

**Experiment Number:** 05083-01

**Test Type:** CHRONIC

**Route:** RESPIRATORY EXPOSURE WHOLE BODY

**Species/Strain:** Rat/F 344/N

**P03: INCIDENCE RATES OF NON-NEOPLASTIC LESIONS BY ANATOMIC SITE (a)**

**Test Compound:** Wollastonite calcium silicates

**CAS Number:** 13983-17-0

**Date Report Requested:** 10/23/2014

**Time Report Requested:** 12:32:22

**First Dose M/F:** NA / NA

**Lab:** NORTHROP

**C Number:**

C55470B

**Lock Date:**

Not Entered.

**Cage Range:**

All

**Date Range:**

All

**Reasons For Removal:**

All

**Removal Date Range:**

All

**Treatment Groups:**

All

**Study Gender:**

Male

**PWG Approval Date**

NONE

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Date Report Requested: 10/23/2014

Time Report Requested: 12:32:22

First Dose M/F: NA / NA

Lab: NORTHROP

F 344/N Rat MALE	CONTROL	10 MG/M3 24 MO	10 MG/M3 12 MO	10 MG/M3ASBESTOS
<b>Disposition Summary</b>				
Animals Initially In Study	78	78	78	78
Early Deaths				
Dead	53	19	49	45
Interval Sacrifice	12	12	12	12
Moribund	6	31	6	7
Survivors				
Terminal Sacrifice	7	12	11	13
Missing		4		
Wrong Sex				1
Animals Examined Microscopically	68	78	67	67
ALIMENTARY SYSTEM				
Esophagus	(61)	(63)	(60)	(56)
Hyperkeratosis			1 (2%)	
Hyperplasia			1 (2%)	
Intestine Large	(0)	(1)	(0)	(0)
Intestine Large, Cecum	(58)	(57)	(51)	(53)
Submucosa, Necrosis, Acute, Focal		1 (2%)		
Intestine Large, Colon	(58)	(54)	(52)	(54)
Mucosa, Submucosa, Inflammation				1 (2%)
Necrosis			1 (2%)	
Ulcer, Focal		1 (2%)	1 (2%)	
Intestine Large, Rectum	(60)	(58)	(53)	(56)
Intestine Small	(0)	(1)	(0)	(0)
Intestine Small, Duodenum	(60)	(58)	(55)	(56)
Inflammation			1 (2%)	
Necrosis, Acute	1 (2%)			
Ulcer			1 (2%)	
Intestine Small, Ileum	(60)	(54)	(52)	(55)

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F 344/N Rat MALE	CONTROL	10 MG/M3 24 MO	10 MG/M3 12 MO	10 MG/M3 ASBESTOS
Hyperplasia, Focal Mucosa, Dilatation			1 (2%) 1 (2%)	
Intestine Small, Jejunum	(60)	(55)	(53)	(53)
Lymphoid Tiss, Hyperplasia			1 (2%)	
Liver	(68)	(69)	(63)	(63)
Basophilic Focus		2 (3%)		
Bile Duct, Hyperplasia	49 (72%)	53 (77%)	13 (21%)	30 (48%)
Bile Duct, Inflammation				1 (2%)
Bile Duct, Proliferation				2 (3%)
Bile Stasis	1 (1%)	1 (1%)		
Central Vein, Thrombosis			1 (2%)	
Centrilobular, Necrosis	2 (3%)			3 (5%)
Clear Cell Focus				1 (2%)
Degeneration			17 (27%)	
Degeneration, Cystic	8 (12%)	4 (6%)	1 (2%)	9 (14%)
Degeneration, Cystic, Focal		1 (1%)		1 (2%)
Focal Cellular Change	2 (3%)			
Granuloma, Focal	1 (1%)			
Hepatocyte, Hyperplasia	1 (1%)			
Hepatocyte, Hypertrophy			1 (2%)	
Hepatocyte, Necrosis, Acute, Focal		1 (1%)		
Hepatocyte, Necrosis, Focal		1 (1%)		
Hepatocyte, Vacuolization Cytoplasmic	1 (1%)	2 (3%)	1 (2%)	4 (6%)
Hepatocyte, Vacuolization Cytoplasmic, Diffuse	1 (1%)		1 (2%)	
Hepatodiaphragmatic Nodule		2 (3%)		5 (8%)
Hyperplasia			16 (25%)	
Inflammation			1 (2%)	
Necrosis	1 (1%)	1 (1%)	2 (3%)	
Necrosis, Coagulative, Focal		1 (1%)		

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Necrosis, Focal	2 (3%)	1 (1%)		3 (5%)
Necrosis, Multifocal		1 (1%)		1 (2%)
Periportal, Necrosis		1 (1%)		
Vacuolization Cytoplasmic Vein, Thrombosis		1 (1%)		1 (2%)
Mesentery	(1)	(1)	(0)	(0)
Fat, Necrosis, Acute		1 (100%)		
Pancreas	(58)	(60)	(58)	(54)
Acinus, Atrophy				6 (11%)
Acinus, Atrophy, Focal				2 (4%)
Acinus, Fibrosis, Focal	1 (2%)	1 (2%)		
Acinus, Hyperplasia	1 (2%)		1 (2%)	4 (7%)
Artery, Polyarteritis	1 (2%)			
Atrophy	4 (7%)	7 (12%)	11 (19%)	
Atrophy, Focal			1 (2%)	
Duct, Inflammation, Chronic		1 (2%)		
Fat, Necrosis			1 (2%)	
Fibrosis	5 (9%)	10 (17%)	1 (2%)	
Fibrosis, Focal		3 (5%)		1 (2%)
Hyperplasia			10 (17%)	
Perivascular, Inflammation, Chronic	1 (2%)			
Pigmentation, Hemosiderin	1 (2%)			
Polyarteritis	1 (2%)			
Salivary Glands	(55)	(58)	(51)	(47)
Duct, Metaplasia, Squamous	6 (11%)	6 (10%)		
Stomach	(1)	(0)	(0)	(0)
Submucosa, Mineralization	1 (100%)			
Stomach, Forestomach	(62)	(61)	(63)	(63)
Acanthosis		1 (2%)		
Acanthosis, Focal	1 (2%)			

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F 344/N Rat MALE	CONTROL	10 MG/M3 24 MO	10 MG/M3 12 MO	10 MG/M3 ASBESTOS
Edema		1 (2%)		
Epithelium, Hyperplasia		1 (2%)		1 (2%)
Erosion			2 (3%)	
Hyperkeratosis		5 (8%)	2 (3%)	
Hyperplasia			2 (3%)	
Inflammation			1 (2%)	
Inflammation, Acute		1 (2%)	1 (2%)	
Mucosa, Ulcer				1 (2%)
Submucosa, Inflammation				5 (8%)
Submucosa, Inflammation, Acute		2 (3%)		
Submucosa, Mineralization				3 (5%)
Ulcer	5 (8%)	3 (5%)	2 (3%)	
Ulcer, Focal		1 (2%)		7 (11%)
Stomach, Glandular	(61)	(62)	(60)	(61)
Mineralization	3 (5%)			1 (2%)
Mucosa, Mineralization			4 (7%)	
Necrosis, Focal				1 (2%)
Submucosa, Inflammation, Chronic Active		1 (2%)		
Submucosa, Mineralization				3 (5%)
Tongue	(1)	(0)	(4)	(0)
Hyperplasia			1 (25%)	
Necrosis	1 (100%)			
<b>CARDIOVASCULAR SYSTEM</b>				
Heart	(63)	(66)	(63)	(60)
Atrium Lft, Valve, Thrombosis		1 (2%)		
Atrium, Mineralization	1 (2%)			
Atrium, Thrombosis	7 (11%)	3 (5%)	8 (13%)	7 (12%)
Cardiomyopathy	56 (89%)	62 (94%)	60 (95%)	55 (92%)
Inflammation			1 (2%)	

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Mineralization	4 (6%)		1 (2%)	3 (5%)
ENDOCRINE SYSTEM				
Adrenal Gland	(2)	(0)	(0)	(0)
Adrenal Gland, Cortex	(67)	(65)	(63)	(63)
Degeneration		1 (2%)		
Degeneration, Cystic, Focal		1 (2%)		
Hyperplasia		1 (2%)	2 (3%)	
Hyperplasia, Focal	1 (1%)	1 (2%)		1 (2%)
Vacuolization Cytoplasmic	19 (28%)	29 (45%)	16 (25%)	14 (22%)
Zona Reticul, Necrosis		1 (2%)		
Adrenal Gland, Medulla	(67)	(61)	(60)	(61)
Cyst, Multiple		1 (2%)		
Hyperplasia	6 (9%)	4 (7%)	16 (27%)	18 (30%)
Mineralization			1 (2%)	
Necrosis	1 (1%)			1 (2%)
Islets, Pancreatic	(7)	(13)	(8)	(8)
Hyperplasia	2 (29%)	2 (15%)	2 (25%)	
Parathyroid Gland	(54)	(55)	(52)	(50)
Bilateral, Hyperplasia				3 (6%)
Hyperplasia	1 (2%)	1 (2%)	7 (13%)	10 (20%)
Pituitary Gland	(50)	(53)	(56)	(51)
Angiectasis			1 (2%)	
Cyst, Multiple		2 (4%)	1 (2%)	
Hyperplasia	10 (20%)	7 (13%)	9 (16%)	6 (12%)
Pars Distalis, Cyst			1 (2%)	
Pars Intermed, Hyperplasia			1 (2%)	
Thyroid Gland	(56)	(56)	(52)	(50)
C Cell, Hyperplasia	2 (4%)			1 (2%)
Cyst			1 (2%)	

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Cyst, Multiple		3 (5%)	4 (8%)	
<b>GENERAL BODY SYSTEM</b>				
Tissue NOS	(7)	(9)	(7)	(3)
Abscess			1 (14%)	
Fat, Necrosis				1 (33%)
Fat, Necrosis, Acute		1 (11%)		
Granuloma			1 (14%)	
Inflammation			1 (14%)	
Inflammation, Acute	1 (14%)			
Necrosis	2 (29%)			1 (33%)
Thrombosis	1 (14%)			
<b>GENITAL SYSTEM</b>				
Epididymis	(67)	(67)	(65)	(65)
Degeneration			1 (2%)	
Hypospermia	29 (43%)	16 (24%)	25 (38%)	25 (38%)
Necrosis			1 (2%)	1 (2%)
Penis	(0)	(2)	(1)	(0)
Preputial Gland	(45)	(31)	(45)	(43)
Hyperplasia				1 (2%)
Inflammation			1 (2%)	
Inflammation, Acute				3 (7%)
Prostate	(62)	(64)	(62)	(65)
Epithelium, Metaplasia, Squamous	1 (2%)			
Hemorrhage		2 (3%)		
Hyperplasia		1 (2%)		
Hyperplasia, Focal	1 (2%)	1 (2%)	1 (2%)	2 (3%)
Inflammation			11 (18%)	
Inflammation, Acute	5 (8%)	6 (9%)		8 (12%)
Inflammation, Acute, Diffuse		1 (2%)		

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Inflammation, Acute, Focal				1 (2%)
Inflammation, Chronic	2 (3%)	1 (2%)		1 (2%)
Inflammation, Chronic Active	1 (2%)	3 (5%)		
Seminal Vesicle	(66)	(59)	(61)	(64)
Inflammation			1 (2%)	
Inflammation, Acute	3 (5%)			3 (5%)
Inflammation, Chronic Active	1 (2%)			
Testes	(66)	(65)	(65)	(64)
Atrophy	1 (2%)	2 (3%)	2 (3%)	
Atrophy, Diffuse	1 (2%)			
Degeneration	13 (20%)	3 (5%)		12 (19%)
Hyperplasia			4 (6%)	
Hypospermia	1 (2%)			
Interstit Cell, Hyperplasia	1 (2%)			1 (2%)
Mineralization				1 (2%)
Polyarteritis	1 (2%)			
Seminif Tub, Degeneration	1 (2%)			
<b>HEMATOPOIETIC SYSTEM</b>				
Bone Marrow	(66)	(44)	(59)	(64)
Fibrous Osteodystrophy				1 (2%)
Hypercellularity		3 (7%)	14 (24%)	
Hyperplasia	9 (14%)		1 (2%)	1 (2%)
Hypocellularity			1 (2%)	
Necrosis	1 (2%)			
Lymph Node	(60)	(57)	(56)	(51)
Bronchial, Angiectasis			2 (4%)	
Bronchial, Depletion Cellular	1 (2%)			
Bronchial, Ectasia			2 (4%)	1 (2%)
Bronchial, Hemorrhage				1 (2%)

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Bronchial, Hyperplasia			2 (4%)	
Congestion			1 (2%)	
Ectasia			1 (2%)	
Pancreatic, Hyperplasia				1 (2%)
Pancreatic, Mineralization			1 (2%)	
Pancreatic, Pigmentation	1 (2%)			
Lymph Node, Mandibular	(52)	(64)	(52)	(45)
Bronchial, Ectasia			1 (2%)	
Congestion	1 (2%)			
Hyperplasia		2 (3%)	6 (12%)	2 (4%)
Mesenteric, Hyperplasia			3 (6%)	
Necrosis			1 (2%)	
Lymph Node, Mesenteric	(54)	(27)	(48)	(43)
Congestion			1 (2%)	
Ectasia			3 (6%)	1 (2%)
Hemorrhage				2 (5%)
Hyperplasia		1 (4%)	1 (2%)	1 (2%)
Spleen	(67)	(67)	(64)	(65)
Ectasia			1 (2%)	
Fibrosis	2 (3%)	2 (3%)	1 (2%)	
Fibrosis, Focal		1 (1%)		
Infarct	1 (1%)			
Necrosis	1 (1%)			1 (2%)
Thymus	(46)	(37)	(36)	(35)
Atrophy			2 (6%)	
Cyst, Multiple		2 (5%)		
Necrosis				1 (3%)
<hr/>				
INTEGUMENTARY SYSTEM				
Mammary Gland	(29)	(29)	(36)	(22)

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F 344/N Rat MALE	CONTROL	10 MG/M3 24 MO	10 MG/M3 12 MO	10 MG/M3ASBESTOS
Cyst	6 (21%)	2 (7%)	1 (3%)	11 (50%)
Cyst, Multiple		2 (7%)	2 (6%)	
Hemorrhage			1 (3%)	
Hyperplasia	1 (3%)			
Hyperplasia, Cystic		1 (3%)		
Inflammation			1 (3%)	
Skin	(56)	(66)	(55)	(59)
Acanthosis, Focal				1 (2%)
Cyst Epithelial Inclusion		1 (2%)	1 (2%)	1 (2%)
Dermis, Tail, Cyst, Multiple		1 (2%)		
Dermis, Tail, Inflammation, Acute		1 (2%)		
Epidermis, Cyst			2 (4%)	
Epidermis, Tail, Cyst, Multiple		1 (2%)		
Hair Follicle, Atrophy		1 (2%)		
Hyperkeratosis			1 (2%)	
Parakeratosis	1 (2%)		1 (2%)	
Sebaceous Gland, Hyperplasia		1 (2%)		
Tail, Cyst Dermoid		1 (2%)		
Tail, Cyst Epithelial Inclusion, Multiple		1 (2%)		
Tail, Hyperkeratosis	2 (4%)	2 (3%)		
Tail, Necrosis, Acute	1 (2%)			
Tail, Ulcer	2 (4%)			
Ulcer			1 (2%)	
<b>MUSCULOSKELETAL SYSTEM</b>				
Bone	(67)	(67)	(61)	(64)
Fibrous Osteodystrophy	2 (3%)			
Fibrous Osteodystrophy, Focal				1 (2%)
Hypertrophy			1 (2%)	
Skeletal Muscle	(48)	(56)	(55)	(56)

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Degeneration				1 (2%)
Necrosis				1 (2%)
NERVOUS SYSTEM				
Brain	(66)	(68)	(61)	(63)
Gliosis, Focal		1 (1%)		
Hemorrhage				1 (2%)
Inflammation			1 (2%)	
Medulla, Hemorrhage		1 (1%)		
Necrosis, Focal	1 (2%)			
Necrosis, Multifocal				1 (2%)
Brain, Brain Stem	(1)	(0)	(0)	(0)
Brain, Cerebrum	(0)	(1)	(0)	(0)
RESPIRATORY SYSTEM				
Larynx	(52)	(55)	(50)	(53)
Foreign Body		1 (2%)		
Inflammation			1 (2%)	
Inflammation, Acute	1 (2%)	2 (4%)		
Metaplasia, Squamous		1 (2%)		
Lung	(56)	(54)	(54)	(54)
Alveolar Epith, Bronchiole, Hyperplasia	3 (5%)			30 (56%)
Alveolar Epith, Hyperplasia	1 (2%)			1 (2%)
Alveolar Epith, Hyperplasia, Focal			1 (2%)	
Alveolar Epith, Necrosis, Acute	1 (2%)			
Alveolus, Bronchiole, Hyperplasia, Focal			1 (2%)	
Alveolus, Hemorrhage, Multifocal		1 (2%)		
Alveolus, Hyperplasia			2 (4%)	
Alveolus, Hyperplasia, Focal			1 (2%)	
Alveolus, Inflammation, Acute	1 (2%)			
Alveolus, Mineralization				2 (4%)

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Atelectasis, Focal		1 (2%)	1 (2%)	
Bronchus, Epithelium, Hyperplasia, Focal				1 (2%)
Emphysema			1 (2%)	
Fibrosis	1 (2%)		4 (7%)	
Fibrosis, Focal	2 (4%)			
Hyperplasia			5 (9%)	
Hyperplasia, Focal	1 (2%)			
Inflammation			1 (2%)	
Inflammation, Chronic, Focal		1 (2%)		
Inflammation, Granulomatous, Focal		1 (2%)		
Inflammation, Suppurative, Acute				1 (2%)
Interstitial, Fibrosis		1 (2%)		50 (93%)
Interstitial, Fibrosis, Focal		2 (4%)	1 (2%)	
Interstitial, Fibrosis, Multifocal			1 (2%)	
Interstitial, Hyperplasia			1 (2%)	
Interstitial, Mineralization			1 (2%)	1 (2%)
Metaplasia, Osseous		1 (2%)		
Metaplasia, Osseous, Focal				1 (2%)
Mineralization	1 (2%)			2 (4%)
Peribronchiolar, Inflammation, Chronic Active		1 (2%)		
Venule, Mineralization, Focal	1 (2%)			
Nose	(63)	(63)	(60)	(58)
Foreign Body		3 (5%)		1 (2%)
Glands, Inflammation, Acute	1 (2%)			
Hemorrhage				1 (2%)
Inflammation			4 (7%)	
Inflammation, Acute	8 (13%)	1 (2%)		9 (16%)
Lumen, Foreign Body	2 (3%)			
Lumen, Inflammation, Acute	1 (2%)	2 (3%)		
Metaplasia, Focal	1 (2%)			

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Mucosa, Hyperplasia				1 (2%)
Nasolacrim Dct, Metaplasia		1 (2%)		
Septum, Inflammation, Acute		1 (2%)		
Trachea	(56)	(58)	(52)	(53)
SPECIAL SENSES SYSTEM				
Eye	(66)	(66)	(65)	(62)
Anterior, Synechia		1 (2%)		
Antr Chamber, Inflammation, Acute	1 (2%)			
Cataract			18 (28%)	
Cornea, Inflammation				1 (2%)
Cornea, Necrosis	1 (2%)		1 (2%)	
Degeneration			3 (5%)	
Inflammation			1 (2%)	
Lens, Degeneration	1 (2%)			
Harderian Gland	(39)	(16)	(46)	(34)
Lacrimal Gland	(63)	(67)	(60)	(61)
Dilatation			1 (2%)	
Inflammation			1 (2%)	
Inflammation, Acute	2 (3%)			
Zymbal's Gland	(0)	(0)	(1)	(0)
URINARY SYSTEM				
Kidney	(65)	(66)	(62)	(65)
Abscess			1 (2%)	
Cortex, Cyst				1 (2%)
Epithelium, Papilla, Pelvis, Hyperplasia		2 (3%)		
Epithelium, Pelvis, Hyperplasia		3 (5%)	2 (3%)	
Epithelium, Renal Tubule, Hyperplasia	1 (2%)			
Hyperplasia			7 (11%)	
Inflammation, Acute		1 (2%)		

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

Experiment Number: 05083-01

Test Type: CHRONIC

Route: RESPIRATORY EXPOSURE WHOLE BODY

Species/Strain: Rat/F 344/N

P03: INCIDENCE RATES OF NON-NEOPLASTIC LESIONS BY ANATOMIC SITE (a)

Test Compound: Wollastonite calcium silicates

CAS Number: 13983-17-0

Date Report Requested: 10/23/2014

Time Report Requested: 12:32:23

First Dose M/F: NA / NA

Lab: NORTHROP

F 344/N Rat MALE	CONTROL	10 MG/M3 24 MO	10 MG/M3 12 MO	10 MG/M3ASBESTOS
Metaplasia, Osseous	1 (2%)			
Mineralization	1 (2%)	2 (3%)	2 (3%)	
Nephropathy	58 (89%)	57 (86%)	58 (94%)	60 (92%)
Papilla, Necrosis, Acute		1 (2%)		
Pelvis, Inflammation, Acute				1 (2%)
Pelvis, Transit Epithe, Hyperplasia	7 (11%)			9 (14%)
Vein, Infarct				1 (2%)
Vein, Thrombosis				1 (2%)
Urethra	(0)	(2)	(0)	(0)
Urinary Bladder	(62)	(60)	(63)	(65)
Calculus Micro Observation Only	1 (2%)		1 (2%)	
Hyperplasia			1 (2%)	
Inflammation			2 (3%)	
Mineralization			1 (2%)	
Mucosa, Hyperplasia, Diffuse		1 (2%)		
Mucosa, Inflammation, Acute		1 (2%)		
Submucosa, Inflammation, Chronic		1 (2%)		
Transit Epithe, Hyperplasia		1 (2%)		

\*\* END OF REPORT \*\*