

Experiment Number: 07062 - 01
Test Type: 30-day
Route: RESPIRATORY EXPOSURE WHOLE BODY
Species/Strain: RATS/HSD

P04: NEOPLASMS BY INDIVIDUAL ANIMAL
1020 Long Multiwalled Carbon Nanotube
CAS Number: L-MWNT-1020

Date Report Requested: 04/17/2013
Time Report Requested: 07:42:27
First Dose M/F: 05/23/11 / 05/23/11
Lab: BNW

F1_HSD

NTP Study Number: C07062
Lock Date: 03/30/2012
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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Lab: BNW

HARLAN SPRAGUE DAWLEY RATS MALE Control		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		0	
		7	3	3	3	3	7	3	3	5	4	5	3	3	3	4	3	3	3	7	3	4	3	4	3	4		3	5
		2	1	1	1	0	2	1	1	6	4	6	0	1	0	4	0	0	0	2	1	4	0	4	1	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	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	2	2	2	2	2	2	2	2	2	
1	2	3	4	5	6	7	8	9	0	1	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5				

NONE

NERVOUS SYSTEM

NONE

RESPIRATORY SYSTEM

Larynx	+	+	+				+	+						+							+								
Lung	+	+	+				+	+						+								+							
Nose	+	+	+				+	+						+								+							
Trachea	+	+	+				M	+						+								+							

SPECIAL SENSES SYSTEM

NONE

URINARY SYSTEM

NONE

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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 Lab: BNW

DAY ON TEST		0	0	0	0	0	0	0	0	0	0	0	0	0
HARLAN SPRAGUE DAWLEY RATS MALE		0	0	0	0	1	1	0	0	0	0	0	0	0
		3	3	7	3	5	5	4	3	3	3	7	7	7
		0	1	2	0	6	6	4	1	0	0	2	2	2
	Control													
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
		2	2	2	2	3	3	3	3	3	3	3	3	3
		6	7	8	9	0	1	2	3	4	5			
													* TOTALS	

ALIMENTARY SYSTEM

Pharynx + + 10

CARDIOVASCULAR SYSTEM

NONE

ENDOCRINE SYSTEM

NONE

GENERAL BODY SYSTEM

NONE

GENITAL SYSTEM

NONE

HEMATOPOIETIC SYSTEM

Lymph Node, Bronchial + + 6

Lymph Node, Mediastinal + M 7

INTEGUMENTARY SYSTEM

NONE

MUSCULOSKELETAL SYSTEM

* .. Total animals with tissue examined microscopically; Total animals with tumor
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 Lab: BNW

DAY ON TEST		0	0	0	0	0	0	0	0	0	0	0	0
HARLAN SPRAGUE DAWLEY RATS		3	3	7	3	5	5	4	3	3	7		
MALE		0	1	2	0	6	6	4	1	0	2		
Control													
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		
		2	2	2	2	3	3	3	3	3	3		
		6	7	8	9	0	1	2	3	4	5		
												* TOTALS	

NONE

NERVOUS SYSTEM

NONE

RESPIRATORY SYSTEM

Larynx		+								+			10
Lung		+								+			10
Nose		+								+			10
Trachea		+								+			9

SPECIAL SENSES SYSTEM

NONE

URINARY SYSTEM

NONE

SYSTEMIC LESIONS

Multiple Organ		+								+			10
----------------	--	---	--	--	--	--	--	--	--	---	--	--	-----------

* .. Total animals with tissue examined microscopically; Total animals with tumor
 + .. Tissue examined microscopically
 X .. Lesion present
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 Lab: BNW

DAY ON TEST	0	0	0	0	0	0	0	0	0	0
	HARLAN SPRAGUE DAWLEY RATS MALE	0	0	0	0	1	1	0	0	0
0.1 mg/m3	3	3	7	3	5	5	4	3	3	7
ANIMAL ID	0	0	0	0	0	0	0	0	0	0
	2	2	2	2	2	2	2	2	2	2
	2	2	2	2	3	3	3	3	3	3
	6	7	8	9	0	1	2	3	4	5
* TOTALS										

ALIMENTARY SYSTEM

Liver											1
Pharynx			+				+				10

CARDIOVASCULAR SYSTEM

NONE

ENDOCRINE SYSTEM

NONE

GENERAL BODY SYSTEM

NONE

GENITAL SYSTEM

NONE

HEMATOPOIETIC SYSTEM

Lymph Node, Bronchial			+					+			6
Lymph Node, Mediastinal			+					+			9

INTEGUMENTARY SYSTEM

NONE

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 A .. Autolysis precludes evaluation
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DAY ON TEST	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	1	1	0	0	0	0
HARLAN SPRAGUE DAWLEY RATS MALE	3	3	7	3	5	5	4	3	3	7
	0	1	2	0	6	6	4	1	0	2
0.1 mg/m3	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0
ANIMAL ID	2	2	2	2	2	2	2	2	2	2
	2	2	2	2	3	3	3	3	3	3
	6	7	8	9	0	1	2	3	4	5
* TOTALS										

MUSCULOSKELETAL SYSTEM

NONE

NERVOUS SYSTEM

NONE

RESPIRATORY SYSTEM

Larynx	+	+	10
Lung	+	+	10
Nose	+	+	10
Trachea	+	+	10

SPECIAL SENSES SYSTEM

NONE

URINARY SYSTEM

NONE

SYSTEMIC LESIONS

Multiple Organ	+	+	10
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* .. Total animals with tissue examined microscopically; Total animals with tumor
 + .. Tissue examined microscopically
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DAY ON TEST	HARLAN SPRAGUE DAWLEY RATS MALE																						ANIMAL ID			
	0 0 7 2	0 0 3 1	0 0 3 1	0 0 3 1	0 0 3 0	0 0 7 2	0 0 3 1	0 0 3 1	0 1 5 6	0 0 4 4	0 1 5 6	0 0 3 0	0 0 3 1	0 0 3 0	0 0 4 4	0 0 3 0	0 0 3 0	0 0 7 2	0 0 3 1	0 0 4 0	0 0 3 4	0 0 4 4		0 0 3 1	0 0 4 1	0 0 3 5
	0 0 4 0 1	0 0 4 0 2	0 0 4 0 3	0 0 4 0 4	0 0 4 0 5	0 0 4 0 6	0 0 4 0 7	0 0 4 0 8	0 0 4 0 9	0 0 4 1 0	0 0 4 1 1	0 0 4 1 2	0 0 4 1 3	0 0 4 1 4	0 0 4 1 5	0 0 4 1 6	0 0 4 1 7	0 0 4 1 8	0 0 4 2 9	0 0 4 2 0	0 0 4 2 1	0 0 4 2 2	0 0 4 2 3	0 0 4 2 4	0 0 4 2 5	males (cont...)

ALIMENTARY SYSTEM

Pharynx + + + + + + + +

CARDIOVASCULAR SYSTEM

NONE

ENDOCRINE SYSTEM

NONE

GENERAL BODY SYSTEM

NONE

GENITAL SYSTEM

NONE

HEMATOPOIETIC SYSTEM

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

Lymph Node, Mediastinal + + + + + + +

INTEGUMENTARY SYSTEM

NONE

MUSCULOSKELETAL SYSTEM

* .. Total animals with tissue examined microscopically; Total animals with tumor
 + .. Tissue examined microscopically
 X .. Lesion present
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 Lab: BNW

HARLAN SPRAGUE DAWLEY RATS MALE 0.3 mg/m3		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
0	0	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	
0	0	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	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	

NONE

NERVOUS SYSTEM

NONE

RESPIRATORY SYSTEM

Larynx	+	+	+				+	+					+						+						+	
Lung	+	+	+				+	+					+							+						+
Nose	+	+	+				+	+					+							+						+
Trachea	+	+	+				+	+					+							+						+

SPECIAL SENSES SYSTEM

NONE

URINARY SYSTEM

NONE

SYSTEMIC LESIONS

Multiple Organ	+	+	+				+	+					+							+						+
----------------	---	---	---	--	--	--	---	---	--	--	--	--	---	--	--	--	--	--	--	---	--	--	--	--	--	---

* .. Total animals with tissue examined microscopically; Total animals with tumor
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 First Dose M/F: 05/23/11 / 05/23/11
 Lab: BNW

HARLAN SPRAGUE DAWLEY RATS MALE 0.3 mg/m3	DAY ON TEST	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
		3	3	7	3	5	5	4	3	3	3	7			
		0	1	2	0	6	6	4	1	0	2				
		4	4	4	4	4	4	4	4	4	4	4			
		2	2	2	2	3	3	3	3	3	3	3			
		6	7	8	9	0	1	2	3	4	5				
* TOTALS															

ALIMENTARY SYSTEM

Pharynx + + 10

CARDIOVASCULAR SYSTEM

NONE

ENDOCRINE SYSTEM

NONE

GENERAL BODY SYSTEM

NONE

GENITAL SYSTEM

NONE

HEMATOPOIETIC SYSTEM

Lymph Node, Bronchial + + 9

Lymph Node, Mediastinal + + 10

INTEGUMENTARY SYSTEM

NONE

MUSCULOSKELETAL SYSTEM

* .. Total animals with tissue examined microscopically; Total animals with tumor
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Experiment Number: 07062 - 01
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 Lab: BNW

DAY ON TEST		0	0	0	0	0	0	0	0	0	0	0	0	0
HARLAN SPRAGUE DAWLEY RATS MALE		0	0	0	0	1	1	0	0	0	0	0	0	0
		3	3	7	3	5	5	4	3	3	3	7	7	7
		0	1	2	0	6	6	4	1	0	0	2	2	2
	0.3 mg/m3													
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
		4	4	4	4	4	4	4	4	4	4	4	4	4
		2	2	2	2	3	3	3	3	3	3	3	3	3
		6	7	8	9	0	1	2	3	4	5	6	7	8
													* TOTALS	

NONE

NERVOUS SYSTEM

NONE

RESPIRATORY SYSTEM

Larynx	+	+	10
Lung	+	+	10
Nose	+	+	10
Trachea	+	+	10

SPECIAL SENSES SYSTEM

NONE

URINARY SYSTEM

NONE

SYSTEMIC LESIONS

Multiple Organ	+	+	10
----------------	---	---	-----------

* .. Total animals with tissue examined microscopically; Total animals with tumor
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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	0	males (cont...)
HARLAN SPRAGUE DAWLEY RATS MALE 1 mg/m3		7	3	3	3	3	7	3	3	5	4	5	3	3	3	4	3	3	3	7	3	4	3	4	4	3	1	
		2	1	1	1	0	2	1	1	6	4	6	0	1	0	4	0	0	0	2	1	4	0	4	4	1	6	
	ANIMAL ID	00601	00602	00603	00604	00605	00606	00607	00608	00609	00610	00611	00612	00613	00614	00615	00616	00617	00618	00619	00620	00621	00622	00623	00624	00625		

ALIMENTARY SYSTEM

Pharynx + + + + + + + +

CARDIOVASCULAR SYSTEM

NONE

ENDOCRINE SYSTEM

NONE

GENERAL BODY SYSTEM

NONE

GENITAL SYSTEM

NONE

HEMATOPOIETIC SYSTEM

Lymph Node, Bronchial M M M + + + +
 Lymph Node, Mediastinal + + + + + + + +

INTEGUMENTARY SYSTEM

NONE

MUSCULOSKELETAL SYSTEM

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 + .. Tissue examined microscopically
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HARLAN SPRAGUE DAWLEY RATS MALE 1 mg/m3	DAY ON TEST	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ANIMAL ID	7	3	3	3	3	7	3	3	5	4	5	3	3	3	4	3	3	3	7	3	4	3	4	3	4	3	4	3	5	6
	2	1	1	1	0	2	1	1	6	4	6	0	1	0	4	0	0	0	2	1	4	0	4	4	1	6					
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	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	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						

males
(cont...)

NONE

NERVOUS SYSTEM

NONE

RESPIRATORY SYSTEM

Larynx	+	+	+	+	+	+	+	+
Lung	+	+	+	+	+	+	+	+
Nose	+	+	+	+	+	+	+	+
Trachea	+	+	+	+	+	+	+	+

SPECIAL SENSES SYSTEM

NONE

URINARY SYSTEM

NONE

SYSTEMIC LESIONS

Multiple Organ	+	+	+	+	+	+	+	+
----------------	---	---	---	---	---	---	---	---

* .. Total animals with tissue examined microscopically; Total animals with tumor
+ .. Tissue examined microscopically
X .. Lesion present
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DAY ON TEST		0	0	0	0	0	0	0	0	0	0	0	0	0
HARLAN SPRAGUE DAWLEY RATS MALE		0	0	0	0	1	1	0	0	0	0	0	0	0
		3	3	7	3	5	5	4	3	3	3	7	7	7
	1 mg/m3	0	1	2	0	6	6	4	1	0	0	2	2	2
	ANIMAL ID	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	
	2	2	2	2	3	3	3	3	3	3	3	3	3	
	6	7	8	9	0	1	2	3	4	5	6	7	8	
													* TOTALS	

ALIMENTARY SYSTEM

Pharynx + + 10

CARDIOVASCULAR SYSTEM

NONE

ENDOCRINE SYSTEM

NONE

GENERAL BODY SYSTEM

NONE

GENITAL SYSTEM

NONE

HEMATOPOIETIC SYSTEM

Lymph Node, Bronchial + + 7

Lymph Node, Mediastinal + | 9

INTEGUMENTARY SYSTEM

NONE

MUSCULOSKELETAL SYSTEM

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 First Dose M/F: 05/23/11 / 05/23/11
 Lab: BNW

HARLAN SPRAGUE DAWLEY RATS MALE 1 mg/m3	DAY ON TEST	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
		3	3	7	3	5	5	4	3	3	7	0	0	0	0	0	0	0	0
		0	1	2	0	6	6	4	1	0	2	6	6	6	6	3	3	3	3
		6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
		2	2	2	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3
		6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3
* TOTALS																			

NONE

NERVOUS SYSTEM

NONE

RESPIRATORY SYSTEM

Larynx		+																	10
Lung		+																	10
Nose		+																	10
Trachea		+																	10

SPECIAL SENSES SYSTEM

NONE

URINARY SYSTEM

NONE

SYSTEMIC LESIONS

Multiple Organ		+																	10
----------------	--	---	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	----

* .. 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: 07062 - 01
 Test Type: 30-day
 Route: RESPIRATORY EXPOSURE WHOLE BODY
 Species/Strain: RATS/HSD

P04: NEOPLASMS BY INDIVIDUAL ANIMAL
 1020 Long Multiwalled Carbon Nanotube
 CAS Number: L-MWNT-1020

Date Report Requested: 04/17/2013
 Time Report Requested: 07:42:27
 First Dose M/F: 05/23/11 / 05/23/11
 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	males (cont...)	
HARLAN SPRAGUE DAWLEY RATS MALE 3 mg/m3		7	3	3	3	3	7	3	3	5	4	5	3	3	3	4	3	3	3	7	3	4	3	4	3	4	3		5
	ANIMAL ID	2	1	1	1	0	2	1	1	6	4	6	0	1	0	4	0	0	0	2	1	4	0	4	1	6	6		
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	
		0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	2	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		

ALIMENTARY SYSTEM

Pharynx + + + + + + + +

CARDIOVASCULAR SYSTEM

NONE

ENDOCRINE SYSTEM

NONE

GENERAL BODY SYSTEM

NONE

GENITAL SYSTEM

NONE

HEMATOPOIETIC SYSTEM

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

Lymph Node, Mediastinal + + + + I + + +

INTEGUMENTARY SYSTEM

NONE

MUSCULOSKELETAL SYSTEM

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

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

Experiment Number: 07062 - 01
 Test Type: 30-day
 Route: RESPIRATORY EXPOSURE WHOLE BODY
 Species/Strain: RATS/HSD

P04: NEOPLASMS BY INDIVIDUAL ANIMAL
 1020 Long Multiwalled Carbon Nanotube
 CAS Number: L-MWNT-1020

Date Report Requested: 04/17/2013
 Time Report Requested: 07:42:27
 First Dose M/F: 05/23/11 / 05/23/11
 Lab: BNW

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

ALIMENTARY SYSTEM

Pharynx + + 10

CARDIOVASCULAR SYSTEM

NONE

ENDOCRINE SYSTEM

NONE

GENERAL BODY SYSTEM

NONE

GENITAL SYSTEM

NONE

HEMATOPOIETIC SYSTEM

Lymph Node, Bronchial + + 7

Lymph Node, Mediastinal + + 9

INTEGUMENTARY SYSTEM

NONE

MUSCULOSKELETAL SYSTEM

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

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

Experiment Number: 07062 - 01

Test Type: 30-day

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/HSD

P04: NEOPLASMS BY INDIVIDUAL ANIMAL

1020 Long Multiwalled Carbon Nanotube

CAS Number: L-MWNT-1020

Date Report Requested: 04/17/2013

Time Report Requested: 07:42:27

First Dose M/F: 05/23/11 / 05/23/11

Lab: BNW

HARLAN SPRAGUE DAWLEY RATS MALE 3 mg/m3	DAY ON TEST	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
		3	3	7	3	5	5	4	3	3	7	0	0	0	0	0	0	0	0
		0	1	2	0	6	6	4	1	0	2	6	7	8	9	0	1	2	3
		8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
		2	2	2	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3
		6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3
* TOTALS																			

NONE

NERVOUS SYSTEM

NONE

RESPIRATORY SYSTEM

Larynx	+	+	10
Lung	+	+	10
Nose	+	+	10
Trachea	+	+	10

SPECIAL SENSES SYSTEM

NONE

URINARY SYSTEM

NONE

SYSTEMIC LESIONS

Multiple Organ	+	+	10
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* .. 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: 07062 - 01
Test Type: 30-day
Route: RESPIRATORY EXPOSURE WHOLE BODY
Species/Strain: RATS/HSD

P04: NEOPLASMS BY INDIVIDUAL ANIMAL
1020 Long Multiwalled Carbon Nanotube
CAS Number: L-MWNT-1020

Date Report Requested: 04/17/2013
Time Report Requested: 07:42:27
First Dose M/F: 05/23/11 / 05/23/11
Lab: BNW

HARLAN SPRAGUE DAWLEY RATS MALE 10 mg/m3	DAY ON TEST																								males (cont...)		
	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0		0	
ANIMAL ID	7	3	3	3	3	7	3	3	5	4	5	3	3	3	4	3	3	3	7	3	4	3	4	3	4	3	5
	2	1	1	1	0	2	1	1	6	4	6	0	1	0	4	0	0	0	2	1	4	0	4	1	6	6	
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	0	0	0	0	0	0	0	0	0	0	0	0	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	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	

ALIMENTARY SYSTEM

Pharynx	+	+	+		+	+			+											+								+
---------	---	---	---	--	---	---	--	--	---	--	--	--	--	--	--	--	--	--	--	---	--	--	--	--	--	--	--	---

CARDIOVASCULAR SYSTEM

NONE

ENDOCRINE SYSTEM

NONE

GENERAL BODY SYSTEM

NONE

GENITAL SYSTEM

NONE

HEMATOPOIETIC SYSTEM

Lymph Node, Bronchial		M	+	+		+	M													+						M		+	
Lymph Node, Mediastinal		+	+	+		+	+					+									+						+		+

INTEGUMENTARY SYSTEM

NONE

MUSCULOSKELETAL SYSTEM

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

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

Experiment Number: 07062 - 01
Test Type: 30-day
Route: RESPIRATORY EXPOSURE WHOLE BODY
Species/Strain: RATS/HSD

P04: NEOPLASMS BY INDIVIDUAL ANIMAL
1020 Long Multiwalled Carbon Nanotube
CAS Number: L-MWNT-1020

Date Report Requested: 04/17/2013
Time Report Requested: 07:42:27
First Dose M/F: 05/23/11 / 05/23/11
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
HARLAN SPRAGUE DAWLEY RATS	7	3	3	3	3	7	3	3	5	4	5	3	3	3	4	3	3	3	7	3	4	3	4	3	4	3
MALE	2	1	1	1	0	2	1	1	6	4	6	0	1	0	4	0	0	0	2	1	4	0	4	1	5	6
10 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
ANIMAL ID	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	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	2	2	2	2

**males
(cont...)**

NONE

NERVOUS SYSTEM

NONE

RESPIRATORY SYSTEM

Larynx		+	+	+			+	+					+							+						+	
Lung		+	+	+			+	+					+								+						+
Nose		+	+	+			+	+					+								+						+
Trachea		+	+	+			+	+					+								+						+

SPECIAL SENSES SYSTEM

NONE

URINARY SYSTEM

NONE

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

Experiment Number: 07062 - 01
 Test Type: 30-day
 Route: RESPIRATORY EXPOSURE WHOLE BODY
 Species/Strain: RATS/HSD

P04: NEOPLASMS BY INDIVIDUAL ANIMAL
 1020 Long Multiwalled Carbon Nanotube
 CAS Number: L-MWNT-1020

Date Report Requested: 04/17/2013
 Time Report Requested: 07:42:27
 First Dose M/F: 05/23/11 / 05/23/11
 Lab: BNW

DAY ON TEST		0	0	0	0	0	0	0	0	0	0
HARLAN SPRAGUE DAWLEY RATS MALE		0	0	0	0	1	1	0	0	0	0
	10 mg/m3	3	3	7	3	5	5	4	3	3	7
		0	1	2	0	6	6	4	1	0	2
	ANIMAL ID	0	0	0	0	0	0	0	0	0	0
	1	1	1	1	1	1	1	1	1	1	
	0	0	0	0	0	0	0	0	0	0	
	2	2	2	2	3	3	3	3	3	3	
	6	7	8	9	0	1	2	3	4	5	
* TOTALS											

ALIMENTARY SYSTEM

Pharynx + + 10

CARDIOVASCULAR SYSTEM

NONE

ENDOCRINE SYSTEM

NONE

GENERAL BODY SYSTEM

NONE

GENITAL SYSTEM

NONE

HEMATOPOIETIC SYSTEM

Lymph Node, Bronchial + + 7

Lymph Node, Mediastinal + + 10

INTEGUMENTARY SYSTEM

NONE

MUSCULOSKELETAL SYSTEM

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

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

Experiment Number: 07062 - 01
 Test Type: 30-day
 Route: RESPIRATORY EXPOSURE WHOLE BODY
 Species/Strain: RATS/HSD

P04: NEOPLASMS BY INDIVIDUAL ANIMAL
 1020 Long Multiwalled Carbon Nanotube
 CAS Number: L-MWNT-1020

Date Report Requested: 04/17/2013
 Time Report Requested: 07:42:27
 First Dose M/F: 05/23/11 / 05/23/11
 Lab: BNW

HARLAN SPRAGUE DAWLEY RATS MALE 10 mg/m3	DAY ON TEST	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
		3	3	7	3	5	5	4	3	3	7	0	0	0	0	0	0	0	0	0
		0	1	2	0	6	6	4	1	0	2	6	7	8	9	0	1	2	3	5
		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
		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	3	3	3	3	3
		6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	5
* TOTALS																				

NONE

NERVOUS SYSTEM

NONE

RESPIRATORY SYSTEM

Larynx	+	+	10
Lung	+	+	10
Nose	+	+	10
Trachea	+	+	10

SPECIAL SENSES SYSTEM

NONE

URINARY SYSTEM

NONE

SYSTEMIC LESIONS

Multiple Organ	+	+	10
----------------	---	---	----

*** 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: 07062 - 01

P04: NEOPLASMS BY INDIVIDUAL ANIMAL

Date Report Requested: 04/17/2013

Test Type: 30-day

1020 Long Multiwalled Carbon Nanotube

Time Report Requested: 07:42:27

Route: RESPIRATORY EXPOSURE WHOLE BODY

CAS Number: L-MWNT-1020

First Dose M/F: 05/23/11 / 05/23/11

Species/Strain: RATS/HSD

Lab: BNW

	DAY ON TEST	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HARLAN SPRAGUE DAWLEY RATS FEMALE Control		7	3	3	3	3	7	3	3	5	4	5	3	3	3	4	3	3	3	7	3	4	3	4	3	4	3	5	7
	ANIMAL ID	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		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	7	8

females
(cont...)

ALIMENTARY SYSTEM

Pharynx	+	+	+	+	+	+	+	+
---------	---	---	---	---	---	---	---	---

CARDIOVASCULAR SYSTEM

NONE

ENDOCRINE SYSTEM

NONE

GENERAL BODY SYSTEM

NONE

GENITAL SYSTEM

NONE

HEMATOPOIETIC SYSTEM

Lymph Node, Bronchial	M	+	+	+	+	+	+	+
Lymph Node, Mediastinal	+	+	+	+	+	+	+	+

INTEGUMENTARY SYSTEM

NONE

MUSCULOSKELETAL SYSTEM

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

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

Experiment Number: 07062 - 01

Test Type: 30-day

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/HSD

P04: NEOPLASMS BY INDIVIDUAL ANIMAL

1020 Long Multiwalled Carbon Nanotube

CAS Number: L-MWNT-1020

Date Report Requested: 04/17/2013

Time Report Requested: 07:42:27

First Dose M/F: 05/23/11 / 05/23/11

Lab: BNW

		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HARLAN SPRAGUE DAWLEY RATS FEMALE Control	DAY ON TEST	7	3	3	3	3	7	3	3	5	4	5	3	3	3	4	3	3	3	7	3	4	3	4	3	4	3	5	1	
	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	
		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	1	2	3	4	5	6	7	8	9	0	1	1	2	3	4	5	6	7	8	9	0	1	2	2	2	3	4	5		
		females (cont...)																												

NONE

NERVOUS SYSTEM

NONE

RESPIRATORY SYSTEM

Larynx																													
Lung																													
Nose																													
Trachea																													

SPECIAL SENSES SYSTEM

NONE

URINARY SYSTEM

NONE

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

Experiment Number: 07062 - 01
 Test Type: 30-day
 Route: RESPIRATORY EXPOSURE WHOLE BODY
 Species/Strain: RATS/HSD

P04: NEOPLASMS BY INDIVIDUAL ANIMAL
 1020 Long Multiwalled Carbon Nanotube
 CAS Number: L-MWNT-1020

Date Report Requested: 04/17/2013
 Time Report Requested: 07:42:27
 First Dose M/F: 05/23/11 / 05/23/11
 Lab: BNW

DAY ON TEST		0	0	0	0	0	0	0	0	0	0
HARLAN SPRAGUE DAWLEY RATS FEMALE		0	0	0	0	1	1	0	0	0	0
	Control	3	3	7	3	5	5	4	3	3	7
		1	2	3	1	7	7	5	2	1	3
ANIMAL ID		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
		2	2	2	2	3	3	3	3	3	3
		6	7	8	9	0	1	2	3	4	5
* TOTALS											

ALIMENTARY SYSTEM

Pharynx + + 10

CARDIOVASCULAR SYSTEM

NONE

ENDOCRINE SYSTEM

NONE

GENERAL BODY SYSTEM

NONE

GENITAL SYSTEM

NONE

HEMATOPOIETIC SYSTEM

Lymph Node, Bronchial M + 7

Lymph Node, Mediastinal + + 10

INTEGUMENTARY SYSTEM

NONE

MUSCULOSKELETAL SYSTEM

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

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

Experiment Number: 07062 - 01
 Test Type: 30-day
 Route: RESPIRATORY EXPOSURE WHOLE BODY
 Species/Strain: RATS/HSD

P04: NEOPLASMS BY INDIVIDUAL ANIMAL
 1020 Long Multiwalled Carbon Nanotube
 CAS Number: L-MWNT-1020

Date Report Requested: 04/17/2013
 Time Report Requested: 07:42:27
 First Dose M/F: 05/23/11 / 05/23/11
 Lab: BNW

DAY ON TEST										
	0	0	0	0	0	0	0	0	0	0
0	0	0	0	1	1	0	0	0	0	0
3	3	7	3	5	5	4	3	3	7	
1	2	3	1	7	7	5	2	1	3	
<hr/>										
ANIMAL ID										
	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	
2	2	2	2	3	3	3	3	3	3	
6	7	8	9	0	1	2	3	4	5	
										* TOTALS

NONE

NERVOUS SYSTEM

NONE

RESPIRATORY SYSTEM

Larynx	+	+	10
Lung	+	+	10
Nose	+	+	10
Trachea	M	M	8

SPECIAL SENSES SYSTEM

NONE

URINARY SYSTEM

NONE

SYSTEMIC LESIONS

Multiple Organ	+	+	10
----------------	---	---	-----------

* .. 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: 07062 - 01
Test Type: 30-day
Route: RESPIRATORY EXPOSURE WHOLE BODY
Species/Strain: RATS/HSD

P04: NEOPLASMS BY INDIVIDUAL ANIMAL
 1020 Long Multiwalled Carbon Nanotube
CAS Number: L-MWNT-1020

Date Report Requested: 04/17/2013
Time Report Requested: 07:42:27
First Dose M/F: 05/23/11 / 05/23/11
Lab: BNW

HARLAN SPRAGUE DAWLEY RATS FEMALE 0.1 mg/m3	DAY ON TEST	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	females (cont...)	
		7	3	3	3	3	7	3	3	5	4	5	3	3	3	4	3	3	3	7	3	4	3	4	3	4	3		5
	ANIMAL ID	3	2	2	2	1	3	2	2	7	5	7	1	2	1	5	1	1	1	3	2	5	1	5	2	2	7		7
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		1	2	3	4	5	6	7	8	9	0	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	

ALIMENTARY SYSTEM

Pharynx + + + + + + + +

CARDIOVASCULAR SYSTEM

NONE

ENDOCRINE SYSTEM

NONE

GENERAL BODY SYSTEM

NONE

GENITAL SYSTEM

NONE

HEMATOPOIETIC SYSTEM

Lymph Node, Bronchial + + I + M + + M

Lymph Node, Mediastinal + + + + + + + +

INTEGUMENTARY SYSTEM

NONE

MUSCULOSKELETAL SYSTEM

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

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

Experiment Number: 07062 - 01

Test Type: 30-day

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/HSD

P04: NEOPLASMS BY INDIVIDUAL ANIMAL

1020 Long Multiwalled Carbon Nanotube

CAS Number: L-MWNT-1020

Date Report Requested: 04/17/2013

Time Report Requested: 07:42:27

First Dose M/F: 05/23/11 / 05/23/11

Lab: BNW

DAY ON TEST																												ANIMAL ID	females (cont...)	
		0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0			0
HARLAN SPRAGUE DAWLEY RATS	FEMALE	7	3	3	3	3	7	3	3	5	4	5	3	3	3	4	3	3	3	3	3	4	3	4	3	4	3	4	3	5
0.1 mg/m3		3	2	2	2	1	3	2	2	7	5	7	1	2	1	5	1	1	1	1	3	2	5	1	5	2	5	2	7	
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		1	2	3	4	5	6	7	8	9	0	1	1	2	3	4	5	6	7	8	9	0	1	2	2	2	3	4	5	

NONE

NERVOUS SYSTEM

NONE

RESPIRATORY SYSTEM

Larynx	+	+	+	+	+	+	+	+
Lung	+	+	+	+	+	+	+	+
Nose	+	+	+	+	+	+	+	+
Trachea	+	+	+	+	+	+	+	+

SPECIAL SENSES SYSTEM

NONE

URINARY SYSTEM

NONE

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

Experiment Number: 07062 - 01
 Test Type: 30-day
 Route: RESPIRATORY EXPOSURE WHOLE BODY
 Species/Strain: RATS/HSD

P04: NEOPLASMS BY INDIVIDUAL ANIMAL
 1020 Long Multiwalled Carbon Nanotube
 CAS Number: L-MWNT-1020

Date Report Requested: 04/17/2013
 Time Report Requested: 07:42:27
 First Dose M/F: 05/23/11 / 05/23/11
 Lab: BNW

HARLAN SPRAGUE DAWLEY RATS FEMALE 0.1 mg/m3	DAY ON TEST	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
		3	3	7	3	5	5	4	3	3	3	7	3	3	3
		1	2	3	1	7	7	5	2	1	3	7	3	3	3
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		3	3	3	3	3	3	3	3	3	3	3	3	3	3
		2	2	2	2	3	3	3	3	3	3	3	3	3	3
		6	7	8	9	0	1	2	3	4	5	6	7	8	9
* TOTALS															

ALIMENTARY SYSTEM

Pharynx + + 10

CARDIOVASCULAR SYSTEM

NONE

ENDOCRINE SYSTEM

NONE

GENERAL BODY SYSTEM

NONE

GENITAL SYSTEM

NONE

HEMATOPOIETIC SYSTEM

Lymph Node, Bronchial + M 6

Lymph Node, Mediastinal + + 10

INTEGUMENTARY SYSTEM

NONE

MUSCULOSKELETAL SYSTEM

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

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

Experiment Number: 07062 - 01
 Test Type: 30-day
 Route: RESPIRATORY EXPOSURE WHOLE BODY
 Species/Strain: RATS/HSD

P04: NEOPLASMS BY INDIVIDUAL ANIMAL
 1020 Long Multiwalled Carbon Nanotube
 CAS Number: L-MWNT-1020

Date Report Requested: 04/17/2013
 Time Report Requested: 07:42:27
 First Dose M/F: 05/23/11 / 05/23/11
 Lab: BNW

DAY ON TEST		0	0	0	0	0	0	0	0	0	0	0	0
HARLAN SPRAGUE DAWLEY RATS FEMALE		0	0	0	0	1	1	0	0	0	0	0	0
	0.1 mg/m3	3	3	7	3	5	5	4	3	3	3	7	3
		1	2	3	1	7	7	5	2	1	3		
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
		3	3	3	3	3	3	3	3	3	3	3	3
		2	2	2	2	3	3	3	3	3	3	3	3
		6	7	8	9	0	1	2	3	4	5		
* TOTALS													

NONE

NERVOUS SYSTEM

NONE

RESPIRATORY SYSTEM

Larynx	+	+	10
Lung	+	+	10
Nose	+	+	10
Trachea	+	+	10

SPECIAL SENSES SYSTEM

NONE

URINARY SYSTEM

NONE

SYSTEMIC LESIONS

Multiple Organ	+	+	10
----------------	---	---	-----------

* .. 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: 07062 - 01
 Test Type: 30-day
 Route: RESPIRATORY EXPOSURE WHOLE BODY
 Species/Strain: RATS/HSD

P04: NEOPLASMS BY INDIVIDUAL ANIMAL
 1020 Long Multiwalled Carbon Nanotube
 CAS Number: L-MWNT-1020

Date Report Requested: 04/17/2013
 Time Report Requested: 07:42:27
 First Dose M/F: 05/23/11 / 05/23/11
 Lab: BNW

HARLAN SPRAGUE DAWLEY RATS FEMALE 0.3 mg/m3	DAY ON TEST																							females (cont...)							
	0073	0033	0032	0032	0031	0037	0033	0032	0015	0004	0015	0007	0003	0003	0003	0004	0003	0003	0004	0003	0005	0001	0005		0003	0004	0003	0001	0003	0005	0002
	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500		500	500	500	500	500	500	500
01	02	03	04	05	06	07	08	09	00	01	01	01	01	01	01	01	01	01	01	02	01	02	03	04	05	02	03	04	05		

ALIMENTARY SYSTEM

Pharynx + + + + + + +

CARDIOVASCULAR SYSTEM

NONE

ENDOCRINE SYSTEM

NONE

GENERAL BODY SYSTEM

NONE

GENITAL SYSTEM

NONE

HEMATOPOIETIC SYSTEM

Lymph Node, Bronchial M M + + + M M

Lymph Node, Mediastinal + + + + + M +

INTEGUMENTARY SYSTEM

NONE

MUSCULOSKELETAL SYSTEM

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

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

Experiment Number: 07062 - 01
 Test Type: 30-day
 Route: RESPIRATORY EXPOSURE WHOLE BODY
 Species/Strain: RATS/HSD

P04: NEOPLASMS BY INDIVIDUAL ANIMAL
 1020 Long Multiwalled Carbon Nanotube
 CAS Number: L-MWNT-1020

Date Report Requested: 04/17/2013
 Time Report Requested: 07:42:27
 First Dose M/F: 05/23/11 / 05/23/11
 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		
HARLAN SPRAGUE DAWLEY RATS FEMALE		7	3	3	3	3	7	3	3	5	4	5	3	3	3	4	3	3	3	7	3	4	3	4	3	4	3	5	7	
		3	2	2	2	1	3	2	2	7	5	7	1	2	1	5	1	1	1	3	2	5	1	5	1	5	2	7		
0.3 mg/m3		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
		5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
		0	0	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	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	7	8	9

females
(cont...)

NONE

NERVOUS SYSTEM

NONE

RESPIRATORY SYSTEM

Larynx	+	+	+	+	+	+	+	+	+
Lung	+	+	+	+	+	+	+	+	+
Nose	+	+	+	+	+	+	+	+	+
Trachea	+	+	+	+	+	+	+	+	+

SPECIAL SENSES SYSTEM

NONE

URINARY SYSTEM

NONE

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

Experiment Number: 07062 - 01
 Test Type: 30-day
 Route: RESPIRATORY EXPOSURE WHOLE BODY
 Species/Strain: RATS/HSD

P04: NEOPLASMS BY INDIVIDUAL ANIMAL
 1020 Long Multiwalled Carbon Nanotube
 CAS Number: L-MWNT-1020

Date Report Requested: 04/17/2013
 Time Report Requested: 07:42:27
 First Dose M/F: 05/23/11 / 05/23/11
 Lab: BNW

DAY ON TEST	0	0	0	0	0	0	0	0	0	0
	HARLAN SPRAGUE DAWLEY RATS FEMALE	0	0	0	0	1	1	0	0	0
0.3 mg/m3	3	3	7	3	5	5	4	3	3	7
ANIMAL ID	1	2	3	1	7	7	5	2	1	3
	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0
	5	5	5	5	5	5	5	5	5	5
	2	2	2	2	3	3	3	3	3	3
	6	7	8	9	0	1	2	3	4	5
* TOTALS										

ALIMENTARY SYSTEM

Pharynx + + 10

CARDIOVASCULAR SYSTEM

NONE

ENDOCRINE SYSTEM

NONE

GENERAL BODY SYSTEM

NONE

GENITAL SYSTEM

NONE

HEMATOPOIETIC SYSTEM

Lymph Node, Bronchial M M 4

Lymph Node, Mediastinal + + 9

INTEGUMENTARY SYSTEM

NONE

MUSCULOSKELETAL SYSTEM

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

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

Experiment Number: 07062 - 01
 Test Type: 30-day
 Route: RESPIRATORY EXPOSURE WHOLE BODY
 Species/Strain: RATS/HSD

P04: NEOPLASMS BY INDIVIDUAL ANIMAL
 1020 Long Multiwalled Carbon Nanotube
 CAS Number: L-MWNT-1020

Date Report Requested: 04/17/2013
 Time Report Requested: 07:42:27
 First Dose M/F: 05/23/11 / 05/23/11
 Lab: BNW

HARLAN SPRAGUE DAWLEY RATS FEMALE 0.3 mg/m3	DAY ON TEST	0	0	0	0	0	0	0	0	0	
	ANIMAL ID	0	0	0	0	0	0	0	0	0	
		3	3	7	3	5	5	4	3	3	
		1	2	3	1	7	7	5	2	1	
		5	5	5	5	5	5	5	5	5	
		2	2	2	2	3	3	3	3	3	
		6	7	8	9	0	1	2	3	4	
											* TOTALS

NONE

NERVOUS SYSTEM

NONE

RESPIRATORY SYSTEM

Larynx	+	+	10
Lung	+	+	10
Nose	+	+	10
Trachea	+	+	10

SPECIAL SENSES SYSTEM

NONE

URINARY SYSTEM

NONE

SYSTEMIC LESIONS

Multiple Organ	+	+	10
----------------	---	---	-----------

* .. 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: 07062 - 01
 Test Type: 30-day
 Route: RESPIRATORY EXPOSURE WHOLE BODY
 Species/Strain: RATS/HSD

P04: NEOPLASMS BY INDIVIDUAL ANIMAL
 1020 Long Multiwalled Carbon Nanotube
 CAS Number: L-MWNT-1020

Date Report Requested: 04/17/2013
 Time Report Requested: 07:42:27
 First Dose M/F: 05/23/11 / 05/23/11
 Lab: BNW

DAY ON TEST HARLAN SPRAGUE DAWLEY RATS FEMALE 1 mg/m3 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
	7	3	3	3	3	7	3	3	5	4	5	3	3	3	4	3	3	3	7	3	4	3	4	3	4	3	4	3	5	2	7	7	7	7	7	
	3	2	2	2	1	3	2	2	7	5	7	1	2	1	5	1	1	1	3	2	5	1	5	1	5	2	1	5	2	7	7	7	7	7	7	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7		
0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
1	2	3	4	5	6	7	8	9	0	1	1	2	3	4	5	6	7	8	9	0	1	1	2	3	4	5	6	7	8	9	0	1	1	2		

females
(cont...)

ALIMENTARY SYSTEM

Pharynx																																				

CARDIOVASCULAR SYSTEM

NONE

ENDOCRINE SYSTEM

NONE

GENERAL BODY SYSTEM

NONE

GENITAL SYSTEM

Uterus																																				

HEMATOPOIETIC SYSTEM

Lymph Node, Bronchial																																					
Lymph Node, Mediastinal																																					

INTEGUMENTARY SYSTEM

NONE

MUSCULOSKELETAL SYSTEM

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

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

Experiment Number: 07062 - 01

Test Type: 30-day

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: RATS/HSD

P04: NEOPLASMS BY INDIVIDUAL ANIMAL

1020 Long Multiwalled Carbon Nanotube

CAS Number: L-MWNT-1020**Date Report Requested:** 04/17/2013**Time Report Requested:** 07:42:27**First Dose M/F:** 05/23/11 / 05/23/11**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
HARLAN SPRAGUE DAWLEY RATS FEMALE 1 mg/m3		7	3	3	3	3	7	3	3	5	4	5	3	3	3	4	3	3	3	7	3	4	3	4	3	4	3	5
		3	2	2	2	1	3	2	2	7	5	7	1	2	1	5	1	1	1	1	3	2	5	1	5	2	7	
	ANIMAL ID	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
		0	0	0	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	6	7
females (cont...)																												

NONE

NERVOUS SYSTEM

NONE

RESPIRATORY SYSTEM

Larynx	+	+	+	+	+	+	+	+
Lung	+	+	+	+	+	+	+	+
Nose	+	+	+	+	+	+	+	+
Trachea	+	+	+	+	+	+	+	+

SPECIAL SENSES SYSTEM

NONE

URINARY SYSTEM

NONE

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

Experiment Number: 07062 - 01
 Test Type: 30-day
 Route: RESPIRATORY EXPOSURE WHOLE BODY
 Species/Strain: RATS/HSD

P04: NEOPLASMS BY INDIVIDUAL ANIMAL
 1020 Long Multiwalled Carbon Nanotube
 CAS Number: L-MWNT-1020

Date Report Requested: 04/17/2013
 Time Report Requested: 07:42:27
 First Dose M/F: 05/23/11 / 05/23/11
 Lab: BNW

DAY ON TEST		0	0	0	0	0	0	0	0	0	0	0	0	0
HARLAN SPRAGUE DAWLEY RATS FEMALE	0	0	0	0	1	1	0	0	0	0	0	0	0	0
	3	3	7	3	5	5	4	3	3	3	7	3	7	3
	1	2	3	1	7	7	5	2	1	1	3	1	3	3
	1 mg/m3													
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
		7	7	7	7	7	7	7	7	7	7	7	7	7
		2	2	2	2	3	3	3	3	3	3	3	3	3
		6	7	8	9	0	1	2	3	4	5	6	7	8
													* TOTALS	

ALIMENTARY SYSTEM

Pharynx + + 10

CARDIOVASCULAR SYSTEM

NONE

ENDOCRINE SYSTEM

NONE

GENERAL BODY SYSTEM

NONE

GENITAL SYSTEM

Uterus 1

HEMATOPOIETIC SYSTEM

Lymph Node, Bronchial M + 6

Lymph Node, Mediastinal + + 10

INTEGUMENTARY SYSTEM

NONE

MUSCULOSKELETAL SYSTEM

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

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

Experiment Number: 07062 - 01
 Test Type: 30-day
 Route: RESPIRATORY EXPOSURE WHOLE BODY
 Species/Strain: RATS/HSD

P04: NEOPLASMS BY INDIVIDUAL ANIMAL
 1020 Long Multiwalled Carbon Nanotube
 CAS Number: L-MWNT-1020

Date Report Requested: 04/17/2013
 Time Report Requested: 07:42:27
 First Dose M/F: 05/23/11 / 05/23/11
 Lab: BNW

HARLAN SPRAGUE DAWLEY RATS FEMALE 3 mg/m3	DAY ON TEST	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
		3	3	7	3	5	5	4	3	3	3	7	1	3	2	3	3	3	3
		1	2	3	1	7	7	5	2	1	7	3	6	7	8	9	0	1	2
		9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9
		2	2	2	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3
		6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3
* TOTALS																			

ALIMENTARY SYSTEM

Pharynx + + 10

CARDIOVASCULAR SYSTEM

NONE

ENDOCRINE SYSTEM

NONE

GENERAL BODY SYSTEM

NONE

GENITAL SYSTEM

NONE

HEMATOPOIETIC SYSTEM

Lymph Node, Bronchial M + 7

Lymph Node, Mediastinal + + 10

INTEGUMENTARY SYSTEM

NONE

MUSCULOSKELETAL SYSTEM

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

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

Experiment Number: 07062 - 01
 Test Type: 30-day
 Route: RESPIRATORY EXPOSURE WHOLE BODY
 Species/Strain: RATS/HSD

P04: NEOPLASMS BY INDIVIDUAL ANIMAL
 1020 Long Multiwalled Carbon Nanotube
 CAS Number: L-MWNT-1020

Date Report Requested: 04/17/2013
 Time Report Requested: 07:42:27
 First Dose M/F: 05/23/11 / 05/23/11
 Lab: BNW

HARLAN SPRAGUE DAWLEY RATS FEMALE 3 mg/m3	DAY ON TEST	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
		3	3	7	3	5	5	4	3	3	3	7	1	3	3	3	3	3	3
		1	2	3	1	7	7	5	2	1	7	3	5	3	4	5	3	5	5
		9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9
		2	2	2	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3
		6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3
* TOTALS																			

NONE

NERVOUS SYSTEM

NONE

RESPIRATORY SYSTEM

Larynx		+																	10
Lung		+																	10
Nose		+																	10
Trachea		+																	10

SPECIAL SENSES SYSTEM

NONE

URINARY SYSTEM

NONE

SYSTEMIC LESIONS

Multiple Organ		+																	10
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* .. 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: 07062 - 01
 Test Type: 30-day
 Route: RESPIRATORY EXPOSURE WHOLE BODY
 Species/Strain: RATS/HSD

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DAY ON TEST		0	0	0	0	0	0	0	0	0	0	0
HARLAN SPRAGUE DAWLEY RATS FEMALE	0	0	0	0	1	1	0	0	0	0	0	0
	3	3	7	3	5	5	4	3	3	3	7	3
	1	2	3	1	7	7	5	2	1	1	3	
	<hr/>											
10 mg/m3	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
	2	2	2	2	3	3	3	3	3	3	3	3
	6	7	8	9	0	1	2	3	4	5		
											* TOTALS	

ALIMENTARY SYSTEM

Pharynx + + 10

CARDIOVASCULAR SYSTEM

NONE

ENDOCRINE SYSTEM

NONE

GENERAL BODY SYSTEM

NONE

GENITAL SYSTEM

NONE

HEMATOPOIETIC SYSTEM

Lymph Node 1
 Lymph Node, Bronchial + + 9
 Lymph Node, Mediastinal + + 10

INTEGUMENTARY SYSTEM

NONE

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DAY ON TEST		0	0	0	0	0	0	0	0	0	0	0
HARLAN SPRAGUE DAWLEY RATS	0	0	0	0	1	1	0	0	0	0	0	
	3	3	7	3	5	5	4	3	3	7	3	
	1	2	3	1	7	7	5	2	1	3		
FEMALE												
10 mg/m3	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	
	2	2	2	2	3	3	3	3	3	3	3	
	6	7	8	9	0	1	2	3	4	5		
ANIMAL ID												
* TOTALS												

MUSCULOSKELETAL SYSTEM

NONE

NERVOUS SYSTEM

NONE

RESPIRATORY SYSTEM

Larynx		+								+			10
Lung		+								+			10
Nose		+								+			10
Trachea		+								+			10

SPECIAL SENSES SYSTEM

NONE

URINARY SYSTEM

NONE

SYSTEMIC LESIONS

Multiple Organ		+								+			10
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