

Experiment Number: 20701 - 01
Test Type: 90-DAY
Route: RESPIRATORY EXPOSURE NASAL
Species/Strain: RATS/Wistar Han

P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL
Nanoscale material (Fullerene-C60 1 micron)
CAS Number: 99685-96-8

Date Report Requested: 02/22/2013
Time Report Requested: 07:58:31
First Dose M/F: 11/05/07 / 11/05/07
Lab: BNW

F2_Rev.1_RE

NTP Study Number: C20701
Lock Date: 02/24/2009
Cage Range: ALL
Date Range: ALL
Reasons For Removal: ALL
Removal Date Range: ALL
Treatment Groups: Include ALL
Study Gender: Both
TDMSE Version: 3.0.1.1_001
PWG Approval Date: NONE

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DAY ON TEST		0	0	0	0	0	0	0	0	0	
WISTAR HAN RATS MALE		0	0	0	0	0	0	0	0	0	
		8	8	8	8	8	8	8	8	8	
		9	9	9	9	9	9	9	9	9	
	0 mg/m3										
ANIMAL ID		0	0	0	0	0	0	0	0	0	
		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	1	
		1	2	3	4	5	6	7	8	9	
* TOTALS											

ALIMENTARY SYSTEM

Esophagus	+	+	+	+	+	+	+	+	+	+	10
Intestine Large, Cecum	+	+	+	+	+	+	+	+	+	+	10
Intestine Large, Colon	+	+	+	+	+	+	+	+	+	+	10
Intestine Large, Rectum	+	+	+	+	+	+	+	+	+	+	10
Intestine Small, Duodenum	+	+	+	+	+	+	+	+	+	+	10
Intestine Small, Ileum	+	+	+	+	+	+	+	+	+	+	10
Intestine Small, Jejunum	+	+	+	+	+	+	+	+	+	+	10
Liver	+	+	+	+	+	+	+	+	+	+	10
Pancreas	+	+	+	+	+	+	+	+	+	+	10
Salivary Glands	+	+	+	+	+	+	+	+	+	+	10
Stomach, Forestomach	+	+	+	+	+	+	+	+	+	+	10
Stomach, Glandular	+	+	+	+	+	+	+	+	+	+	10

CARDIOVASCULAR SYSTEM

Blood Vessel	+	+	+	+	+	+	+	+	+	+	10
Heart	+	+	+	+	+	+	+	+	+	+	10

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DAY ON TEST	0	0	0	0	0	0	0	0	0	0	ANIMAL ID		
	8	8	8	8	8	8	8	8	8	8			
9	9	9	9	9	9	9	9	9	9	9	0	0	
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	1	2	
													* TOTALS
Cardiomyopathy											1		1 1.0

ENDOCRINE SYSTEM

Adrenal Cortex	+	+	+	+	+	+	+	+	+	+			10
Adrenal Medulla	+	+	+	+	+	+	+	+	+	+			10
Islets, Pancreatic	+	+	+	+	+	+	+	+	+	+			10
Parathyroid Gland	+	+	M	+	+	+	+	+	+	+			9
Pituitary Gland	+	+	+	+	+	+	+	+	+	+			10
Thyroid Gland	+	+	+	+	+	+	+	+	+	+			10

GENERAL BODY SYSTEM

NONE

GENITAL SYSTEM

Epididymis	+	+	+	+	+	+	+	+	+	+			10
Preputial Gland	+	+	+	+	+	+	+	+	+	+			10
Inflammation, Chronic Active							1	1	1				3 1.0
Prostate	+	+	+	+	+	+	+	+	+	+			10
Seminal Vesicle	+	+	+	+	+	+	+	+	+	+			10

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WISTAR HAN RATS MALE 0 mg/m3	DAY ON TEST										ANIMAL ID					
	0 8 9	0 8 9	0 8 9	0 8 9	0 8 9	0 8 9	0 8 9	0 8 9	0 8 9	0 8 9						
	0	0	0	0	0	0	0	0	0	0	0 1 0 0 1					
	1	1	1	1	1	1	1	1	1	1	0 0 0 0 0					
	2	3	4	5	6	7	8	9	0							
	* TOTALS															
Testes	+	+	+	+	+	+	+	+	+	+				10		
HEMATOPOIETIC SYSTEM																
Bone Marrow	+	+	+	+	+	+	+	+	+	+				10		
Lymph Node, Bronchial	+	+	+	+	M	+	M	+	M	+				7		
Lymph Node, Mandibular	+	+	+	+	+	+	+	+	+	+				10		
Lymph Node, Mediastinal Pigmentation	M	+	M	+	+	+	+	+	+	+	1	1	1	1	8	4 1.0
Lymph Node, Mesenteric	+	+	+	+	+	+	+	+	+	+				10		
Spleen	+	+	+	+	+	+	+	+	+	+				10		
Thymus	+	+	+	+	+	+	+	+	+	+				10		
INTEGUMENTARY SYSTEM																
Mammary Gland	+	M	+	+	M	M	M	+	M	+				5		
Skin	+	+	+	+	+	+	+	+	+	+				10		
MUSCULOSKELETAL SYSTEM																
Bone	+	+	+	+	+	+	+	+	+	+				10		
NERVOUS SYSTEM																

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WISTAR HAN RATS MALE 0 mg/m3	DAY ON TEST										ANIMAL ID					
	0	0	0	0	0	0	0	0	0	0						
	8	8	8	8	8	8	8	8	8	8	0					
	9	9	9	9	9	9	9	9	9	9	0					
	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	1	0					
	1	2	3	4	5	6	7	8	9	0						
																* TOTALS
Brain	+	+	+	+	+	+	+	+	+	+						10
RESPIRATORY SYSTEM																
Larynx	+	+	+	+	+	+	+	+	+	+						10
Lung	+	+	+	+	+	+	+	+	+	+						10
Infiltration Cellular, Histiocyte								1								1 1.0
Inflammation, Chronic Active	1															1 1.0
Nose	+	+	+	+	+	+	+	+	+	+						10
Trachea	+	+	+	+	+	+	+	+	+	+						10
SPECIAL SENSES SYSTEM																
Eye	+	+	+	+	+	+	+	+	+	+						10
Harderian Gland	+	+	+	+	+	+	+	+	+	+						10
Inflammation, Chronic Active				1						1						2 1.0
URINARY SYSTEM																
Kidney	+	+	+	+	+	+	+	+	+	+						10
Infarct										1						1 1.0
Urinary Bladder	+	+	+	+	+	+	+	+	+	+						10

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		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		8	8	8	8	8	8	8	8	8	8	8	8	8	8
		9	9	9	9	9	9	9	9	9	9	9	9	9	9
15 mg/m3	ANIMAL ID	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	
		4	4	4	4	4	4	4	4	4	4	4	4	4	
		0	0	0	0	0	0	0	0	0	0	0	1	0	
		1	2	3	4	5	6	7	8	9	0				
* TOTALS															

ALIMENTARY SYSTEM

NONE

CARDIOVASCULAR SYSTEM

NONE

ENDOCRINE SYSTEM

NONE

GENERAL BODY SYSTEM

NONE

GENITAL SYSTEM

Epididymis	+	+	+	+	+	+	+	+	+	+	10		
Hypospermia										4		1	4.0
Testes	+	+	+	+	+	+	+	+	+	+	10		
Germinal Epithelium, Degeneration	1					1				4		3	2.0
Interstitial Cell, Hyperplasia										2		1	2.0

HEMATOPOIETIC SYSTEM

Lymph Node, Bronchial	M	+	+	M	+	M	+	+	M	+	6		
Pigmentation		1	1		1							3	1.0
Lymph Node, Mediastinal	+	+	M	+	+	+	M	+	+	+	8		

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DAY ON TEST	0	0	0	0	0	0	0	0	0	0	
	WISTAR HAN RATS MALE	8	8	8	8	8	8	8	8	8	8
15 mg/m3	9	9	9	9	9	9	9	9	9	9	
ANIMAL ID	0	0	0	0	0	0	0	0	0	0	
	1	1	1	1	1	1	1	1	1	1	
	4	4	4	4	4	4	4	4	4	4	
	0	0	0	0	0	0	0	0	0	1	
	1	2	3	4	5	6	7	8	9	0	
* TOTALS											
Pigmentation	2		1			2					3 1.7

INTEGUMENTARY SYSTEM

NONE

MUSCULOSKELETAL SYSTEM

NONE

NERVOUS SYSTEM

NONE

RESPIRATORY SYSTEM

Lung	+	+	+	+	+	+	+	+	+	9	
Hemorrhage									2		1 2.0
Infiltration Cellular, Histiocyte		1	1	1	2	1	2	2	1		8 1.4
Inflammation, Chronic Active	2	1	1		2	2	2	2	2		8 1.8
Pigmentation		2	2	2	3	2	2	2	2		8 2.1

SPECIAL SENSES SYSTEM

NONE

URINARY SYSTEM

NONE

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		0	0	0	0	0	0	0	0	0	
WISTAR HAN RATS MALE	DAY ON TEST	0	0	0	0	0	0	0	0	0	
		8	8	8	8	8	8	8	8	8	
		9	9	9	9	9	9	9	9	9	
	30 mg/m3										
	ANIMAL ID	0	0	0	0	0	0	0	0	0	
		1	1	1	1	1	1	1	1	1	
		6	6	6	6	6	6	6	6	6	
		0	0	0	0	0	0	0	0	1	
		1	2	3	4	5	6	7	8	9	
* TOTALS											

ALIMENTARY SYSTEM

Esophagus	+	+	+	+	+	+	+	+	+	+	10
Intestine Large, Cecum	+	+	+	+	+	+	+	+	+	+	10
Intestine Large, Colon	+	+	+	+	+	+	+	+	+	+	10
Intestine Large, Rectum	+	+	+	+	+	+	+	+	+	+	10
Intestine Small, Duodenum	+	+	+	+	+	+	+	+	+	+	10
Intestine Small, Ileum	+	+	+	+	+	+	+	+	+	+	10
Intestine Small, Jejunum	+	+	+	+	+	+	+	+	+	+	10
Liver	+	+	+	+	+	+	+	+	+	+	10
Inflammation, Chronic Active				1							1 1.0
Pancreas	+	+	+	+	+	+	+	+	+	+	10
Salivary Glands	+	+	+	+	+	+	+	+	+	+	10
Stomach, Forestomach	+	+	+	+	+	+	+	+	+	+	10
Stomach, Glandular	+	+	+	+	+	+	+	+	+	+	10

CARDIOVASCULAR SYSTEM

Blood Vessel	+	+	+	+	+	+	+	+	+	+	10
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WISTAR HAN RATS MALE	DAY ON TEST										ANIMAL ID	
	0	0	0	0	0	0	0	0	0	0		
30 mg/m3	8	8	8	8	8	8	8	8	8	8	0	
	9	9	9	9	9	9	9	9	9	9	0	
	1	1	1	1	1	1	1	1	1	1	0	
	6	6	6	6	6	6	6	6	6	6	0	
	0	0	0	0	0	0	0	0	0	0	1	
	1	2	3	4	5	6	7	8	9	0		* TOTALS

Heart	+	+	+	+	+	+	+	+	+	+	10	
Cardiomyopathy							1					1 1.0

ENDOCRINE SYSTEM

Adrenal Cortex	+	+	+	+	+	+	+	+	+	+	10	
Adrenal Medulla	+	+	+	+	+	+	+	+	+	+	10	
Islets, Pancreatic	+	+	+	+	+	+	+	+	+	+	10	
Parathyroid Gland	M	+	+	+	M	M	+	+	+	+	7	
Pituitary Gland	+	+	+	+	+	+	+	+	+	+	10	
Thyroid Gland	+	+	+	+	+	+	+	+	+	+	10	

GENERAL BODY SYSTEM

NONE

GENITAL SYSTEM

Epididymis	+	+	+	+	+	+	+	+	+	+	10	
Preputial Gland	+	+	+	+	+	+	+	+	+	+	10	
Inflammation, Chronic Active	1		1	1	1	1						5 1.0
Prostate	+	+	+	+	+	+	+	+	+	+	10	
Inflammation, Chronic			2									1 2.0

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WISTAR HAN RATS MALE 30 mg/m3	DAY ON TEST										* TOTALS
	0 8 9	0 8 9	0 8 9	0 8 9	0 8 9	0 8 9	0 8 9	0 8 9	0 8 9	0 8 9	
ANIMAL ID	0	0	0	0	0	0	0	0	0	0	
	1	1	1	1	1	1	1	1	1	1	
	6	6	6	6	6	6	6	6	6	6	
	0	0	0	0	0	0	0	0	0	1	
Seminal Vesicle	+	+	+	+	+	+	+	+	+	+	10
Testes	+	+	+	+	+	+	+	+	+	+	10
Germinal Epithelium, Degeneration								1			1 1.0
HEMATOPOIETIC SYSTEM											
Bone Marrow	+	+	+	+	+	+	+	+	+	+	10
Lymph Node, Bronchial Pigmentation	+	M	+	M	+	+	+	+	+	+	8
	1		1			3	2	2	2	2	7 1.9
Lymph Node, Mandibular	+	+	+	+	+	+	+	+	+	+	10
Lymph Node, Mediastinal Pigmentation	+	M	+	+	+	+	+	+	+	+	9
				2		1	1		3	1	5 1.6
Lymph Node, Mesenteric	+	+	+	+	+	+	+	+	+	+	10
Spleen	+	+	+	+	+	+	+	+	+	+	10
Thymus	+	+	+	+	+	+	+	+	+	+	10
INTEGUMENTARY SYSTEM											
Mammary Gland	+	+	M	M	M	M	+	M	M	M	3
Skin	+	+	+	+	+	+	+	+	+	I	9
MUSCULOSKELETAL SYSTEM											

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	0 8 9	0 8 9	0 8 9	0 8 9	0 8 9	0 8 9	0 8 9	0 8 9	0 8 9	0 8 9			
	0	0	0	0	0	0	0	0	0	0	1	* TOTALS	
Bone	+	+	+	+	+	+	+	+	+	+		10	
NERVOUS SYSTEM													
Brain	+	+	+	+	+	+	+	+	+	+		10	
RESPIRATORY SYSTEM													
Larynx	+	+	+	+	+	+	+	+	+	+		10	
Lung	+	+	+	+	+	+	+	+	+	+		10	
Hemorrhage						2		1		2		3	1.7
Infiltration Cellular, Histiocyte	4	4	4	4	3	4	4	4	4	3		10	3.8
Inflammation, Chronic Active	2	2	2	2	2	2	2	2	2	2		10	2.0
Pigmentation	4	3	4	3	3	3	3	3	3	3		10	3.2
Nose	+	+	+	+	+	+	+	+	+	+		10	
Goblet Cell, Hyperplasia			1									1	1.0
Trachea	+	+	+	+	+	+	+	+	+	+		10	
SPECIAL SENSES SYSTEM													
Eye	+	+	+	+	+	+	+	+	+	+		10	
Inflammation, Chronic Active										1		1	1.0
Harderian Gland	+	+	+	+	+	+	+	+	+	+		10	
URINARY SYSTEM													
Kidney	+	+	+	+	+	+	+	+	+	+		10	

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

1-4 .. Lesion qualified as:
 1) Minimal 3) Moderate
 2) Mild 4) Marked

Experiment Number: 20701 - 01
 Test Type: 90-DAY
 Route: RESPIRATORY EXPOSURE NASAL
 Species/Strain: RATS/Wistar Han

P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL
 Nanoscale material (Fullerene-C60 1 micron)
 CAS Number: 99685-96-8

Date Report Requested: 02/22/2013
 Time Report Requested: 07:58:31
 First Dose M/F: 11/05/07 / 11/05/07
 Lab: BNW

		0	0	0	0	0	0	0	0	0	
WISTAR HAN RATS MALE	DAY ON TEST	0	0	0	0	0	0	0	0	0	
		8	8	8	8	8	8	8	8	8	
		9	9	9	9	9	9	9	9	9	
	30 mg/m3										
	ANIMAL ID	0	0	0	0	0	0	0	0	0	
		1	1	1	1	1	1	1	1	1	
		6	6	6	6	6	6	6	6	6	
		0	0	0	0	0	0	0	0	1	
		1	2	3	4	5	6	7	8	9	0
* TOTALS											
Nephropathy						1		1			2 1.0
Pelvis, Dilatation									2		1 2.0
Urinary Bladder		+	+	+	+	+	+	+	+	+	10

*** END OF MALE DATA ***

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

1-4 .. Lesion qualified as:
 1) Minimal 3) Moderate
 2) Mild 4) Marked

Experiment Number: 20701 - 01
 Test Type: 90-DAY
 Route: RESPIRATORY EXPOSURE NASAL
 Species/Strain: RATS/Wistar Han

P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL
 Nanoscale material (Fullerene-C60 1 micron)
 CAS Number: 99685-96-8

Date Report Requested: 02/22/2013
 Time Report Requested: 07:58:31
 First Dose M/F: 11/05/07 / 11/05/07
 Lab: BNW

		0	0	0	0	0	0	0	0	0	
WISTAR HAN RATS FEMALE	DAY ON TEST	0	0	0	0	0	0	0	0	0	
		8	8	8	8	8	8	8	8	8	
		9	9	9	9	9	9	9	9	9	
	0 mg/m3										
	ANIMAL ID	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	
		0	0	0	0	0	0	0	0	1	
		1	2	3	4	5	6	7	8	9	0
* TOTALS											

ALIMENTARY SYSTEM

Esophagus	+	+	+	+	+	+	+	+	+	+	10
Intestine Large, Cecum	+	+	+	+	+	+	+	+	+	+	10
Intestine Large, Colon	+	+	+	+	+	+	+	+	+	+	10
Intestine Large, Rectum	+	+	+	+	+	+	+	+	+	+	10
Intestine Small, Duodenum	+	+	+	+	+	+	+	+	+	+	10
Intestine Small, Ileum	+	+	+	+	+	+	+	+	+	+	10
Intestine Small, Jejunum	+	+	+	+	+	+	+	+	+	+	10
Liver	+	+	+	+	+	+	+	+	+	+	10
Pancreas	+	+	+	+	+	+	+	+	+	+	10
Salivary Glands	+	+	+	+	+	+	+	+	+	+	10
Stomach, Forestomach Hyperplasia, Squamous	+	+	+	+	+	+	+	+	+	+	10
				2							1 2.0
Stomach, Glandular	+	+	+	+	+	+	+	+	+	+	10

CARDIOVASCULAR SYSTEM

Blood Vessel	+	+	+	+	+	+	+	+	+	+	10
--------------	---	---	---	---	---	---	---	---	---	---	-----------

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

1-4 .. Lesion qualified as:
 1) Minimal 3) Moderate
 2) Mild 4) Marked

Experiment Number: 20701 - 01
 Test Type: 90-DAY
 Route: RESPIRATORY EXPOSURE NASAL
 Species/Strain: RATS/Wistar Han

P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL
 Nanoscale material (Fullerene-C60 1 micron)
 CAS Number: 99685-96-8

Date Report Requested: 02/22/2013
 Time Report Requested: 07:58:31
 First Dose M/F: 11/05/07 / 11/05/07
 Lab: BNW

DAY ON TEST	0	0	0	0	0	0	0	0	0	0	ANIMAL ID		
	8	8	8	8	8	8	8	8	8	8			
WISTAR HAN RATS FEMALE	9	9	9	9	9	9	9	9	9	9			
0 mg/m3	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			
	0	0	0	0	0	0	0	0	0	1			
	1	2	3	4	5	6	7	8	9	0			* TOTALS
Heart	+	+	+	+	+	+	+	+	+	+			10
ENDOCRINE SYSTEM													
Adrenal Cortex	+	+	+	+	+	+	+	+	+	+			10
Adrenal Medulla	+	+	+	+	+	+	+	+	+	+			10
Islets, Pancreatic	+	+	+	+	+	+	+	+	+	+			10
Parathyroid Gland	+	+	+	+	+	+	M	+	+	+			9
Pituitary Gland	+	+	+	+	+	+	+	+	+	+			10
Thyroid Gland	+	+	+	+	+	+	+	+	+	+			10
GENERAL BODY SYSTEM													
NONE													
GENITAL SYSTEM													
Clitoral Gland	+	+	+	+	+	+	+	+	+	+			10
Inflammation, Chronic Active				1		1							2 1.0
Ovary	+	+	+	+	+	+	+	+	+	+			10
Uterus	+	+	+	+	+	+	+	+	+	+			10
HEMATOPOIETIC SYSTEM													

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

1-4 .. Lesion qualified as:
 1) Minimal 3) Moderate
 2) Mild 4) Marked

Experiment Number: 20701 - 01
 Test Type: 90-DAY
 Route: RESPIRATORY EXPOSURE NASAL
 Species/Strain: RATS/Wistar Han

P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL
 Nanoscale material (Fullerene-C60 1 micron)
 CAS Number: 99685-96-8

Date Report Requested: 02/22/2013
 Time Report Requested: 07:58:31
 First Dose M/F: 11/05/07 / 11/05/07
 Lab: BNW

WISTAR HAN RATS FEMALE	DAY ON TEST										* TOTALS
	0 8 9	0 8 9	0 8 9	0 8 9	0 8 9	0 8 9	0 8 9	0 8 9	0 8 9	0 8 9	
0 mg/m3	ANIMAL ID										
	0 1 1 0 1	0 1 1 0 2	0 1 1 0 3	0 1 1 0 4	0 1 1 0 5	0 1 1 0 6	0 1 1 0 7	0 1 1 0 8	0 1 1 0 9	0 1 1 0 0	
Bone Marrow	+	+	+	+	+	+	+	+	+	+	10
Lymph Node, Bronchial Pigmentation	M 1	+	+	+	M	+	+	+	M	M	6 1 1.0
Lymph Node, Mandibular	+	+	+	+	+	+	+	+	+	+	10
Lymph Node, Mediastinal Pigmentation	+	+	+	+	M	I	+	+	+	+	8 3 1.0
Lymph Node, Mesenteric Infiltration Cellular, Histiocyte	+	+	+	+	+	+	+	+	+	+	10 1 2.0
Spleen	+	+	+	+	+	+	+	+	+	+	10
Thymus	+	+	+	+	+	+	+	+	+	+	10
INTEGUMENTARY SYSTEM											
Mammary Gland	+	+	+	+	+	+	+	+	+	+	10
Skin	+	+	+	+	+	+	+	+	+	+	10
MUSCULOSKELETAL SYSTEM											
Bone	+	+	+	+	+	+	+	+	+	+	10
NERVOUS SYSTEM											
Brain	+	+	+	+	+	+	+	+	+	+	10

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

1-4 .. Lesion qualified as:
 1) Minimal 3) Moderate
 2) Mild 4) Marked

Experiment Number: 20701 - 01
 Test Type: 90-DAY
 Route: RESPIRATORY EXPOSURE NASAL
 Species/Strain: RATS/Wistar Han

P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL
 Nanoscale material (Fullerene-C60 1 micron)
 CAS Number: 99685-96-8

Date Report Requested: 02/22/2013
 Time Report Requested: 07:58:31
 First Dose M/F: 11/05/07 / 11/05/07
 Lab: BNW

DAY ON TEST	0	0	0	0	0	0	0	0	0	0
	WISTAR HAN RATS FEMALE	0	0	0	0	0	0	0	0	0
0 mg/m3	8	8	8	8	8	8	8	8	8	8
ANIMAL ID	9	9	9	9	9	9	9	9	9	9
	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
	0	0	0	0	0	0	0	0	0	1
	1	2	3	4	5	6	7	8	9	0
* TOTALS										

RESPIRATORY SYSTEM

Larynx	+	+	+	+	+	+	+	+	+	+	10
Lung	+	+	+	+	+	+	+	+	+	+	10
Infiltration Cellular, Histiocyte									1		1 1.0
Nose	+	+	+	+	+	+	+	+	+	+	10
Trachea	+	+	+	+	+	+	+	+	+	+	10

SPECIAL SENSES SYSTEM

Eye	+	+	+	+	+	+	+	+	+	+	10
Harderian Gland	+	+	+	+	+	+	+	+	+	+	10

URINARY SYSTEM

Kidney	+	+	+	+	+	+	+	+	+	+	10
Nephropathy							1				1 1.0
Urinary Bladder	+	+	+	+	+	+	+	+	+	+	10

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

1-4 .. Lesion qualified as:
 1) Minimal 3) Moderate
 2) Mild 4) Marked

Experiment Number: 20701 - 01
 Test Type: 90-DAY
 Route: RESPIRATORY EXPOSURE NASAL
 Species/Strain: RATS/Wistar Han

P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL
 Nanoscale material (Fullerene-C60 1 micron)
 CAS Number: 99685-96-8

Date Report Requested: 02/22/2013
 Time Report Requested: 07:58:31
 First Dose M/F: 11/05/07 / 11/05/07
 Lab: BNW

DAY ON TEST		0	0	0	0	0	0	0	0	0	0
WISTAR HAN RATS FEMALE		0	0	0	0	0	0	0	0	0	0
		8	8	8	8	8	8	8	8	8	8
		9	9	9	9	9	9	9	9	9	8
	2 mg/m3	0	0	0	0	0	0	0	0	0	0
ANIMAL ID		0	1	1	1	1	1	1	1	1	1
		3	3	3	3	3	3	3	3	3	3
		0	0	0	0	0	0	0	0	0	1
		1	2	3	4	5	6	7	8	9	0
* TOTALS											

ALIMENTARY SYSTEM

Esophagus	+	1
Intestine Large, Cecum	+	1
Intestine Large, Colon	+	1
Intestine Large, Rectum	+	1
Intestine Small, Duodenum	+	1
Intestine Small, Ileum	+	1
Intestine Small, Jejunum	+	1
Liver	+	1
Pancreas	+	1
Salivary Glands	+	1
Stomach, Forestomach	+	1
Stomach, Glandular	+	1

CARDIOVASCULAR SYSTEM

Heart	+	1
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ENDOCRINE SYSTEM

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

1-4 .. Lesion qualified as:
 1) Minimal 3) Moderate
 2) Mild 4) Marked

Experiment Number: 20701 - 01
 Test Type: 90-DAY
 Route: RESPIRATORY EXPOSURE NASAL
 Species/Strain: RATS/Wistar Han

P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL
 Nanoscale material (Fullerene-C60 1 micron)
 CAS Number: 99685-96-8

Date Report Requested: 02/22/2013
 Time Report Requested: 07:58:31
 First Dose M/F: 11/05/07 / 11/05/07
 Lab: BNW

DAY ON TEST	0	0	0	0	0	0	0	0	0	0
	8	8	8	8	8	8	8	8	8	8
WISTAR HAN RATS FEMALE	9	9	9	9	9	9	9	9	9	8
2 mg/m3	0	0	0	0	0	0	0	0	0	0
ANIMAL ID	1	1	1	1	1	1	1	1	1	1
	3	3	3	3	3	3	3	3	3	3
	0	0	0	0	0	0	0	0	0	1
	1	2	3	4	5	6	7	8	9	0

*** TOTALS**

Adrenal Cortex											+	1
Adrenal Medulla											+	1
Islets, Pancreatic											+	1
Parathyroid Gland											+	1
Pituitary Gland											+	1
Thyroid Gland											+	1

GENERAL BODY SYSTEM

NONE

GENITAL SYSTEM

Clitoral Gland											+	1	
Inflammation, Chronic Active											1		1 1.0
Ovary											+	1	
Uterus											+	1	

HEMATOPOIETIC SYSTEM

Bone Marrow											+	1	
Lymph Node, Bronchial Pigmentation	M	+	M	M	M	+	+	+	M	+		5	1 1.0
						1							

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

1-4 .. Lesion qualified as:
 1) Minimal 3) Moderate
 2) Mild 4) Marked

Experiment Number: 20701 - 01
 Test Type: 90-DAY
 Route: RESPIRATORY EXPOSURE NASAL
 Species/Strain: RATS/Wistar Han

P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL
 Nanoscale material (Fullerene-C60 1 micron)
 CAS Number: 99685-96-8

Date Report Requested: 02/22/2013
 Time Report Requested: 07:58:31
 First Dose M/F: 11/05/07 / 11/05/07
 Lab: BNW

WISTAR HAN RATS FEMALE	DAY ON TEST										
	0	0	0	0	0	0	0	0	0	0	
2 mg/m3	8	8	8	8	8	8	8	8	8	8	
	9	9	9	9	9	9	9	9	9	8	
	ANIMAL ID										
	1	1	1	1	1	1	1	1	1	1	1
	3	3	3	3	3	3	3	3	3	3	
	0	0	0	0	0	0	0	0	0	1	
	1	2	3	4	5	6	7	8	9	0	
* TOTALS											
Lung	+	+	+	+	+	+	+	+	+	+	10
Infiltration Cellular, Histiocyte										1	1 1.0
Nose										+	1
Trachea										+	1
SPECIAL SENSES SYSTEM											
Eye										+	1
Harderian Gland										+	1
URINARY SYSTEM											
Kidney										+	1
Urinary Bladder										+	1

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

1-4 .. Lesion qualified as:
 1) Minimal 3) Moderate
 2) Mild 4) Marked

Experiment Number: 20701 - 01
 Test Type: 90-DAY
 Route: RESPIRATORY EXPOSURE NASAL
 Species/Strain: RATS/Wistar Han

P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL
 Nanoscale material (Fullerene-C60 1 micron)
 CAS Number: 99685-96-8

Date Report Requested: 02/22/2013
 Time Report Requested: 07:58:31
 First Dose M/F: 11/05/07 / 11/05/07
 Lab: BNW

WISTAR HAN RATS FEMALE	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
		8	8	8	8	8	8	8	8	8	8	8	8	8
		9	9	9	9	9	9	9	9	9	9	9	9	9
15 mg/m3	ANIMAL ID	0	0	0	0	0	0	0	0	0	0	0	0	
		1	1	1	1	1	1	1	1	1	1	1	1	
		5	5	5	5	5	5	5	5	5	5	5	5	
		0	0	0	0	0	0	0	0	0	0	1	0	
		1	2	3	4	5	6	7	8	9	0			
* TOTALS														

ALIMENTARY SYSTEM

NONE

CARDIOVASCULAR SYSTEM

NONE

ENDOCRINE SYSTEM

NONE

GENERAL BODY SYSTEM

NONE

GENITAL SYSTEM

NONE

HEMATOPOIETIC SYSTEM

Lymph Node, Bronchial Pigmentation	M	+	M	+	+	+	+	+	+	M	7	3	1.3
				2		1	1						
Lymph Node, Mediastinal Pigmentation	+	+	I	+	+	I	+	+	+	+	8	7	1.3
	1	1		1	2		1	2		1			

INTEGUMENTARY SYSTEM

NONE

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

1-4 .. Lesion qualified as:
 1) Minimal 3) Moderate
 2) Mild 4) Marked

Experiment Number: 20701 - 01
 Test Type: 90-DAY
 Route: RESPIRATORY EXPOSURE NASAL
 Species/Strain: RATS/Wistar Han

P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL
 Nanoscale material (Fullerene-C60 1 micron)
 CAS Number: 99685-96-8

Date Report Requested: 02/22/2013
 Time Report Requested: 07:58:31
 First Dose M/F: 11/05/07 / 11/05/07
 Lab: BNW

WISTAR HAN RATS FEMALE	DAY ON TEST										* TOTALS
	089	089	089	089	089	089	089	089	089	089	
30 mg/m3	01701	01702	01703	01704	01705	01706	01707	01708	01709	01710	
ANIMAL ID	01701	01702	01703	01704	01705	01706	01707	01708	01709	01710	

ALIMENTARY SYSTEM

Esophagus	+	+	+	+	+	+	+	+	+	+	10
Intestine Large, Cecum	+	+	+	+	+	+	+	+	+	+	10
Intestine Large, Colon	+	+	+	+	+	+	+	+	+	+	10
Intestine Large, Rectum	+	+	+	+	+	+	+	+	+	+	10
Intestine Small, Duodenum	+	+	+	+	+	+	+	+	+	+	10
Intestine Small, Ileum	+	+	+	+	+	+	+	+	+	+	10
Intestine Small, Jejunum	+	+	+	+	+	+	+	+	+	+	10
Liver	+	+	+	+	+	+	+	+	+	+	10
Hepatocyte, Pigmentation					3						1 3.0
Pancreas	+	+	+	+	+	+	+	+	+	+	10
Salivary Glands	+	+	+	+	+	+	+	+	+	+	10
Stomach, Forestomach	+	+	+	+	+	+	+	+	+	+	10
Stomach, Glandular	+	+	+	+	+	+	+	+	+	+	10

CARDIOVASCULAR SYSTEM

Blood Vessel	+	+	+	+	+	+	+	+	+	+	10
--------------	---	---	---	---	---	---	---	---	---	---	----

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

1-4 .. Lesion qualified as:
 1) Minimal 3) Moderate
 2) Mild 4) Marked

Experiment Number: 20701 - 01
 Test Type: 90-DAY
 Route: RESPIRATORY EXPOSURE NASAL
 Species/Strain: RATS/Wistar Han

P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL
 Nanoscale material (Fullerene-C60 1 micron)
 CAS Number: 99685-96-8

Date Report Requested: 02/22/2013
 Time Report Requested: 07:58:31
 First Dose M/F: 11/05/07 / 11/05/07
 Lab: BNW

WISTAR HAN RATS FEMALE 30 mg/m3	DAY ON TEST										ANIMAL ID		
	0	0	0	0	0	0	0	0	0	0			
	0	0	0	0	0	0	0	0	0	0	0		
	8	8	8	8	8	8	8	8	8	8	8		
	9	9	9	9	9	9	9	9	9	9	9		
	0	0	0	0	0	0	0	0	0	0	0		
	1	1	1	1	1	1	1	1	1	1	1		
	7	7	7	7	7	7	7	7	7	7	7		
	0	0	0	0	0	0	0	0	0	0	0		
	1	2	3	4	5	6	7	8	9	0	0		
												* TOTALS	
Heart	+	+	+	+	+	+	+	+	+	+	+		10
ENDOCRINE SYSTEM													
Adrenal Cortex	+	+	+	+	+	+	+	+	+	+	+		10
Adrenal Medulla	+	+	+	+	+	M	+	+	+	+	+		9
Islets, Pancreatic	+	+	+	+	+	+	+	+	+	+	+		10
Parathyroid Gland	+	+	+	+	M	+	+	+	+	+	+		9
Pituitary Gland	+	+	+	+	+	+	+	+	+	+	+		10
Thyroid Gland	+	+	+	+	+	+	+	+	+	+	+		10
GENERAL BODY SYSTEM													
NONE													
GENITAL SYSTEM													
Clitoral Gland	+	+	+	+	+	+	+	+	+	+	+		10
Inflammation, Chronic Active				1	1	1							3 1.0
Ovary	+	+	+	+	+	+	+	+	+	+	+		10
Uterus	+	+	+	+	+	+	+	+	+	+	+		10
HEMATOPOIETIC SYSTEM													

* .. Total animals with tissue examined microscopically; Total animals with lesion and mean severity grade
 + .. Tissue examined microscopically
 X .. Lesion present
 I .. Insufficient tissue
 M .. Missing tissue
 A .. Autolysis precludes evaluation
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1-4 .. Lesion qualified as:
 1) Minimal 3) Moderate
 2) Mild 4) Marked

Experiment Number: 20701 - 01
 Test Type: 90-DAY
 Route: RESPIRATORY EXPOSURE NASAL
 Species/Strain: RATS/Wistar Han

P09: NON-NEOPLASTIC LESIONS BY INDIVIDUAL ANIMAL
 Nanoscale material (Fullerene-C60 1 micron)
 CAS Number: 99685-96-8

Date Report Requested: 02/22/2013
 Time Report Requested: 07:58:31
 First Dose M/F: 11/05/07 / 11/05/07
 Lab: BNW

WISTAR HAN RATS FEMALE 30 mg/m3	DAY ON TEST										* TOTALS
	0 8 9	0 8 9	0 8 9	0 8 9	0 8 9	0 8 9	0 8 9	0 8 9	0 8 9	0 8 9	
ANIMAL ID	0 1 7 0 1	0 1 7 0 2	0 1 7 0 3	0 1 7 0 4	0 1 7 0 5	0 1 7 0 6	0 1 7 0 7	0 1 7 0 8	0 1 7 0 9	0 1 7 0 0	
Bone Marrow	+	+	+	+	+	+	+	+	+	+	10
Lymph Node, Bronchial Pigmentation	M	+	+	+	+	M	+	M	M	M	5 4 1.5
Lymph Node, Mandibular	+	+	+	+	+	+	+	+	+	+	10
Lymph Node, Mediastinal Pigmentation	M	+	+	+	+	+	+	+	+	+	9 7 1.6
Lymph Node, Mesenteric	+	+	+	+	+	+	+	+	+	+	10
Spleen	+	+	+	+	+	+	+	+	+	+	10
Thymus	+	+	+	+	+	+	+	+	+	+	10
INTEGUMENTARY SYSTEM											
Mammary Gland	+	+	+	+	+	+	+	+	+	+	10
Skin	+	+	+	+	+	+	+	+	+	+	10
MUSCULOSKELETAL SYSTEM											
Bone	+	+	+	+	+	+	+	+	+	+	10
NERVOUS SYSTEM											
Brain	+	+	+	+	+	+	+	+	+	+	10
RESPIRATORY SYSTEM											

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

1-4 .. Lesion qualified as:
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DAY ON TEST	0	0	0	0	0	0	0	0	0	0		
	8	8	8	8	8	8	8	8	8	8		
WISTAR HAN RATS FEMALE	9	9	9	9	9	9	9	9	9	9		
30 mg/m3	0	0	0	0	0	0	0	0	0	0		
	1	1	1	1	1	1	1	1	1	1		
ANIMAL ID	7	7	7	7	7	7	7	7	7	7		
	0	0	0	0	0	0	0	0	0	1		
	1	2	3	4	5	6	7	8	9	0		
											* TOTALS	
Larynx	+	+	+	+	+	+	+	+	+	+	10	
Lung	+	+	+	+	+	+	+	+	+	+	10	
Infiltration Cellular, Histiocyte	4	4	4	4	4	4	4	4	4	4		10 4.0
Inflammation, Chronic Active	2	2	2	2	2	2	2	2	2	2		10 2.0
Pigmentation	3	4	3	3	3	3	4	3	3	3		10 3.2
Nose	+	+	+	+	+	+	+	+	+	+	10	
Trachea	+	+	+	+	+	+	+	+	+	+	10	
SPECIAL SENSES SYSTEM												
Eye	+	+	+	+	+	+	+	+	+	+	10	
Harderian Gland	+	+	+	+	+	+	+	+	+	+	10	
URINARY SYSTEM												
Kidney	+	+	+	+	+	+	+	+	+	+	10	
Mineralization										1		1 1.0
Nephropathy				1								1 1.0
Pelvis, Dilatation				2								1 2.0
Urinary Bladder	+	+	+	+	+	+	+	+	+	+	10	

*** END OF REPORT ***

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