

Experiment Number: 04049 - 01

**P18: INCIDENCE RATES OF NON-NEOPLASTIC LESIONS BY ANATOMIC SITE (a) WITH
AVERAGE SEVERITY GRADES[b]**

Date Report Requested: 02/06/2018

Test Type: 28-DAY

Perfluorononanoic Acid

Time Report Requested: 12:36:11

Route: GAVAGE

CAS Number: 375-95-1

First Dose M/F: 02/02/12 / 02/03/12

Species/Strain: RATS/HSD

Lab: BAT

PFNA_Final 1

NTP Study Number: C04049
Lock Date: 01/22/2016
Cage Range: ALL
Date Range: ALL
Reasons For Removal: ALL
Removal Date Range: ALL
Treatment Groups: Include ALL
Study Gender: Both
TDMSE Version: 3.0.2.3_002
PWG Approval Date: NONE

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Species/Strain: RATS/HSD

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Harlan Sprague Dawley RATS MALE	0 mg/kg/d M	0.625mg/kg/d M	1.25 mg/kg/d M	2.5 mg/kg/d M	5 mg/kg/d M	10 mg/kg/d M
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Disposition Summary

Animals Initially In Study	10	10	10	10	10	10
Early Deaths						
Natural Death					8	10
Survivors						
Terminal Sacrifice	10	10	10	10	2	
Animals Examined Microscopically	10	10	10	10	10	10

ALIMENTARY SYSTEM

Esophagus	(10)	(0)	(0)	(10)	(10)	(10)
Intestine Large, Cecum	(10)	(0)	(0)	(10)	(9)	(10)
Intestine Large, Colon	(10)	(0)	(0)	(10)	(8)	(10)
Intestine Large, Rectum	(10)	(0)	(0)	(10)	(10)	(10)
Intestine Small, Duodenum	(10)	(0)	(0)	(10)	(8)	(10)
Intestine Small, Ileum	(10)	(0)	(0)	(10)	(9)	(10)
Intestine Small, Jejunum	(10)	(0)	(0)	(10)	(9)	(10)
Liver	(10)	(10)	(10)	(10)	(9)	(10)
Infiltration Cellular, Mixed Cell	2 [1.0]		1 [1.0]		1 [1.0]	
Hepatocyte, Cytoplasmic Alteration		10 [1.5]	10 [3.7]	10 [4.0]	9 [3.1]	10 [2.1]
Hepatocyte, Hypertrophy		7 [2.3]	10 [4.0]	10 [4.0]	9 [3.6]	10 [3.0]
Hepatocyte, Necrosis			1 [1.0]	5 [1.2]	6 [2.0]	9 [1.8]
Hepatocyte, Vacuolization Cytoplasmic			6 [1.5]	9 [3.7]		
Pancreas	(10)	(10)	(10)	(10)	(8)	(10)
Salivary Glands	(10)	(0)	(0)	(10)	(9)	(10)
Stomach, Forestomach	(10)	(10)	(10)	(10)	(8)	(10)
Inflammation, Chronic Active				5 [2.0]		
Ulcer				2 [1.0]		
Epithelium, Hyperplasia				6 [2.3]	6 [1.8]	8 [1.8]
Stomach, Glandular	(10)	(0)	(0)	(10)	(9)	(10)

CARDIOVASCULAR SYSTEM

Blood Vessel	(10)	(0)	(0)	(10)	(10)	(10)
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a - Number of animals examined microscopically at site and number of animals with lesion

b-Average severity grade(1-minimal;2-mild;3-moderate;4-marked)

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Heart	(10)	(0)	(0)	(10)	(10)	(10)
Infiltration Cellular, Mixed Cell	2 [1.0]					
ENDOCRINE SYSTEM						
Adrenal Cortex	(10)	(0)	(0)	(10)	(10)	(10)
Adrenal Medulla	(10)	(0)	(0)	(10)	(10)	(10)
Parathyroid Gland	(6)	(0)	(0)	(7)	(9)	(9)
Pituitary Gland	(10)	(0)	(0)	(10)	(10)	(10)
Thyroid Gland	(10)	(10)	(10)	(10)	(10)	(10)
GENERAL BODY SYSTEM						
None						
GENITAL SYSTEM						
Epididymis	(10)	(10)	(10)	(10)	(9)	(10)
Granuloma Sperm						4 [2.0]
Hypospermia				2 [2.5]	9 [3.7]	10 [2.9]
Duct, Exfoliated Germ Cell				6 [2.7]	9 [3.7]	10 [3.6]
Epithelium, Apoptosis					8 [2.0]	10 [2.1]
Epithelium, Exfoliated Germ Cell					1 [2.0]	
Preputial Gland	(10)	(0)	(0)	(10)	(10)	(10)
Prostate	(10)	(0)	(0)	(10)	(10)	(10)
Seminal Vesicle	(10)	(0)	(0)	(10)	(10)	(10)
Testes	(10)	(10)	(10)	(10)	(9)	(10)
Germinal Epithelium, Degeneration				6 [2.2]	9 [3.1]	10 [3.7]
Interstitial Cell, Atrophy			1 [1.0]	10 [1.7]	9 [3.1]	10 [3.5]
Seminiferous Tubule, Spermatid Retention				6 [2.8]	9 [3.0]	10 [3.0]
HEMATOPOIETIC SYSTEM						

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Bone Marrow	(10)	(10)	(10)	(10)	(10)	(10)
Hypocellularity				10 [3.4]	10 [4.0]	10 [3.1]
Lymph Node, Mandibular	(10)	(10)	(10)	(10)	(7)	(10)
Atrophy				2 [1.5]	5 [3.8]	5 [2.2]
Lymph Node, Mesenteric	(10)	(10)	(10)	(10)	(8)	(10)
Atrophy				3 [3.0]	6 [3.7]	9 [3.2]
Spleen	(10)	(10)	(10)	(10)	(8)	(10)
Atrophy					7 [3.6]	9 [4.0]
Thymus	(10)	(10)	(10)	(10)	(10)	(8)
Atrophy				10 [3.3]	10 [4.0]	8 [4.0]
INTEGUMENTARY SYSTEM						
Mammary Gland	(10)	(0)	(0)	(10)	(10)	(10)
Skin	(10)	(0)	(0)	(10)	(10)	(10)
MUSCULOSKELETAL SYSTEM						
Bone	(10)	(0)	(0)	(10)	(10)	(10)
NERVOUS SYSTEM						
Brain	(10)	(0)	(0)	(10)	(10)	(10)
RESPIRATORY SYSTEM						
Lung	(10)	(0)	(0)	(10)	(10)	(10)
Infiltration Cellular, Mixed Cell	3 [1.0]					1 [1.0]
Artery, Thrombus, Focal					1 [2.0]	
Nose	(10)	(10)	(10)	(10)	(10)	(10)
Olfactory Epithelium, Degeneration					1 [1.0]	3 [1.3]
Olfactory Epithelium, Inflammation, Suppurative					1 [2.0]	2 [2.0]
Respiratory Epithelium, Hyperplasia						1 [1.0]

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Lab: BAT

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Respiratory Epithelium, Inflammation, Chronic Active	1 [1.0]	5 [1.0]				
Trachea	(10)	(0)	(0)	(10)	(10)	(10)
SPECIAL SENSES SYSTEM						
Eye	(10)	(0)	(0)	(10)	(10)	(10)
Harderian Gland	(10)	(0)	(0)	(10)	(10)	(10)
URINARY SYSTEM						
Kidney	(10)	(10)	(10)	(10)	(10)	(10)
Nephropathy, Chronic Progressive	8 [1.1]	8 [1.0]	5 [1.0]	6 [1.0]	4 [1.0]	
Urinary Bladder	(10)	(0)	(0)	(10)	(10)	(10)

*** END OF MALE ***

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Harlan Sprague Dawley RATS FEMALE	0 mg/kg/d F	1.56mg/kg/d F	3.12mg/kg/d F	6.25mg/kg/d F	12.5mg/kg/d F	25mg/kg/d F
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Disposition Summary

Animals Initially In Study	10	10	10	10	10	10
Early Deaths						
Natural Death					9	10
Survivors						
Terminal Sacrifice	10	10	10	10	1	
Animals Examined Microscopically	10	10	10	10	10	10

ALIMENTARY SYSTEM

Esophagus	(10)	(0)	(0)	(10)	(10)	(10)
Intestine Large, Cecum	(10)	(0)	(0)	(10)	(10)	(10)
Intestine Large, Colon	(10)	(0)	(0)	(10)	(10)	(10)
Intestine Large, Rectum	(10)	(0)	(0)	(10)	(10)	(10)
Intestine Small, Duodenum	(10)	(0)	(0)	(10)	(9)	(10)
Intestine Small, Ileum	(10)	(0)	(0)	(10)	(9)	(10)
Intestine Small, Jejunum	(10)	(0)	(0)	(10)	(9)	(10)
Liver	(10)	(10)	(10)	(10)	(10)	(10)
Clear Cell Focus	1					
Infiltration Cellular, Mixed Cell	2 [1.0]			1 [1.0]		
Hepatocyte, Cytoplasmic Alteration		5 [1.0]	10 [1.0]	10 [2.4]	9 [1.6]	
Hepatocyte, Hypertrophy			2 [1.0]	10 [4.0]	10 [3.0]	10 [2.6]
Hepatocyte, Necrosis					4 [1.3]	3 [1.0]
Pancreas	(10)	(10)	(10)	(10)	(10)	(10)
Salivary Glands	(10)	(0)	(0)	(10)	(10)	(10)
Stomach, Forestomach	(10)	(10)	(10)	(10)	(10)	(10)
Inflammation, Chronic Active						1 [1.0]
Epithelium, Hyperplasia					7 [2.0]	6 [1.5]
Stomach, Glandular	(10)	(0)	(0)	(10)	(10)	(10)

CARDIOVASCULAR SYSTEM

Blood Vessel	(10)	(0)	(0)	(10)	(10)	(10)
Heart	(10)	(0)	(0)	(10)	(10)	(10)

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ENDOCRINE SYSTEM

Adrenal Cortex	(10)	(0)	(0)	(10)	(10)	(10)
Adrenal Medulla	(10)	(0)	(0)	(10)	(10)	(10)
Parathyroid Gland	(7)	(0)	(0)	(9)	(7)	(8)
Pituitary Gland	(10)	(0)	(0)	(8)	(10)	(10)
Thyroid Gland	(10)	(10)	(10)	(10)	(10)	(10)

GENERAL BODY SYSTEM

None

GENITAL SYSTEM

Clitoral Gland	(10)	(0)	(0)	(10)	(10)	(10)
Ovary	(10)	(10)	(10)	(10)	(10)	(10)
Uterus	(10)	(0)	(0)	(10)	(10)	(10)
Bilateral, Dilation	1 [3.0]					

HEMATOPOIETIC SYSTEM

Bone Marrow	(10)	(10)	(10)	(10)	(10)	(10)
Hypocellularity					10 [3.8]	10 [3.1]
Lymph Node, Mandibular	(10)	(10)	(10)	(10)	(8)	(9)
Atrophy					8 [3.4]	9 [3.1]
Lymph Node, Mesenteric	(10)	(10)	(10)	(10)	(9)	(10)
Atrophy					8 [4.0]	9 [2.9]
Spleen	(10)	(10)	(10)	(10)	(10)	(10)
Atrophy					8 [4.0]	10 [4.0]
Thymus	(10)	(10)	(10)	(10)	(10)	(10)
Atrophy					9 [4.0]	10 [4.0]

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INTEGUMENTARY SYSTEM						
Mammary Gland	(10)	(0)	(0)	(10)	(10)	(10)
Skin	(10)	(0)	(0)	(10)	(10)	(10)
MUSCULOSKELETAL SYSTEM						
Bone	(10)	(0)	(0)	(10)	(10)	(10)
NERVOUS SYSTEM						
Brain	(10)	(0)	(0)	(10)	(10)	(10)
RESPIRATORY SYSTEM						
Lung	(10)	(0)	(0)	(10)	(10)	(10)
Infiltration Cellular, Mixed Cell Arteriole, Thrombus, Focal Vein, Thrombus	1 [1.0]					1 [1.0]
Nose	(10)	(10)	(10)	(10)	1 [2.0] (10)	(10)
Olfactory Epithelium, Degeneration						5 [2.0]
Olfactory Epithelium, Hyperplasia						1 [1.0]
Olfactory Epithelium, Inflammation, Suppurative						3 [1.7]
Trachea	(10)	(0)	(0)	(10)	(10)	(10)
SPECIAL SENSES SYSTEM						
Eye	(10)	(0)	(0)	(10)	(10)	(10)
Harderian Gland	(10)	(0)	(0)	(10)	(10)	(10)

URINARY SYSTEM

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Kidney	(10)	(10)	(10)	(10)	(10)	(10)
Cyst, Focal						1
Nephropathy, Chronic Progressive	6 [1.0]	3 [1.0]	5 [1.0]	3 [1.0]	1 [1.0]	3 [1.0]
Urinary Bladder	(10)	(0)	(0)	(10)	(10)	(10)

*** END OF REPORT ***

a - Number of animals examined microscopically at site and number of animals with lesion

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