + | + | M | M | + | M | + | + |
| INTEGUMENTARY SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Mammary Gland | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |

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

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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
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0 | 0
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1 | 0
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4
1 | 0
5
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9 | 0
6
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4 | 0
1
1
7 | 0
7
3
1 | 0
7
3
1 | 0
5
9
3 | 0
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5 | 0
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3
2 | 0
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1 | 0
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2 | 0
6
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8 | 0
7
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2 | 0
7
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1 | 0
5
9
0 | 0
6
1
8 | 0
7
3
1 | 0
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1 | 0
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5 | 0
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2 | | | | |
| ANIMAL ID | 0
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6 | 0
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8 | 0
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6 | 0
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5
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7 | | |
| Adenocarcinoma | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | |
| Adenoma | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| Fibroadenoma | | | | | | | X | X | X | | X | X | | | | X | X | | X | X | X | | | | | 15 | |
| Skin | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Keratoacanthoma | | | | | | | | | | | | | | | X | | | | | | | | | | | 2 | |
| Squamous Cell Papilloma | | | | | | | | | | | | | | | | | | | | | | | X | | | 1 | |
| MUSCULOSKELETAL SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Bone | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| NERVOUS SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Brain | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Carcinoma, Metastatic, Pituitary Gland | | | | | | | | | | | | | | | | | | X | | | | | | | | 1 | |
| Glioma Malignant | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | |
| Leukemia Mononuclear | | | | | | | X | | | | | | | | | | | | | | | | | | | 1 | |
| RESPIRATORY SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Larynx | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Leukemia Mononuclear | | | | | | X | X | | | | | | | | | | | | | | | | | | | 2 | |
| Lung | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 | |
| Alveolar/Bronchiolar Adenoma | | | | | | | | | | | | | | | | | | | X | | | | X | | | 6 | |
| Alveolar/Bronchiolar Adenoma, Multiple | | | | | | | | | | | | | | | | | | | | | | | | | | 3 | |
| Alveolar/Bronchiolar Carcinoma | | | | | | | | | | | X | X | | | | X | X | | | | | X | X | | | 14 | |
| Alveolar/Bronchiolar Carcinoma, Multiple | | | | | | | | | | | | | | | | | | | | | | | | | | 3 | |
| Cystic Keratinizing Epithelioma | | | | | | | | | | | | | 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
 BLANK .. Not examined microscopically

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

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 Cobalt
 CAS Number: 7440-48-4

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| FISCHER 344-TACONIC RATS
FEMALE
2.5 mg/m3 | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | | * TOTALS |
|---|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|----------|
| | 0591 | 0590 | 0731 | 0734 | 0589 | 0654 | 0177 | 0773 | 0771 | 0593 | 0665 | 0772 | 0773 | 0773 | 0773 | 0662 | 0773 | 0773 | 0590 | 0668 | 0771 | 0773 | 0665 | 0773 | |
| ANIMAL ID | 00526 | 00527 | 00528 | 00529 | 00530 | 00531 | 00532 | 00533 | 00534 | 00535 | 00536 | 00537 | 00538 | 00539 | 00540 | 00541 | 00542 | 00543 | 00544 | 00545 | 00546 | 00547 | 00548 | 00549 | |
| Leukemia Mononuclear | X | X | | | X | X | | | X | X | | X | | | X | | | | | X | | | X | | 17 |
| Nose | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 49 |
| Leukemia Mononuclear | | | | | X | X | | | | | | | | | | | | | | | | | X | | 3 |
| Trachea | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| SPECIAL SENSES SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | |
| Eye | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 49 |
| Harderian Gland | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Leukemia Mononuclear | | | | | | X | | | | | | | | | | | | | | | | | | | 1 |
| URINARY SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | |
| Kidney | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Leukemia Mononuclear | | | | | X | X | | | | X | | | | | | | | | | | | | | | 3 |
| Urinary Bladder | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Leukemia Mononuclear | | | | | X | | | | | | | | | | X | | | | | | | | | | 2 |
| SYSTEMIC LESIONS | | | | | | | | | | | | | | | | | | | | | | | | | |
| Multiple Organ | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Leukemia Mononuclear | X | X | X | X | X | 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
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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
5.0 mg/m3 | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | | females
(cont...) |
|---|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| | 0
7
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1 | 0
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8 | 0
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6
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0 | 0
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5 | 0
7
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2 | 0
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1 | 0
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1 | 0
7
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1 | 0
6
9
1 | 0
7
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2 | 0
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6 | 0
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2 | 0
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3
2 | 0
4
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9 | 0
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2 | 0
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1 | 0
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1 | 0
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2 | |
| ANIMAL ID | 0
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2 | 0
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7
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3 | 0
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ALIMENTARY SYSTEM

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

* .. 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

P04: NEOPLASMS BY INDIVIDUAL ANIMAL
 Cobalt
 CAS Number: 7440-48-4

Date Report Requested: 01/18/2012
 Time Report Requested: 14:48:11
 First Dose M/F: 05/08/06 / 05/08/06
 Lab: BNW

| FISCHER 344-TACONIC RATS
FEMALE
5.0 mg/m3 | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | | | females
(cont...) |
|---|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|----------------------|
| | 0
7
3
1 | 0
7
3
0 | 0
7
3
1 | 0
4
7
8 | 0
7
3
0 | 0
4
7
3 | 0
6
0
0 | 0
7
2
5 | 0
7
3
2 | 0
7
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1 | 0
7
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1 | 0
7
3
1 | 0
6
9
1 | 0
7
1
2 | 0
5
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5
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6 | 0
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6 | 0
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2 | 0
4
8
9 | 0
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3
2 | 0
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3
1 | 0
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1 | 0
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2 | | |
| ANIMAL ID | 0
0
7
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2 | 0
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3 | 0
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4 | 0
0
7
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7
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1 | 0
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2 | 0
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2
1 | 0
0
7
2
2 | 0
0
7
2
3 | 0
0
7
2
4 | 0
0
7
2
5 | |
| Leukemia Mononuclear
Pars Distalis, Adenoma
Pars Distalis, Carcinoma | X | X | | | | | X | | X | | X | X | | | X | | X | X | | X | | | | | X | |
| Thyroid Gland
C-cell, Adenoma
C-cell, Carcinoma
Follicular Cell, Adenoma | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | |
| GENERAL BODY SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | |
| NONE | | | | | | | | | | | | | | | | | | | | | | | | | | |
| GENITAL SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Clitoral Gland
Adenoma
Carcinoma | + | M | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | M | + | + | + | | |
| Ovary
Leukemia Mononuclear
Thecoma Benign | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | |
| Uterus
Leukemia Mononuclear
Polyp Stromal | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | |
| HEMATOPOIETIC SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Bone Marrow | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | |

* .. 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

P04: NEOPLASMS BY INDIVIDUAL ANIMAL
 Cobalt
 CAS Number: 7440-48-4

Date Report Requested: 01/18/2012
 Time Report Requested: 14:48:11
 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...) |
|---|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|-----------------------|-----------|----------------------|
| | 0
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1 | 0
4
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8 | 0
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4
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3 | 0
6
7
0 | 0
7
2
5 | 0
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2 | 0
7
3
1 | 0
7
3
1 | 0
7
3
1 | 0
6
9
1 | 0
7
1
2 | 0
5
3
0 | 0
5
0
6 | 0
7
3
2 | 0
6
4
6 | 0
7
3
2 | 0
4
8
9 | 0
7
3
2 | 0
7
3
1 | 0
7
3
1 | 0
7
3
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
7
0
1 | | |

INTEGUMENTARY SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mammary Gland | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Adenoma | | | | | | | | | | | | | | | | | | | | | | | | |
| Carcinoma | | | | | | | | | | | X | X | | | | | | | | | X | | | |
| Fibroadenoma | | X | X | | | | | | | | | | | | | | | | | | | | X | |
| Skin | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | |
| Keratoacanthoma | | | | | | | | | | | | | | | | | | | | | X | | | |
| Subcutaneous Tissue, Fibroma | | | | | | | | | | | | | | | | | | | | | | | | |
| Subcutaneous Tissue, Schwannoma Malignant | | | | | | | | | | | | | | | | | | | | | | | | |

MUSCULOSKELETAL SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | | |
|--|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Bone | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + |
| Skeletal Muscle | | | | | | | | | | | | | | | | | | | | | | | | |
| Schwannoma Malignant, Metastatic, Skin | | | | | | | | | | | | | | | | | | | | | | | | |

NERVOUS SYSTEM

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

RESPIRATORY SYSTEM

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

* .. 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

P04: NEOPLASMS BY INDIVIDUAL ANIMAL
 Cobalt
 CAS Number: 7440-48-4

Date Report Requested: 01/18/2012
 Time Report Requested: 14:48:11
 First Dose M/F: 05/08/06 / 05/08/06
 Lab: BNW

| FISCHER 344-TACONIC RATS
FEMALE
5.0 mg/m3 | DAY ON TEST | | | | | | | | | | | | | | | | | | | | | | | | females
(cont...) |
|---|-------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|----------------------|
| | 0731 | 0730 | 0731 | 0738 | 0730 | 0746 | 0767 | 0777 | 0777 | 0777 | 0777 | 0777 | 0777 | 0777 | 0777 | 0777 | 0777 | 0777 | 0777 | 0777 | 0777 | 0777 | 0777 | 0777 | |
| ANIMAL ID | 0070 | 0070 | 0070 | 0070 | 0070 | 0070 | 0070 | 0070 | 0070 | 0070 | 0070 | 0070 | 0070 | 0070 | 0070 | 0070 | 0070 | 0070 | 0070 | 0070 | 0070 | 0070 | 0070 | 0070 | |
| Alveolar/Bronchiolar Adenoma | | | | | | | X | X | | | | | X | X | | | | | X | | | | | | |
| Alveolar/Bronchiolar Adenoma, Multiple | | X | | X | | | | | | | | | | | | | | | X | | | | | | |
| Alveolar/Bronchiolar Carcinoma | | X | | | | X | | X | | | | | X | | | | | | | | X | | | | |
| Alveolar/Bronchiolar Carcinoma, Multiple | X | | X | | | | | | X | X | X | | | X | | X | | | X | | X | X | | | |
| Cystic Keratinizing Epithelioma | X | | | | | | | | | | | | | | | | | | | | | | | | |
| Leukemia Mononuclear | | | | X | X | | | | X | | | | X | | | | | | X | | | | | | |
| Pheochromocytoma Malignant, Metastatic, Adrenal Medulla | | | | | | | | | | | | | | | | | | | | | | | | | |
| Squamous Cell Carcinoma | | | | | | | | | | | | | | | | | | | | | | | | | |
| Mediastinum, Alveolar/Bronchiolar Carcinoma, Metastatic, Lung | | | | | | | | | | | | X | | | | | | | | | | | | | |
| Nose | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | |
| Leukemia Mononuclear | | | | | | | | | | | | | | X | | | | | | X | | | | | |
| Trachea | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | |
| SPECIAL SENSES SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | |
| Ear | | | | | | | | | | | | | | | | | | | | | | | | | |
| Eye | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | |
| Harderian Gland | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | |
| URINARY SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | |
| Kidney | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | |
| Leukemia Mononuclear | | | | | | | | | | | | | | | | | | | | | | X | | | |
| Urinary Bladder | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | |

* .. 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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 Lab: BNW

| FISCHER 344-TACONIC RATS
FEMALE
5.0 mg/m3 | DAY ON TEST | | | | | | | | | | | | | | | | | | | | * TOTALS | | | | |
|---|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|----------|-------|-------|-------|-------|
| | 0674 | 0673 | 0641 | 0673 | 0673 | 0659 | 0673 | 0663 | 0666 | 0666 | 0673 | 0657 | 0673 | 0666 | 0673 | 0673 | 0657 | 0673 | 0666 | 0673 | | 0673 | 0673 | 0666 | 0673 |
| ANIMAL ID | 00726 | 00777 | 00777 | 00777 | 00777 | 00777 | 00777 | 00777 | 00777 | 00777 | 00777 | 00777 | 00777 | 00777 | 00777 | 00777 | 00777 | 00777 | 00777 | 00777 | 00777 | 00777 | 00777 | 00777 | 00777 |

Tooth + + 2

CARDIOVASCULAR SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|----|
| Heart | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Leukemia Mononuclear | | X | | | | X | | | X | | | X | | | | X | | | | | | | | X | | 8 |
| Pheochromocytoma Malignant, Metastatic, Adrenal Medulla | | | | | | | | | | | | | | | | | | | | | | X | | | | 1 |
| Pericardium, Rhabdomyosarcoma, Metastatic, Uncertain Primary Site | | | | | | | | | | | | | | | | | | | | | | | | | | 1 |

ENDOCRINE SYSTEM

| | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---------------------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|----|
| Adrenal Cortex | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Leukemia Mononuclear | | X | | | | | | | X | | | X | | | | X | | | | X | | | X | X | | 11 |
| Adrenal Medulla | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Leukemia Mononuclear | X | X | | | | | | | X | | | X | | | | X | | | | X | | | X | X | | 12 |
| Pheochromocytoma Benign | | | | X | | X | | | | X | X | X | | | | X | X | X | | X | X | | | X | | 17 |
| Pheochromocytoma Malignant | | | | X | | | | | X | | | X | | | | | | | | X | | | | | | 7 |
| Bilateral, Pheochromocytoma Benign | X | | | | | | X | X | X | | | | X | | X | X | | | | | | | | X | | 19 |
| Bilateral, Pheochromocytoma Malignant | | | | | | | | | | | | | | | | | | X | | | | | X | | | 4 |
| Islets, Pancreatic | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Adenoma | | | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| Carcinoma | | | | | | | | | | | | X | | | | | | | | | | | | | | 3 |
| Parathyroid Gland | M | + | + | + | + | + | + | + | M | + | + | + | + | + | M | + | + | + | + | + | + | + | + | + | + | 45 |
| Pituitary Gland | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |

* .. 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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FEMALE
5.0 mg/m3 | DAY ON TEST | | | | | | | | | | | | | | | | | | | | * TOTALS | | |
|--|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|----------|-------|-------|
| | 0674 | 0673 | 0641 | 0673 | 0673 | 0659 | 0673 | 0663 | 0666 | 0671 | 0675 | 0677 | 0666 | 0677 | 0677 | 0657 | 0676 | 0677 | 0677 | 0677 | | 0667 | 0673 |
| ANIMAL ID | 00726 | 00772 | 00778 | 00779 | 00777 | 00773 | 00773 | 00733 | 00733 | 00734 | 00735 | 00736 | 00737 | 00737 | 00737 | 00737 | 00737 | 00737 | 00737 | 00737 | 00737 | 00737 | 00737 |
| Leukemia Mononuclear | | | | | | | | | | | | | | | | | | | | | | | 1 |
| Lymph Node | | | | | | | | | | + | | | | | + | | | | | | | | 5 |
| Lumbar, Pancreatic, Renal, Leukemia Mononuclear | | | | | | | | | | | | | | | | | | | | | | | 1 |
| Pancreatic, Leukemia Mononuclear | | | | | | | | | | | | | | | X | | | | | | | X | 2 |
| Renal, Leukemia Mononuclear | | | | | | | | | | | | | | | | | | | | | | | 1 |
| Lymph Node, Bronchial | M | + | + | + | + | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | M | 17 |
| Alveolar/Bronchiolar Carcinoma, Metastatic, Lung | | | | | | | | | | | | | | | | | | | | | | X | 1 |
| Leukemia Mononuclear | | | | | | | | | | | | | | | | | | | | | | | 2 |
| Lymph Node, Mandibular | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 47 |
| Leukemia Mononuclear | X | | | | | | | | | X | | | | | X | | | | | | | | 9 |
| Lymph Node, Mediastinal | + | + | + | + | + | + | + | + | + | + | M | + | + | + | M | + | + | + | + | + | + | + | 48 |
| Leukemia Mononuclear | | | | | | | | | | X | | | | | | | | | | | | X | 6 |
| Lymph Node, Mesenteric | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Leukemia Mononuclear | | | | | | | | | | X | | | | | X | | | | | | | X | 5 |
| Spleen | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | 50 |
| Leukemia Mononuclear | X | X | | X | X | X | X | | X | X | | X | | | X | | X | X | X | | | X | 27 |
| Thymus | + | + | + | + | + | + | + | + | + | + | + | + | + | + | + | M | + | + | + | + | + | + | 47 |
| Alveolar/Bronchiolar Carcinoma, Metastatic, Lung | | | | | | | | | | | | | | | | | | | | | | X | 1 |
| Leukemia Mononuclear | | | | | | | | | | | | | | | X | | | | | | | X | 3 |

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

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 BLANK .. Not examined microscopically

