

**Experiment Number:** 92004-01  
**Test Type:** CHRONIC  
**Species/Strain:** Rat/F 344/N

**P18: INCIDENCE RATES OF NON-NEOPLASTIC LESIONS BY ANATOMIC SITE (a) WITH  
AVERAGE SEVERITY GRADES[b]**  
**Test Compound:** NTP 91/92 diet study  
**CAS Number:** DIET9192

**Date Report Requested:** 10/20/2014  
**Time Report Requested:** 18:15:39  
**First Dose M/F:** NA / NA  
**Lab:** NIEHS

**C Number:** C92004  
**Lock Date:** Not Entered.  
**Cage Range:** All  
**Date Range:** All  
**Reasons For Removal:** All  
**Removal Date Range:** All  
**Treatment Groups:** All  
**Study Gender:** Both  
**PWG Approval Date** NONE

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F 344/N Rat MALE	07M	91M	92M
<b>Disposition Summary</b>			
Animals Initially In Study	60	60	60
Early Deaths			
Moribund Sacrifice	1	1	
Natural Death	3	5	8
Survivors			
Moribund Sacrifice	21	16	15
Natural Death	12	6	7
Terminal Sacrifice	23	32	30
Animals Examined Microscopically	58	60	56

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ALIMENTARY SYSTEM

Liver	(57)	(60)	(56)
Angiectasis	4 [1.5]		1 [1.0]
Basophilic Focus	10 [1.1]	18 [1.2]	17 [1.2]
Bile Duct, Fibrosis	1 [1.0]		
Bile Duct, Hyperplasia	29 [2.3]	46 [1.6]	35 [1.8]
Centrilobular, Degeneration	11 [1.5]	7 [2.0]	6 [1.8]
Centrilobular, Fatty Change	11 [2.5]	8 [2.3]	8 [2.4]
Clear Cell Focus	1 [1.0]	6 [1.0]	3 [1.0]
Congestion	1 [1.0]		1 [2.0]
Cyst		1 [3.0]	
Degeneration		1 [2.0]	1 [1.0]
Degeneration, Cystic	24 [1.7]	8 [1.3]	14 [1.1]
Eosinophilic Focus	9 [1.2]	17 [1.1]	20 [1.3]
Fatty Change	1 [3.0]		
Hemorrhage		1 [2.0]	
Hepatodiaphragmatic Nodule			1 [2.0]
Hyperplasia	1 [2.0]	1 [2.0]	1 [2.0]

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

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F 344/N Rat MALE	07M	91M	92M
Hyperplasia, Focal		1 [3.0]	
Infiltration Cellular, Lymphocyte	1 [1.0]		
Inflammation, Chronic		10 [1.3]	2 [1.0]
Necrosis	3 [2.7]	4 [1.8]	6 [2.2]
Necrosis, Focal	1 [1.0]		
Oval Cell, Hyperplasia		1 [1.0]	
Periportal, Fatty Change	2 [3.0]	2 [2.5]	3 [1.7]
Mesentery	(8)	(4)	(5)
Artery, Inflammation, Chronic	1 [4.0]		
Fat, Necrosis	5 [2.8]	3 [2.3]	4 [3.3]
Thrombosis			1 [4.0]
Pancreas	(56)	(59)	(52)
Acinus, Degeneration	30 [1.4]	28 [1.1]	22 [1.2]
Acinus, Hyperplasia	4 [1.5]	4 [2.0]	1 [2.0]
Artery, Polyarteritis	1 [4.0]		
Atrophy	2 [1.0]		
Hyperplasia			1 [3.0]
Inflammation, Chronic			1 [1.0]
Polyarteritis		1 [2.0]	2 [1.0]
Salivary Glands	(0)	(0)	(1)
Stomach, Forestomach	(4)	(0)	(0)
Inflammation, Chronic	1 [4.0]		
Ulcer	2 [3.5]		
Stomach, Glandular	(1)	(0)	(0)
Tongue	(1)	(0)	(0)
<b>CARDIOVASCULAR SYSTEM</b>			
Heart	(57)	(60)	(56)
Cardiomyopathy	3 [1.0]	6 [1.2]	4 [1.3]
Congestion		1 [2.0]	

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F 344/N Rat MALE	07M	91M	92M
Fibrosis	12 [1.3]	5 [1.6]	5 [1.4]
Inflammation, Chronic		1 [4.0]	
Mineralization	1 [2.0]		
Necrosis	1 [3.0]		
Thrombosis	3 [3.0]	4 [2.5]	1 [3.0]
<b>ENDOCRINE SYSTEM</b>			
Adrenal Cortex	(56)	(60)	(56)
Atrophy			1 [2.0]
Congestion	1 [1.0]		
Hyperplasia	6 [1.3]	9 [1.0]	8 [1.5]
Hyperplasia, Focal	1 [1.0]		1 [2.0]
Hypertrophy	1 [1.0]	1 [1.0]	1 [2.0]
Infiltration Cellular, Lymphocyte	1 [1.0]		
Metaplasia, Osseous			1 [3.0]
Necrosis	2 [1.5]		
Vacuolization Cytoplasmic, Diffuse	5 [1.0]	6 [2.0]	5 [1.4]
Vacuolization Cytoplasmic, Focal	4 [1.5]	8 [1.1]	1 [1.0]
Adrenal Medulla	(56)	(60)	(56)
Angiectasis		1 [4.0]	
Hyperplasia	14 [1.7]	11 [1.7]	7 [1.3]
Hyperplasia, Focal	1 [1.0]		
Infiltration Cellular, Lymphocyte	1 [1.0]		
Thrombosis	2 [2.0]	2 [2.0]	
Islets, Pancreatic	(56)	(59)	(52)
Hyperplasia	2 [3.0]	3 [1.7]	3 [1.0]
Parathyroid Gland	(36)	(41)	(40)
Hyperplasia	6 [2.3]		1 [1.0]
Pituitary Gland	(55)	(58)	(56)
Pars Distalis, Angiectasis	5 [1.4]	1 [1.0]	1 [2.0]

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F 344/N Rat MALE	07M	91M	92M
Pars Distalis, Cyst	7 [1.4]	4 [1.5]	4 [1.3]
Pars Distalis, Hyperplasia	9 [1.8]	10 [1.3]	10 [1.5]
Thyroid Gland	(51)	(58)	(56)
C Cell, Hyperplasia	14 [1.2]	7 [1.0]	7 [1.3]
Fibrosis			1 [1.0]
Follicle, Cyst	2 [1.0]		
Inflammation, Chronic			1 [2.0]
<b>GENERAL BODY SYSTEM</b>			
Peritoneum	(1)	(0)	(2)
<b>GENITAL SYSTEM</b>			
Penis	(1)	(0)	(0)
Preputial Gland	(5)	(3)	(3)
Inflammation, Chronic	1 [3.0]	1 [1.0]	
Seminal Vesicle	(2)	(3)	(5)
Atrophy	2 [2.0]	3 [2.0]	5 [2.0]
Testes	(56)	(60)	(56)
Atrophy	1 [3.0]		
Bilateral, Hyperplasia			1 [1.0]
Bilateral, Interstit Cell, Hyperplasia	3 [1.0]	5 [1.4]	2 [1.0]
Bilateral, Seminif Tub, Degeneration	1 [4.0]	1 [2.0]	2 [4.0]
Interstit Cell, Hyperplasia	7 [1.7]	6 [1.7]	8 [1.8]
Interstit Cell, Inflammation, Acute	1 [2.0]		
Interstit Cell, Seminif Tub, Degeneration	1 [1.0]		
<b>HEMATOPOIETIC SYSTEM</b>			
Lymph Node	(1)	(1)	(2)
Lymph Node, Mandibular	(2)	(0)	(1)
Lymph Node, Mesenteric	(56)	(57)	(54)
Hemorrhage	1 [1.0]	1 [2.0]	1 [1.0]

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<b>F 344/N Rat MALE</b>	<b>07M</b>	<b>91M</b>	<b>92M</b>
Hyperplasia, Lymphoid Spleen	1 [2.0] (57)	(59)	1 [2.0] (56)
Fibrosis	4 [1.8]	9 [2.0]	6 [2.3]
Hematopoietic Cell Proliferation	3 [1.0]	2 [1.5]	4 [1.3]
Hyperplasia, Lymphoid			1 [3.0]
Inflammation, Acute	1 [2.0]		1 [1.0]
Necrosis	1 [2.0]		
Pigmentation, Hemosiderin	2 [1.0]	1 [2.0]	1 [1.0]
Thymus	(30)	(46)	(38)
Atrophy	27 [2.0]	40 [2.0]	32 [2.0]
Hemorrhage			1 [2.0]
<b>INTEGUMENTARY SYSTEM</b>			
Mammary Gland	(5)	(1)	(3)
Skin	(10)	(9)	(3)
Hair Follicle, Atrophy	1 [3.0]		
Hyperkeratosis		1 [1.0]	
<b>MUSCULOSKELETAL SYSTEM</b>			
Bone	(0)	(0)	(1)
<b>NERVOUS SYSTEM</b>			
Brain	(1)	(1)	(0)
Hemorrhage	1 [4.0]	1 [3.0]	
Mineralization		1 [1.0]	
Brain, Cerebellum	(1)	(0)	(1)
Hemorrhage			1 [3.0]
Brain, Cerebrum	(0)	(1)	(0)
Hemorrhage		1 [4.0]	
<b>RESPIRATORY SYSTEM</b>			

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<b>F 344/N Rat MALE</b>	<b>07M</b>	<b>91M</b>	<b>92M</b>
Lung	(57)	(59)	(56)
Alveolar Epith, Hyperplasia			1 [2.0]
Alveolus, Infiltration Cellular, Histiocyte	7 [1.0]	3 [1.0]	3 [1.3]
Artery, Mineralization	46 [1.0]	50 [1.0]	52 [1.0]
Congestion	4 [1.8]	1 [2.0]	1 [2.0]
Fibrosis			1 [1.0]
Hemorrhage	3 [1.3]	3 [1.7]	
Hyperplasia			1 [2.0]
Hyperplasia, Adenomatous	4 [2.8]	8 [2.6]	5 [2.6]
Inflammation, Chronic	10 [1.5]	9 [1.2]	5 [1.4]
Pigmentation, Hematoidin	1 [2.0]		
Thrombosis	1 [1.0]	1 [2.0]	
<b>SPECIAL SENSES SYSTEM</b>			
Zymbal's Gland	(0)	(1)	(1)
<b>URINARY SYSTEM</b>			
Kidney	(57)	(60)	(56)
Congestion	1 [2.0]		
Cyst	2 [1.0]	2 [2.5]	1 [2.0]
Hydronephrosis	2 [1.0]		1 [1.0]
Hyperplasia, Tubular	2 [1.5]		
Infiltration Cellular, Lymphocyte			1 [1.0]
Inflammation, Chronic	1 [2.0]		
Mineralization	1 [2.0]	1 [2.0]	
Necrosis	1 [3.0]		
Nephropathy	55 [2.5]	46 [1.6]	51 [1.6]
Pigmentation	17 [2.2]	8 [1.5]	10 [1.5]
Renal Tubule, Degeneration		2 [2.0]	
Renal Tubule, Hyperplasia	1 [2.0]		

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<b>F 344/N Rat MALE</b>	<b>07M</b>	<b>91M</b>	<b>92M</b>
Vacuolization Cytoplasmic		1 [2.0]	
Urinary Bladder	(55)	(59)	(52)
Hemorrhage	1 [2.0]		
Hyperplasia			1 [2.0]
Infiltration Cellular, Lymphocyte	11 [1.0]	13 [1.0]	18 [1.0]
Inflammation, Acute			1 [2.0]

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\*\*\*END OF MALE DATA\*\*\*

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First Dose M/F: NA / NA

Lab: NIEHS

F 344/N Rat FEMALE	07F	91F	92F
<b>Disposition Summary</b>			
<b>Animals Initially In Study</b>	<b>60</b>	<b>60</b>	<b>60</b>
<b>Early Deaths</b>			
<b>Moribund Sacrifice</b>	<b>2</b>	<b>2</b>	
<b>Natural Death</b>	<b>6</b>	<b>3</b>	<b>6</b>
<b>Survivors</b>			
<b>Moribund Sacrifice</b>	<b>11</b>	<b>13</b>	<b>10</b>
<b>Natural Death</b>	<b>10</b>	<b>5</b>	<b>7</b>
<b>Terminal Sacrifice</b>	<b>31</b>	<b>37</b>	<b>37</b>
<b>Animals Examined Microscopically</b>	<b>56</b>	<b>60</b>	<b>59</b>
<b>ALIMENTARY SYSTEM</b>			
Intestine Large, Cecum	(0)	(0)	(1)
Intestine Large, Colon	(1)	(0)	(0)
Inflammation, Chronic	1 [4.0]		
Perforation	1		
Liver	(56)	(56)	(59)
Angiectasis	2 [1.5]		
Basophilic Focus	41 [2.2]	46 [2.0]	45 [2.4]
Bile Duct, Hyperplasia	2 [1.5]	3 [1.0]	1 [1.0]
Centrilobular, Degeneration	2 [1.5]		3 [2.7]
Centrilobular, Fatty Change	7 [2.3]	2 [3.5]	2 [3.5]
Clear Cell Focus	4 [1.0]	2 [1.0]	6 [1.0]
Congestion	1 [2.0]		
Degeneration		1 [2.0]	
Eosinophilic Focus	1 [1.0]	8 [1.0]	5 [1.0]
Fatty Change			1 [3.0]
Hematopoietic Cell Proliferation	2 [1.0]		
Hepatodiaphragmatic Nodule	2	1	5

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F 344/N Rat FEMALE	07F	91F	92F
Hyperplasia	1 [3.0]		
Infiltration Cellular, Lymphocyte	1 [1.0]		
Infiltration Cellular, Polymorphnuclr		1 [2.0]	
Inflammation, Chronic	11 [1.5]	24 [1.3]	13 [1.2]
Necrosis	2 [1.5]	2 [2.0]	2 [2.5]
Periportal, Fatty Change	2 [1.0]	4 [1.8]	3 [1.0]
Vacuolization Cytoplasmic	1 [1.0]		
Vacuolization Cytoplasmic, Focal	1 [2.0]		
Mesentery	(2)	(3)	(2)
Fat, Necrosis	1 [3.0]	3 [2.0]	2 [3.0]
Pancreas	(55)	(58)	(57)
Acinus, Degeneration	27 [1.2]	14 [1.1]	17 [1.1]
Infiltration Cellular, Lymphocyte		1 [1.0]	
Inflammation, Acute	1 [1.0]		
Stomach, Forestomach	(0)	(1)	(0)
Stomach, Glandular	(0)	(1)	(0)
<b>CARDIOVASCULAR SYSTEM</b>			
Heart	(56)	(57)	(59)
Cardiomyopathy	5 [1.4]	4 [1.0]	2 [1.0]
Fibrosis	2 [1.0]		1 [1.0]
Thrombosis	2 [2.5]		
Valve, Inflammation, Chronic	1 [2.0]		
<b>ENDOCRINE SYSTEM</b>			
Adrenal Cortex	(56)	(58)	(59)
Angiectasis		1 [2.0]	1 [2.0]
Congestion	2 [1.5]		
Degeneration			1 [2.0]
Hyperplasia	9 [1.4]	16 [1.3]	15 [1.7]

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First Dose M/F: NA / NA

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F 344/N Rat FEMALE	07F	91F	92F
Hypertrophy	1 [1.0]	5 [1.4]	1 [1.0]
Necrosis		1 [2.0]	
Vacuolization Cytoplasmic, Diffuse	4 [1.8]		2 [1.5]
Vacuolization Cytoplasmic, Focal	4 [1.3]	3 [1.3]	7 [1.4]
Adrenal Medulla	(55)	(58)	(58)
Hyperplasia	2 [1.0]		2 [1.0]
Hyperplasia, Focal			1 [2.0]
Islets, Pancreatic	(55)	(58)	(57)
Hyperplasia	1 [3.0]		2 [1.5]
Parathyroid Gland	(36)	(40)	(37)
Fibrosis		1 [2.0]	
Pituitary Gland	(55)	(57)	(57)
Pars Distalis, Angiectasis	9 [1.7]	2 [2.0]	8 [1.9]
Pars Distalis, Cyst	12 [1.3]	20 [1.6]	14 [1.7]
Pars Distalis, Hyperplasia	13 [1.8]	13 [1.8]	15 [1.8]
Pars Distalis, Pigmentation, Hemosiderin	1 [1.0]	1 [2.0]	
Pigmentation, Hemosiderin		1 [1.0]	
Thyroid Gland	(54)	(55)	(56)
C Cell, Hyperplasia	10 [1.0]	8 [1.6]	7 [1.0]
Follicle, Cyst		2 [1.0]	1 [2.0]
Ultimobranchial Cyst	1 [1.0]		1 [1.0]

GENERAL BODY SYSTEM

None

GENITAL SYSTEM

Clitoral Gland	(7)	(5)	(7)
Cyst		1 [3.0]	
Hyperplasia	1 [3.0]		
Ovary	(55)	(57)	(59)

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First Dose M/F: NA / NA

Lab: NIEHS

F 344/N Rat FEMALE	07F	91F	92F
Congestion	1 [2.0]		
Cyst	8 [1.8]	5 [2.0]	8 [2.5]
Interstit Cell, Hyperplasia		1 [1.0]	
Uterus	(52)	(57)	(59)
Bilateral, Dilatation	4 [1.8]	1 [3.0]	2 [1.5]
Dilatation	3 [2.0]	7 [1.9]	5 [2.2]
Endometrium, Cyst		1 [2.0]	
Inflammation, Acute		1 [2.0]	
Serosa, Cyst	1 [3.0]		
<b>HEMATOPOIETIC SYSTEM</b>			
Lymph Node, Mesenteric	(56)	(58)	(59)
Amyloid Deposition	1 [3.0]		
Hemorrhage	2 [1.5]	3 [2.0]	
Hyperplasia, Lymphoid	1 [1.0]		
Infiltration Cellular, Histiocyte			1 [1.0]
Inflammation, Acute	1 [2.0]		
Spleen	(56)	(58)	(59)
Fibrosis	3 [2.0]		1 [1.0]
Hematopoietic Cell Proliferation	6 [1.5]	5 [1.6]	2 [2.0]
Inflammation, Acute			1 [1.0]
Pigmentation, Hemosiderin	13 [1.0]	17 [1.1]	14 [1.1]
Thymus	(40)	(39)	(40)
Atrophy	36 [2.1]	38 [2.1]	38 [2.1]
Cyst		1 [1.0]	1 [1.0]
<b>INTEGUMENTARY SYSTEM</b>			
Mammary Gland	(29)	(26)	(26)
Galactoceles			2 [2.5]
Hyperplasia	1 [2.0]	1 [3.0]	2 [2.0]

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

Experiment Number: 92004-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

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

Test Compound: NTP 91/92 diet study

CAS Number: DIET9192

Date Report Requested: 10/20/2014

Time Report Requested: 18:15:40

First Dose M/F: NA / NA

Lab: NIEHS

F 344/N Rat FEMALE	07F	91F	92F
Hyperplasia, Atypical		1 [3.0]	
Skin	(4)	(2)	(3)
Inflammation, Acute	1 [2.0]	1 [3.0]	
Subcut Tiss, Necrosis	1 [1.0]		
<b>MUSCULOSKELETAL SYSTEM</b>			
Bone	(1)	(0)	(0)
<b>NERVOUS SYSTEM</b>			
Brain	(0)	(0)	(1)
<b>RESPIRATORY SYSTEM</b>			
Lung	(56)	(57)	(59)
Alveolus, Infiltration Cellular, Histiocyte	33 [1.1]	14 [1.0]	23 [1.0]
Artery, Mineralization	38 [1.0]	36 [1.0]	41 [1.0]
Bronchus, Inflammation, Acute		1 [4.0]	
Congestion	3 [1.7]	1 [2.0]	5 [1.4]
Hemorrhage		1 [1.0]	
Hyperplasia, Adenomatous	4 [2.5]	5 [2.4]	6 [2.0]
Infiltration Cellular, Histiocyte	1 [1.0]		
Inflammation, Chronic	4 [1.3]	4 [1.0]	5 [1.0]
<b>SPECIAL SENSES SYSTEM</b>			
Eye	(0)	(0)	(2)
Bilateral, Degeneration			1 [3.0]
Degeneration			1 [3.0]
Lacrimal Gland	(0)	(1)	(0)
Zymbal's Gland	(1)	(0)	(0)
<b>URINARY SYSTEM</b>			
Kidney	(56)	(58)	(59)
Cyst	1 [1.0]		1 [2.0]

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)

Experiment Number: 92004-01

Test Type: CHRONIC

Species/Strain: Rat/F 344/N

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

Test Compound: NTP 91/92 diet study

CAS Number: DIET9192

Date Report Requested: 10/20/2014

Time Report Requested: 18:15:40

First Dose M/F: NA / NA

Lab: NIEHS

<b>F 344/N Rat FEMALE</b>	<b>07F</b>	<b>91F</b>	<b>92F</b>
Hemorrhage	1 [2.0]	1 [1.0]	
Hydronephrosis			1 [2.0]
Infiltration Cellular, Lymphocyte			1 [1.0]
Mineralization	2 [1.0]		
Nephropathy	21 [1.4]	12 [1.0]	10 [1.0]
Pigmentation	13 [1.0]	10 [1.3]	8 [1.4]
Renal Tubule, Cyst	1 [1.0]		
Renal Tubule, Degeneration			1 [1.0]
Renal Tubule, Hyperplasia			1 [1.0]
Vacuolization Cytoplasmic	1 [2.0]		
Urinary Bladder	(54)	(56)	(57)
Fibrosis	1 [1.0]		
Hemorrhage	1 [1.0]		
Hyperplasia	1 [1.0]		
Infiltration Cellular, Lymphocyte	11 [1.0]	12 [1.0]	17 [1.0]

**\*\* END OF REPORT \*\***

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)