A 03

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DEPARTMENT OF HEALTH & HUMAN SERVICES

Public Health Service

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National Institutes of Health
National Institute of
Environmental Health Sciences
P.O. Box 12233
Research Triangle Park, N.C. 27709

84980000036
FYI-98-001334

July 15, 1998

FYI-0798-1334

Contains No CBI

Document Control Office (7407)
Attn: TSCA Section 8(e) (or FYI)
Rm G99 East Tower
OPPT/EPA
401 M St SW
Washington, DC 20460-0001

Dear Dr. (7407):

In compliance with the National Toxicology Program's (NTP) mission to keep our colleagues informed of the current NTP findings during on-going studies, a copy of the Pathology Working Group (PWG) report and the Summary Pathology Tables for the chronic inhalation studies on Glutaraldehyde (CAS No. 111-30-8) are enclosed for your review.

The NTP assembles a Pathology Working Group to review every study and to resolve any differences between the study laboratory and quality assessment pathology evaluations. Please note that the PWG conclusion of the study results is based solely on the pathology for this study and may not reflect final NTP conclusions. In determining final conclusions, the NTP assesses a broad array of information that includes other results from this study and historical control data.

All study data are subject to an NTP retrospective audit and the interpretation may be modified based on the findings. The technical report for this study is currently being prepared for presentation to the NTP Board of Scientific Counselors' Technical Reports Review Subcommittee with an anticipated peer-review date of October 1998.

The Summary Pathology Tables along with a wide variety of NTP information are also available in electronic format on the world-wide web. For example, the NTP Annual Plan, abstracts of NTP Reports, study data, and the status of all NTP studies may be viewed electronically with access to the internet and a Web browser such as Netscape Navigator or Internet Explorer.

To locate the NTP home page, use the URL http://ntp-server.niehs.nih.gov/. The NTP individual animal and summary pathology tables, survival tables, and survival and growth curves may be accessed from the NTP homepage selecting "Testing Information and Study Results" and then choosing "Data of Completed Studies." Comments on the usefulness of this site and suggestions for improvement are encouraged.

Please contact Central Data Management (CDM) at (919)541-3419 if you have any questions. You may also fax your requests for information to CDM at (919)541-3687 or send them via e-mail to cdm@niehs.nih.gov.

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FYI-98-001334

A 04

Hard copies of documents such as NTP Technical Reports, short-term Toxicity Reports and the Report on Carcinogens are available from the Environmental Health Information Service (EHIS). You can contact EHIS by phone at (919) 541-3841, by fax at (919)541-0273, or by e-mail at ehis@niehs.nih.gov.

Sincerely,

William Eastin

William Eastin, Ph.D.
Head, Information Systems & Central Files
Environmental Toxicology Program

Encls: Rats & Mice, PWG, Pathology Summary Tables
cc: Dr. J. Bucher
Dr. A. Van Birgelen
Central Data Management

CORE STUDY

Facility: Battelle Northwest

Chemical CAS #: 111-30-8

Lock Date: 07/01/97

Age Range: All

Reasons For Removal: All

Removal Date Range: All

Treatment Groups: Include All

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

A 15

INCIDENCE RATES OF NONNEOPLASTIC LESIONS BY ANATOMIC SITE (a)
GLUTARALDEHYDE

B6C3F1 MICE FEMALE	CONTROL	62.5 PPB	125 PPB	250 PPB
DISPOSITION SUMMARY				
Animals Initially In Study	50	50	50	50
Early Deaths				
Moribund Sacrifice	11	10	10	12
Natural Death	5	3	4	6
Accidently Killed			1	
Survivors				
Terminal Sacrifice	34	37	35	32
Animals Examined Microscopically	50	50	50	50
ALIMENTARY SYSTEM				
Gallbladder	(45)	(41)	(43)	(41)
Hyperplasia				1 (2%)
Intestine Small, Duodenum	(45)	(47)	(48)	(48)
Necrosis	1 (2%)	1 (2%)		
Liver	(50)	(48)	(50)	(50)
Amyloid Deposition				1 (2%)
Basophilic Focus	2 (4%)	4 (8%)	5 (10%)	2 (4%)
Clear Cell Focus	2 (4%)	1 (2%)		
Eosinophilic Focus	6 (12%)	6 (13%)	4 (8%)	
Fatty Change			3 (6%)	
Hematopoietic Cell Proliferation	1 (2%)			
Hyperplasia, Lymphoid			1 (2%)	
Necrosis	1 (2%)	1 (2%)	1 (2%)	2 (4%)
Tension Lipidosis	1 (2%)	1 (2%)	1 (2%)	1 (2%)
Vacuolization Cytoplasmic, Focal		1 (2%)		
Bile Duct, Hyperplasia	1 (2%)			
Centrilobular, Necrosis	1 (2%)		2 (4%)	1 (2%)
Mesentery	(12)	(6)	(5)	(6)
Inflammation, Suppurative	1 (8%)			1 (17%)
Thrombosis	1 (8%)	1 (17%)		1 (17%)
Artery, Inflammation, Chronic Active	2 (17%)			
Fat, Necrosis	9 (75%)	5 (83%)	3 (60%)	4 (67%)
Pancreas	(50)	(48)	(49)	(49)
Atrophy		1 (2%)		
Basophilic Focus	1 (2%)	1 (2%)		
Hypertrophy			1 (2%)	
Inflammation, Suppurative	1 (2%)			
Duct, Cyst	1 (2%)		2 (4%)	
Stomach, Forestomach	(50)	(49)	(48)	(48)
Hyperplasia, Squamous	1 (2%)		1 (2%)	1 (2%)
Infiltration Cellular, Mast Cell		1 (2%)		
Inflammation, Acute		1 (2%)	2 (4%)	
Stomach, Glandular	(50)	(48)	(48)	(48)

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

A 06

INCIDENCE RATES OF NONNEOPLASTIC LESIONS BY ANATOMIC SITE (a)
GLUTARALDEHYDE

B6C3F1 MICE FEMALE	CONTROL	62.5 PPB	125 PPB	250 PPB
ALIMENTARY SYSTEM - CONT				
Infiltration Cellular, Mixed Cell			1 (2%)	
Mineralization	1 (2%)	1 (2%)		1 (2%)
Necrosis			1 (2%)	
Tooth		(1)		(1)
Developmental Malformation		1 (100%)		1 (100%)
CARDIOVASCULAR SYSTEM				
Heart	(50)	(49)	(50)	(50)
Artery, Inflammation	1 (2%)			
Atrium, Thrombosis	2 (4%)			
ENDOCRINE SYSTEM				
Adrenal Cortex	(50)	(49)	(49)	(50)
Atrophy	1 (2%)			
Hyperplasia	2 (4%)	2 (4%)	7 (14%)	1 (2%)
Hypertrophy	2 (4%)	2 (4%)	1 (2%)	2 (4%)
Capsule, Inflammation, Chronic Active	1 (2%)			
Adrenal Medulla	(50)	(49)	(48)	(49)
Hyperplasia	3 (6%)	1 (2%)	5 (10%)	1 (2%)
Islets, Pancreatic	(50)	(48)	(49)	(49)
Hyperplasia	1 (2%)		2 (4%)	1 (2%)
Pituitary Gland	(49)	(49)	(49)	(50)
Pars Distalis, Hyperplasia	19 (39%)	24 (49%)	23 (47%)	28 (56%)
Pars Intermedia, Hypertrophy			1 (2%)	
Thyroid Gland	(50)	(48)	(50)	(50)
Follicular Cell, Hyperplasia	26 (52%)	24 (50%)	30 (60%)	37 (74%)
GENERAL BODY SYSTEM				
None				
GENITAL SYSTEM				
Ovary	(49)	(47)	(49)	(50)
Angiectasis		1 (2%)		1 (2%)
Cyst	16 (33%)	12 (26%)	18 (37%)	18 (36%)
Inflammation, Suppurative	1 (2%)			1 (2%)
Thrombosis				1 (2%)
Uterus	(50)	(48)	(49)	(49)
Angiectasis	2 (4%)	1 (2%)	1 (2%)	
Cyst	1 (2%)			

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

A 07

B6C3F1 MICE FEMALE	CONTROL	62.5 PPB	125 PPB	250 PPB
GENITAL SYSTEM - CONT				
Hemorrhage			1 (2%)	
Hydrometra	3 (6%)	7 (15%)	3 (%)	5 (10%)
Infiltration Cellular, Mast Cell		1 (2%)		
Infiltration Cellular, Polymorphonuclear	3 (6%)	1 (2%)		1 (2%)
Inflammation, Chronic			1 (2%)	
Necrosis		1 (2%)		
Thrombosis		1 (2%)		
Myometrium, Hyperplasia			1 (2%)	
HEMATOPOIETIC SYSTEM				
Bone Marrow	(50)	(48)	(50)	(49)
Infiltration Cellular, Mast Cell		1 (2%)		
Necrosis			1 (2%)	
Lymph Node	(7)	(4)	(3)	(1)
Iliac, Infiltration Cellular, Plasma Cell	1 (14%)			
Lumbar, Hyperplasia, Lymphoid		1 (25%)		
Lumbar, Inflammation, Suppurative				1 (100%)
Renal, Infiltration Cellular, Plasma Cell	1 (14%)			
Lymph Node, Bronchial	(29)	(32)	(37)	(36)
Hyperplasia, Lymphoid			1 (3%)	
Infiltration Cellular, Plasma Cell	2 (7%)			
Lymph Node, Mandibular	(43)	(40)	(39)	(38)
Hyperplasia, Lymphoid	1 (2%)			
Lymph Node, Mesenteric	(47)	(48)	(46)	(46)
Ectasia	1 (2%)		1 (2%)	
Hemorrhage			1 (2%)	1 (2%)
Hyperplasia, Lymphoid	4 (9%)		1 (2%)	
Lymph Node, Mediastinal	(31)	(23)	(34)	(37)
Hemorrhage			1 (3%)	
Hyperplasia, Lymphoid	1 (3%)			
Infiltration Cellular, Plasma Cell	1 (3%)			
Inflammation, Suppurative				1 (3%)
Spleen	(50)	(48)	(48)	(49)
Amyloid Deposition				1 (2%)
Hematopoietic Cell Proliferation	11 (22%)	8 (17%)	8 (17%)	12 (24%)
Hyperplasia, Lymphoid	4 (8%)	2 (4%)	1 (2%)	
INTEGUMENTARY SYSTEM				
Skin	(50)	(50)	(50)	(0)
Cyst Epithelial Inclusion	1 (2%)			
Hyperplasia		1 (2%)		
Inflammation Chronic Active		1 (2%)		
Inflammation, Suppurative				1 (2%)

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

A 08

INCIDENCE RATES OF NONNEOPLASTIC LESIONS BY ANATOMIC SITE (a)
GLUTARALDEHYDE

B6C3F1 MICE FEMALE	CONTROL	62.5 PPB	125 PPB	250 PPB
MUSCULOSKELETAL SYSTEM				
Skeletal Muscle	(2)	(1)		
Hemorrhage	1 (50%)			
NERVOUS SYSTEM				
Brain	(50)	(49)	(50)	(50)
Degeneration	1 (2%)			
Necrosis	1 (2%)			
Artery, Inflammation	1 (2%)			
RESPIRATORY SYSTEM				
Larynx	(50)	(49)	(50)	(48)
Inflammation			1 (2%)	
Epiglottis, Hyperplasia			1 (2%)	
Epiglottis, Metaplasia, Squamous		1 (2%)	1 (2%)	
Lung	(50)	(49)	(50)	(50)
Hemorrhage		1 (2%)		
Inflammation, Chronic Active				1 (2%)
Thrombosis	1 (2%)		2 (4%)	
Alveolus Epithelium, Hyperplasia	4 (8%)	4 (8%)		
Alveolus, Infiltration Cellular, Histiocyte	1 (2%)			1 (2%)
Mediastinum, Inflammation, Suppurative	1 (2%)			
Nose	(50)	(49)	(50)	(50)
Inflammation	5 (10%)	7 (14%)	13 (26%)	14 (28%)
Inflammation, Suppurative	1 (2%)			
Thrombosis				1 (2%)
Olfactory Epithelium, Atrophy		1 (2%)	3 (6%)	3 (6%)
Olfactory Epithelium, Degeneration, Hyaline	11 (22%)	10 (20%)	15 (30%)	10 (20%)
Respiratory Epithelium, Degeneration, Hyaline	16 (32%)	35 (71%)	32 (64%)	30 (60%)
Respiratory Epithelium, Metaplasia, Squamous	7 (14%)	11 (22%)	16 (32%)	21 (42%)
Turbinate, Necrosis		3 (6%)	1 (2%)	4 (8%)
SPECIAL SENSES SYSTEM				
None				

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

A 09

INCIDENCE RATES OF NONNEOPLASTIC LESIONS BY ANATOMIC SITE (a)
GLUTARALDEHYDE

B6C3F1 MICE FEMALE	CONTROL	62.5 PPB	125 PPB	250 PPB
URINARY SYSTEM				
Kidney	(50)	(49)	(49)	(49)
Amyloid Deposition				1 (2%)
Hydronephrosis			1 (2%)	
Infarct	1 (2%)	2 (4%)	3 (6%)	2 (4%)
Metaplasia, Osseous	1 (2%)			2 (4%)
Nephropathy	20 (40%)	14 (29%)	19 (39%)	16 (33%)
Artery, Inflammation, Chronic Active	1 (2%)			
Renal Tubule, Necrosis	1 (2%)			
Urinary Bladder	(48)	(48)	(48)	(47)
Infiltration Cellular, Mast Cell		1 (2%)		
Inflammation, Suppurative	1 (2%)			

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

A 10

INCIDENCE RATES OF NONNEOPLASTIC LESIONS BY ANATOMIC SITE (a)
GLUTARALDEHYDE

B6C3F1 MICE MALE	CONTROL	62.5 PPB	125 PPB	250 PPB
DISPOSITION SUMMARY				
Animals Initially In Study	50	50	50	50
Early Deaths				
Moribund Sacrifice	13	15	6	5
Natural Death	6	8	4	7
Survivors				
Terminal Sacrifice	31	27	40	38
Animals Examined Microscopically	50	50	50	50
ALIMENTARY SYSTEM				
Liver	(49)	(50)	(50)	(49)
Atypia Cellular, Diffuse	1 (2%)			
Basophilic Focus	5 (10%)	8 (16%)	4 (8%)	6 (12%)
Clear Cell Focus	9 (18%)	6 (12%)	9 (18%)	7 (14%)
Eosinophilic Focus	7 (14%)	6 (12%)	5 (10%)	3 (6%)
Fatty Change				2 (4%)
Inflammation, Granulomatous			1 (2%)	
Mixed Cell Focus	2 (4%)	2 (4%)		
Necrosis	1 (2%)	1 (2%)		2 (4%)
Tension Lipidosis		1 (2%)		
Centrilobular, Necrosis		2 (4%)		1 (2%)
Mesentery	(2)	(2)	(3)	(5)
Artery, Mineralization	1 (50%)			
Fat, Necrosis	1 (50%)	2 (100%)	2 (67%)	5 (100%)
Pancreas	(47)	(49)	(50)	(48)
Atrophy			1 (2%)	1 (2%)
Basophilic Focus				1 (2%)
Metaplasia, Hepatocyte			1 (2%)	1 (2%)
Duct, Cyst			1 (2%)	
Stomach, Forestomach	(48)	(49)	(50)	(48)
Diverticulum	1 (2%)			
Hyperplasia, Squamous	2 (4%)	1 (2%)	1 (2%)	
Inflammation, Acute	2 (4%)	1 (2%)		
Necrosis			1 (2%)	
Stomach, Glandular	(46)	(47)	(50)	(48)
Infiltration Cellular, Mixed Cell		2 (4%)		
Metaplasia, Hepatocyte			1 (2%)	
Necrosis		1 (2%)		1 (2%)
Tooth	(13)	(17)	(10)	(19)
Developmental Malformation	12 (92%)	17 (100%)	10 (100%)	19 (100%)
Inflammation, Chronic Active	2 (15%)			1 (5%)

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

A11

INCIDENCE RATES OF NONNEOPLASTIC LESIONS BY ANATOMIC SITE (a)
GLUTARALDEHYDE

B6C3F1 MICE MALE	CONTROL	62.5 PPB	125 PPB	250 PPB
CARDIOVASCULAR SYSTEM				
Blood Vessel	(1)			
Aorta, Mineralization	1 (100%)			
Heart	(49)	(50)	(50)	(49)
Angiectasis			1 (2%)	
Inflammation, Chronic Active	1 (2%)	1 (2%)		
Artery, Inflammation	1 (2%)	1 (2%)	1 (2%)	
Artery, Mineralization	1 (2%)			
ENDOCRINE SYSTEM				
Adrenal Cortex	(47)	(49)	(50)	(49)
Hyperplasia	10 (21%)	9 (18%)	18 (36%)	12 (24%)
Hypertrophy	32 (68%)	26 (53%)	31 (62%)	34 (69%)
Necrosis	1 (2%)			
Adrenal Medulla	(47)	(49)	(50)	(49)
Hyperplasia	2 (4%)	2 (4%)	2 (4%)	2 (4%)
Necrosis	1 (2%)			
Islets, Pancreatic	(47)	(48)	(50)	(48)
Hyperplasia	3 (6%)	2 (4%)	1 (2%)	6 (13%)
Pituitary Gland	(46)	(47)	(48)	(47)
Pars Distalis, Hyperplasia	2 (4%)	1 (2%)	2 (4%)	4 (9%)
Thyroid Gland	(48)	(49)	(49)	(49)
Bilateral, Follicular Cell, Hyperplasia				1 (2%)
Follicular Cell, Hyperplasia	14 (29%)	9 (18%)	11 (22%)	18 (37%)
GENERAL BODY SYSTEM				
None				
GENITAL SYSTEM				
Epididymis	(48)	(50)	(50)	(49)
Granuloma Sperm	2 (4%)			1 (2%)
Penis			(1)	
Inflammation, Acute			1 (100%)	
Preputial Gland	(48)	(49)	(50)	(47)
Cyst		1 (2%)		
Inflammation, Chronic Active	2 (4%)	2 (4%)	2 (4%)	
Prostate	(49)	(48)	(50)	(47)
Hyperplasia			1 (2%)	
Inflammation, Chronic Active	1 (2%)		1 (2%)	1 (2%)
Testes	(48)	(50)	(50)	(50)
Atrophy	1 (2%)	1 (2%)		

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

A 12

INCIDENCE RATES OF NONNEOPLASTIC LESIONS BY ANATOMIC SITE (a)
GLUTARALDEHYDE

B6C3F1 MICE MALE	CONTROL	62.5 PPB	125 PPB	250 PPB
HEMATOPOIETIC SYSTEM				
Lymph Node, Mandibular	(36)	(22)	(30)	(33)
Hyperplasia, Lymphoid	1 (3%)			
Lymph Node, Mesenteric	(46)	(44)	(47)	(47)
Infiltration Cellular, Plasma Cell	1 (2%)		1 (2%)	
Lymph Node, Mediastinal	(29)	(27)	(33)	(30)
Hyperplasia, Lymphoid			1 (3%)	
Spleen	(48)	(48)	(50)	(48)
Hematopoietic Cell Proliferation	12 (25%)	14 (29%)	12 (24%)	7 (15%)
Hyperplasia, Lymphoid		2 (4%)		
Thymus	(39)	(34)	(43)	(44)
Hyperplasia, Tubular				1 (2%)
INTEGUMENTARY SYSTEM				
Skin	(48)	(50)	(50)	(48)
Prepuce, Inflammation, Chronic Active	7 (15%)	7 (14%)	4 (8%)	5 (10%)
MUSCULOSKELETAL SYSTEM				
None				
NERVOUS SYSTEM				
Brain	(49)	(50)	(50)	(50)
Demyelination, Focal		1 (2%)		
Meninges, Infiltration Cellular, Mononuclear Cell	1 (2%)			
RESPIRATORY SYSTEM				
Larynx	(47)	(49)	(50)	(50)
Glands, Inflammation	5 (11%)	3 (6%)	3 (6%)	3 (6%)
Lung	(48)	(50)	(50)	(50)
Inflammation, Chronic Active			1 (2%)	
Alveolar Epithelium, Hyperplasia	3 (6%)	3 (6%)	5 (10%)	2 (4%)
Alveolus, Infiltration Cellular, Histiocyte		1 (2%)	1 (2%)	
Artery, Mediastinum, Mineralization	1 (2%)			
Nose	(48)	(50)	(50)	(50)
Inflammation	6 (13%)	4 (8%)	3 (6%)	5 (10%)
Polyp, Inflammatory	1 (2%)			
Nasolacrimal Duct, Inflammation				1 (2%)

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

A 13

INCIDENCE RATES OF NONNEOPLASTIC LESIONS BY ANATOMIC SITE (a)
GLUTARALDEHYDE

B6C3F1 MICE MALE	CONTROL	62.5 PPB	125 PPB	250 PPB
RESPIRATORY SYSTEM - CONT				
Olfactory Epithelium, Atrophy	1 (2%)	1 (2%)		2 (4%)
Olfactory Epithelium, Degeneration, Hyaline	1 (2%)	1 (2%)	5 (10%)	2 (4%)
Olfactory Epithelium, Metaplasia	1 (2%)			1 (2%)
Respiratory Epithelium, Degeneration, Hyaline	5 (10%)	3 (6%)	6 (12%)	10 (20%)
Respiratory Epithelium, Metaplasia, Squamous	2 (4%)	5 (10%)	6 (12%)	9 (18%)
Turbinate, Necrosis			2 (4%)	
SPECIAL SENSE SYSTEM				
Eye			(1)	
Cornea, Inflammation, Acute			1 (100%)	
URINARY SYSTEM				
Kidney	(48)	(49)	(50)	(49)
Cyst		4 (8%)	2 (4%)	
Hydronephrosis	2 (4%)	3 (6%)	2 (4%)	1 (2%)
Inflammation	1 (2%)			
Metaplasia, Osseous		1 (2%)	2 (4%)	
Mineralization	1 (2%)			
Nephropathy	44 (92%)	43 (88%)	46 (92%)	47 (96%)
Thrombosis			1 (2%)	
Glomerulus, Inflammation, Suppurative	1 (2%)	1 (2%)		
Papilla, Inflammation, Suppurative				2 (4%)
Renal Tubule, Necrosis		1 (2%)	1 (2%)	
Urinary Bladder	(47)	(48)	(50)	(47)
Infiltration Cellular, Polymorphonuclear			1 (2%)	
Inflammation, Chronic Active	3 (6%)	1 (2%)	1 (2%)	1 (2%)

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

A 14

END OF REPORT

B 01

CORE STUDY

Facility: Battelle Northwest

Chemical CAS #: 111-30-8

Lock Date: 07/01/97

Cage Range: All

Reasons For Removal: All

Removal Date Range: All

Treatment Groups: Include All

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

B 02

B6C3F1 MICE FEMALE	CONTROL	62.5 PPB	125 PPB	250 PPB
DISPOSITION SUMMARY				
Animals Initially in Study	50	50	50	50
Early Deaths				
Moribund Sacrifice	11	10	10	12
Natural Death	5	3	4	6
Accidently Killed			1	
Survivors				
Terminal Sacrifice	34	37	35	32
Animals Examined Microscopically	50	50	50	50
ALIMENTARY SYSTEM				
Gallbladder	(45)	(41)	(43)	(41)
Adenoma				1 (2%)
Hepatocholangiocarcinoma, Metastatic, Liver			1 (2%)	
Histiocytic Sarcoma	1 (2%)			
Intestine Large, Rectum	(47)	(47)	(48)	(45)
Intestine Large, Cecum	(47)	(47)	(47)	(46)
Leiomyosarcoma				1 (2%)
Intestine Small, Duodenum	(45)	(47)	(48)	(48)
Polyp Adenomatous				1 (2%)
Intestine Small, Jejunum	(46)	(47)	(47)	(45)
Carcinoma, Metastatic, Uterus			1 (2%)	
Intestine Small, Ileum	(46)	(48)	(47)	(46)
Polyp Adenomatous				1 (2%)
Liver	(50)	(48)	(50)	(50)
Hemangiosarcoma		2 (4%)	1 (2%)	1 (2%)
Hepatocellular Carcinoma	3 (6%)	6 (13%)	5 (10%)	3 (6%)
Hepatocellular Carcinoma, Multiple	1 (2%)	1 (2%)		1 (2%)
Hepatocellular Adenoma	6 (12%)	11 (23%)	7 (14%)	3 (6%)
Hepatocellular Adenoma, Multiple	5 (10%)			
Hepatocholangiocarcinoma			1 (2%)	
Histiocytic Sarcoma			1 (2%)	
Ito Cell Tumor Malignant				1 (2%)
Mesentery	(12)	(6)	(5)	(6)
Carcinoma, Metastatic, Uterus			1 (20%)	
Histiocytic Sarcoma			1 (20%)	
Pancreas	(50)	(48)	(49)	(49)
Carcinoma, Metastatic, Uterus			1 (2%)	
Histiocytic Sarcoma			1 (2%)	
Salivary Glands	(50)	(49)	(50)	(50)
Stomach, Forestomach	(50)	(49)	(48)	(48)
Squamous Cell Carcinoma			1 (2%)	
Squamous Cell Papilloma	1 (2%)	1 (2%)	1 (2%)	

B 03

NTP Experiment-Test: [illegible] NUMBERS AND RATES OF NEOPLASMS BY ANATOMIC SITE (SYSTEMIC LESIONS ABSENT) (a)
Study Type: CHRONIC — GLUTARALDEHYDE
Route: RESPIRATORY EXPOSURE WHOLE BODY

Report: [illegible]
Date: [illegible]
Time: 08:36:10

B6C3F1 MICE FEMALE	VEHICLE	62.5 PPB	125 PPB	250 PPB
ALIMENTARY SYSTEM - cont				
Stomach, Glandular	(50)	(48)	(48)	(48)
CARDIOVASCULAR SYSTEM				
Heart	[illegible]	(49)	[illegible]	[illegible]
ENDOCRINE SYSTEM				
Adrenal Cortex	[illegible]	(49)	(49)	[illegible]
Carcinoma, Metastatic, Uterus			1 (2%)	
Capsule, Adenoma		1 (2%)		
Capsule, Carcinoma		1 (2%)	1 (2%)	
Adrenal Medulla	[illegible]	(49)	(48)	(49)
Pheochromocytoma Malignant		1 (2%)		
Pheochromocytoma Benign	[illegible] (8%)	1 (2%)	1 (2%)	2 (4%)
Islets, Pancreatic	(50)	(48)	(49)	(49)
Adenoma			1 (2%)	
Pituitary Gland	(49)	(49)	(49)	(50)
Pars Distalis, Adenoma	20 (41%)	16 (33%)	20 (41%)	16 (32%)
Pars Distalis, Carcinoma	1 (2%)			
Pars Intermedia, Adenoma		1 (2%)	1 (2%)	
Thyroid Gland	(50)	(48)	(50)	(50)
Follicular Cell, Adenoma	4 (8%)		2 (4%)	3 (6%)
Follicular Cell, Carcinoma				1 (2%)
GENERAL BODY SYSTEM				
Peritoneum			(2)	
Carcinoma, Metastatic, Uterus			1 (50%)	
Histiocytic Sarcoma			1 (50%)	
GENITAL SYSTEM				
Ovary	(49)	(47)	(49)	(50)
Carcinoma, Metastatic, Uterus			1 (2%)	
Cystadenoma	1 (2%)	1 (2%)	1 (2%)	2 (4%)
[illegible]			1 (2%)	
Histiocytic [illegible]			1 (2%)	
[illegible]oma	2 (4%)			
Bilateral, Granulosa Cell Tumor Benign			1 (2%)	
Uterus	(50)	(48)	(49)	(49)
Adenoma		1 (2%)		
Carcinoma		1 (2%)	2 (4%)	2 (4%)

B 04

B6C3F1 MICE FEMALE	CONTROL	62.5 PPB	125 PPB	250 PPB
GENITAL SYSTEM - cont				
Granular Cell Tumor Benign	1 (2%)			
Hemangioma		1 (2%)		
Leiomyoma			2 (4%)	1 (2%)
Polyp Stromal	3 (6%)	4 (8%)	3 (6%)	
HEMATOPOIETIC SYSTEM				
Bone Marrow	(50)	(48)	(50)	(49)
Hemangiosarcoma	1 (2%)	3 (6%)	1 (2%)	
Lymph Node	(7)	(4)	(3)	(1)
Pancreatic, Histiocytic Sarcoma	1 (14%)			
Lymph Node, Bronchial	(29)	(32)	(37)	(36)
Histiocytic Sarcoma	1 (3%)		1 (3%)	
Lymph Node, Mandibular	(43)	(40)	(39)	(38)
Hemangiosarcoma		1 (3%)		
Lymph Node, Mesenteric	(47)	(48)	(46)	(46)
Histiocytic Sarcoma	1 (2%)			1 (2%)
Lymph Node, Mediastinal	(31)	(23)	(34)	(37)
Alveolar/Bronchiolar Carcinoma, Metastatic, Lung		1 (4%)		
Carcinoma, Metastatic, Uncertain Primary Site	1 (3%)			
Histiocytic Sarcoma			1 (3%)	
Spleen	(50)	(48)	(48)	(49)
Hemangiosarcoma	1 (2%)	3 (6%)	1 (2%)	1 (2%)
Histiocytic Sarcoma			1 (2%)	
Thymus	(45)	(44)	(39)	(47)
Carcinoma, Metastatic, Uncertain Primary Site	1 (2%)			
INTEGUMENTARY SYSTEM				
Mammary Gland	(49)	(49)	(50)	(49)
Carcinoma	3 (6%)		3 (6%)	
Skin	(50)	(50)	(50)	(50)
Subcutaneous Tissue, Fibrosarcoma	1 (2%)	1 (2%)	3 (6%)	
Subcutaneous Tissue, Hemangiosarcoma	1 (2%)	1 (2%)	1 (2%)	
Subcutaneous Tissue, Sarcoma				3 (6%)
Subcutaneous Tissue, Sarcoma, Multiple	2 (4%)			
MUSCULOSKELETAL SYSTEM				
Bone	(50)	(49)	(50)	(50)
Hemangiosarcoma		1 (2%)		
Skeletal Muscle	(2)	(1)		
Hemangiosarcoma		1 (100%)		

B 05

B6C3F1 MICE FEMALE	CONTROL	62.5 PPB	125 PPB	250 PPB
NERVOUS SYSTEM				
Brain	(50)	(49)	(50)	(50)
Carcinoma, Metastatic, Pituitary Gland	1 (2%)			
RESPIRATORY SYSTEM				
Larynx	(50)	(49)	(50)	(48)
Lung	(50)	(49)	(50)	(50)
Alveolar/Bronchiolar Adenoma	2 (4%)	3 (6%)	2 (4%)	2 (4%)
Alveolar/Bronchiolar Adenoma, Multiple		1 (2%)		
Alveolar/Bronchiolar Carcinoma	1 (2%)	4 (8%)	5 (10%)	2 (4%)
Carcinoma, Metastatic, Uncertain Primary Site	1 (2%)			
Carcinoma, Metastatic, Uterus			1 (2%)	
Hepatocellular Carcinoma, Metastatic, Liver	2 (4%)	5 (10%)	1 (2%)	2 (4%)
Hepatocholangiocarcinoma, Metastatic, Liver			1 (2%)	
Histiocytic Sarcoma			1 (2%)	
Leiomyosarcoma, Metastatic, Intestine Large, Cecum				1 (2%)
Osteosarcoma, Metastatic, Uncertain Primary Site		1 (2%)		
Nose	(50)	(49)	(50)	(50)
Pleura	(1)	(1)	(1)	
Alveolar/Bronchiolar Carcinoma, Metastatic, Lung		1 (100%)	1 (100%)	
Carcinoma, Metastatic, Uncertain Primary Site	1 (100%)			
SPECIAL SENSES SYSTEM				
Harderian Gland	(3)		(1)	(2)
Adenoma	1 (33%)			
Carcinoma	2 (67%)			1 (50%)
URINARY SYSTEM				
Kidney	(50)	(49)	(49)	(49)
Hepatocholangiocarcinoma, Metastatic, Liver			1 (2%)	
Histiocytic Sarcoma			1 (2%)	
Capsule, Sarcoma	1 (2%)			
Urinary Bladder	(48)	(48)	(48)	(47)
Carcinoma, Metastatic, Uterus			1 (2%)	
Histiocytic Sarcoma			1 (2%)	

B 06

NTP Experiment-Test: 05184-06 INCIDENCE RATES OF NEOPLASMS BY ANATOMIC SITE (SYSTEMIC LESIONS ABRIDGED) (a)
Study Type: C[illegible]
Route: RESPIRATORY EXPOSURE WHOLE BODY

GLUTARALDEHYDE

Report: PE1RPT05
Date: 07/13/98
Time: 08:36:10

B6C3F1 MICE FEMALE	CONTROL	62.5 PPB	125 PPB	250 PPB
SYSTEMIC LESIONS				
Multiple Organs	*(50)	*(50)	*(50)	*(50)
Histiocytic Sarcoma	1 (2%)		1 (2%)	1 (2%)
Lymphoma Malignant	12 (24%)	12 (24%)	8 (16%)	12 (24%)

* Number of animals with any tissue examined microscopically

B 07

NTP Experiment-Test: 05184-06 INCIDENCE RATES OF NEOPLASMS BY ANATOMIC SITE (SYSTEMIC LESIONS ABRIDGED) (a)
Study Type: CHRONIC GLUTARALDEHYDE
Route: RESPIRATORY EXPOSURE WHOLE BODY

Report: PEIRPT05
Date: 07/13/98
Time: 08:36:10

B6C3F1 MICE FEMALE	CONTROL	62.5 PPB	125 PPB	250 PPB
TUMOR SUMMARY				
Total Animals with Primary Neoplasms (b)	41	44	41	40
Total Primary Neoplasms	81	81	77	62
Total Animals with Benign Neoplasms	32	32	30	26
Total Benign Neoplasms	50	42	42	32
Total Animals with Malignant Neoplasms	24	26	24	25
Total Malignant Neoplasms	31	39	35	30
Total Animals with Metastatic Neoplasms	3	6	4	3
Total Metastatic Neoplasm	7	8	13	3
Total Animals with Malignant Neoplasms Uncertain Primary Site	1	1		
Total Animals with Neoplasms Uncertain-Benign or Malignant				
Total Uncertain Neoplasms				

a Number of animals examined microscopically at site and number of animals with lesion
b Primary tumors: all tumors except metastatic tumors

B 08

B6C3F1 MICE MALE	CONTROL	62.5 PPB	125 PPB	250 PPB
DISPOSITION SUMMARY				
Animals Initially in Study	50	50	50	50
Early Deaths				
Moribund Sacrifice	13	15	6	5
Natural Death	6	8	4	7
Survivors				
Terminal Sacrifice	31	27	40	38
Animals Examined Microscopically	50	50	50	50
ALIMENTARY SYSTEM				
Gallbladder	(42)	(36)	(41)	(46)
Sarcoma, Metastatic, Mesentery			1 (2%)	
Intestine Large, Cecum	(45)	(44)	(48)	(47)
Intestine Small, Duodenum	(43)	(43)	(47)	(46)
Carcinoma			1 (2%)	
Intestine Small, Jejunum	(43)	(44)	(47)	(46)
Intestine Small, Ileum	(44)	(46)	(48)	(47)
Liver	(49)	(50)	(50)	(49)
Hemangiosarcoma	2 (4%)		3 (6%)	2 (4%)
Hepatocellular Carcinoma	15 (31%)	9 (18%)	10 (20%)	10 (20%)
Hepatocellular Carcinoma, Multiple		6 (12%)	2 (4%)	2 (4%)
Hepatocellular Adenoma	15 (31%)	7 (14%)	16 (32%)	9 (18%)
Hepatocellular Adenoma, Multiple	4 (8%)	3 (6%)	4 (8%)	2 (4%)
Hepatocholangiocarcinoma		1 (2%)		1 (2%)
Histiocytic Sarcoma	3 (6%)			
Mesentery	(2)	(2)	(3)	(5)
Sarcoma			1 (33%)	
Pancreas	(47)	(49)	(50)	(48)
Sarcoma, Metastatic, Mesentery			1 (2%)	
Stomach, Forestomach	(48)	(49)	(50)	(48)
Sarcoma, Metastatic, Mesentery			1 (2%)	
Squamous Cell Carcinoma		1 (2%)		
Squamous Cell Papilloma		1 (2%)		
Stomach, Glandular	(46)	(47)	(50)	(48)
Tooth	(13)	(17)	(10)	(19)
Odontoma	1 (8%)			

B 09

B6C3F1 MICE MALE	CONTROL	62.5 PPB	125 PPB	250 PPB
CARDIOVASCULAR SYSTEM				
Heart	(49)	(50)	(50)	(49)
Hemangiosarcoma				1 (2%)
Hepatocholangiocarcinoma, Metastatic, Liver		1 (2%)		
Sarcoma, Metastatic, Mesentery			1 (2%)	
ENDOCRINE SYSTEM				
Adrenal Cortex	(47)	(49)	(50)	(49)
Capsule, Adenoma	2 (4%)		3 (6%)	1 (2%)
Pituitary Gland	(46)	(47)	(48)	(47)
Pars Distalis, Adenoma	1 (2%)			
Pars Intermedia, Adenoma	1 (2%)			
Thyroid Gland	(48)	(49)	(49)	(49)
Bilateral, Follicular Cell, Adenoma	1 (2%)			
Follicular Cell, Adenoma		3 (6%)	2 (4%)	1 (2%)
Follicular Cell, Carcinoma	1 (2%)			
GENERAL BODY SYSTEM				
None				
GENITAL SYSTEM				
Epididymis	(48)	(50)	(50)	(49)
Histiocytic Sarcoma	1 (2%)	1 (2%)		
Preputial Gland	(48)	(49)	(50)	(47)
Squamous Cell Carcinoma		1 (2%)		
Prostate	(49)	(48)	(50)	(47)
Seminal Vesicle	(47)	(49)	(50)	(49)
Granular Cell Tumor Benign			1 (2%)	
Testes	(48)	(50)	(50)	(50)
Interstitial Cell, Adenoma		1 (2%)	2 (4%)	2 (4%)
HEMATOPOIETIC SYSTEM				
Bone Marrow	(48)	(47)	(50)	(49)
Hemangiosarcoma	1 (2%)	1 (2%)		1 (2%)
Mast Cell Tumor Malignant			1 (2%)	
Lymph Node	(1)	(2)	(1)	(1)
Lymph Node, Bronchial	(34)	(28)	(35)	(37)
Alveolar/Bronchiolar Carcinoma, Metastatic, Lung			1 (3%)	

B 10

B6C3F1 MICE MALE	CONTROL	62.5 PPB	125 PPB	250 PPB
HEMATOPOIETIC SYSTEM - cont				
Histiocytic Sarcoma	1 (3%)			
Lymph Node, Mandibular	(36)	(22)	(30)	(33)
Lymph Node, Mesenteric	(46)	(44)	(47)	(47)
Sarcoma, Metastatic, Mesentery			1 (2%)	
Lymph Node, Mediastinal	(29)	(27)	(33)	(30)
Histiocytic Sarcoma	1 (3%)			
Spleen	(48)	(48)	(50)	(48)
Hemangiosarcoma	1 (2%)	1 (2%)	1 (2%)	1 (2%)
Histiocytic Sarcoma		1 (2%)		
Thymus	(39)	(34)	(43)	(44)
INTEGUMENTARY SYSTEM				
Skin	(48)	(50)	(50)	(48)
Subcutaneous Tissue, Fibrosarcoma	1 (2%)	1 (2%)		
Subcutaneous Tissue, Sarcoma		1 (2%)		
MUSCULOSKELETAL SYSTEM				
Skeletal Muscle		(1)		
Hepatocholangiocarcinoma, Metastatic, Liver		1 (100%)		
NERVOUS SYSTEM				
None				
RESPIRATORY SYSTEM				
Lung	(48)	(50)	(50)	(50)
Alveolar/Bronchiolar Adenoma	8 (17%)	10 (20%)	9 (18%)	6 (12%)
Alveolar/Bronchiolar Adenoma, Multiple				1 (2%)
Alveolar/Bronchiolar Carcinoma	9 (19%)	6 (12%)	7 (14%)	6 (12%)
Alveolar/Bronchiolar Carcinoma, Multiple	1 (2%)			1 (2%)
Hepatocellular Carcinoma, Metastatic, Liver	6 (13%)	2 (4%)	6 (12%)	4 (8%)
Hepatocholangiocarcinoma, Metastatic, Liver		1 (2%)		
Histiocytic Sarcoma	2 (4%)			
Mediastinum, Alveolar/Bronchiolar Carcinoma, Metastatic, Lung				1 (2%)
Pleura		(1)		(2)
Alveolar/Bronchiolar Carcinoma, Metastatic, Lung		1 (100%)		1 (50%)

B 11

B6C3F1 MICE MALE	CONTROL	62.5 PPB	125 PPB	250 PPB
SPECIAL SENSES SYSTEM				
Harderian Gland	(4)	(5)	(2)	(2)
Adenoma	3 (75%)	3 (60%)	2 (100%)	1 (50%)
Carcinoma	1 (25%)	2 (40%)		1 (50%)
URINARY SYSTEM				
Kidney	(48)	(49)	(50)	(49)
Alveolar/Bronchiolar Carcinoma, Metastatic, Lung			1 (2%)	
Hepatocholangiocarcinoma, Metastatic, Liver		1 (2%)		
Histiocytic Sarcoma	1 (2%)			
Mast Cell Tumor Malignant, Metastatic, Bone Marrow			1 (2%)	
SYSTEMIC LESIONS				
Multiple Organs	*(50)	*(50)	*(50)	*(50)
Histiocytic Sarcoma	3 (6%)	1 (2%)		
Lymphoma Malignant	4 (8%)	5 (10%)	1 (2%)	5 (10%)

* Number of animals with any tissue examined microscopically

B 12

NTP Experiment-Test: 05184-06 INCIDENCE RATES OF NEOPLASMS BY ANATOMIC SITE (SYSTEMIC LESIONS ABRIDGED) (a)
Study Type: CHRONIC UTARALDEHYDE
Route: RESPIRATORY EXPOSURE WHOLE BODY

Report: PEIRPT05
Date: 07/13/98
Time: 08:36:10

B6C3F1 MICE MALE	CONTROL	62.5 PPB	125 PPB	250 PPB
TUMOR SUMMARY				
Total Animals with Primary Neoplasms (b)	44	42	39	33
Total Primary Neoplasms	75	64	66	54
Total Animals with Benign Neoplasms	27	24	29	19
Total Benign Neoplasms	36	28	39	23
Total Animals with Malignant Neoplasms	33	28	23	22
Total Malignant Neoplasms	39	36	27	31
Total Animals with Metastatic Neoplasms	6	4	8	5
Total Metastatic Neoplasm	6	7	14	6
Total Animals with Malignant Neoplasms Uncertain Primary Site				
Total Animals with Neoplasms Uncertain-Benign or Malignant				
Total Uncertain Neoplasms				

a Number of animals examined microscopically at site and number of animals with lesion
b Primary tumors: all tumors except metastatic tumors

B 13

B 14

CORE STUDY

REASONS FOR REMOVAL: ALL

REMOVAL DATE RANGE: ALL

TREATMENT GROUPS: INCLUDE ALL

C 01

NTP
LAB: Battelle Northwest

EXPERIMENT: 05184 TEST: 06
TEST TYPE: CHRONIC
CONT: N01-ES-25335
PATHOLOGIST: GRUMBEIN, S.

STATISTICAL ANALYSIS OF PRIMARY TUMORS
GLUTARALDEHYDE

CAGES FROM 0000 TO LAST CAGE
ROUTE: RESPIRATORY EXPOSURE WHOLE BODY

REPORT: PEIRPT08
DATE: 07/13/98

TIME: 08:38:05

NTP C#: 55425C
CAS: 111-30-8

Mice(B6C3F1)

FOR ALL DOSES THE TUMOR RATES IN THE FOLLOWING TISSUES/ORGANS ARE BASED ON NUMBER OF TISSUES EXAMINED. IN OTHER TISSUES/ORGANS RATES ARE BASED ON THE NUMBER OF ANIMALS NECROPSIED.

Adrenal Cortex
Adrenal Medulla
Bone Marrow
Clitoral/Preputial Gland
Gallbladder
Heart
Islets, Pancreatic
Kidney
Liver
Lung
Ovary
Pituitary Gland
Spleen
Testes
Thyroid Gland

C 02

NTP
LAB: Battelle Northwest
EXPERIMENT: 05184 TEST: 06
TEST TYPE: CHRONIC
CONT: NO1-ES-25335
PATHOLOGIST: GRUMBEIN, S.

STATISTICAL ANALYSIS OF PRIMARY TUMORS
GLUTARALDEHYDE

CAGES FROM 0000 TO LAST CAGE
ROUTE: RESPIRATORY EXPOSURE WHOLE BODY

REPORT: PEIRPT08
DATE: 07/13/98
TIME: 08:38:05

NTP C#: 55425C
CAS: 111-30-8

SUMMARY OF STATISTICALLY SIGNIFICANT (P<=.05) RESULTS
IN THE ANALYSIS OF GLUTARALDEHYDE

Male Mice

Organ	Morphology
Liver	Hepatocellular Adenoma
	Hepatocellular Carcinoma or Hepatocellular Adenoma
	Hepatocellular Carcinoma, Hepatocellular Adenoma, or Hepatoblastoma
All Organs	Histiocytic Sarcoma
	Benign Tumors
	Malignant Tumors
	Malignant and Benign Tumors

Female Mice

Organ	Morphology
Intestine Small: Site Unspecified	Polyp Adenomatous
Liver	Hepatocellular Adenoma
	Hepatocellular Carcinoma or Hepatocellular Adenoma
	Hepatocellular Carcinoma, Hepatocellular Adenoma, or Hepatoblastoma

C 03

Date: 07/13/98 EXPERIMENT: 05184 TEST: 06 GLUTARALDEHYDE

Statistical Analysis of Primary Tumors in Mice(B6C3F1)

Terminal Sacrifice at 105 weeks

Dose	Males CONTROL	Males 62.5 PPB	Males 125 PPB	Males 250 PPB	Females CONTROL	Females 62.5 PPB	Females 125 PPB	Females 250 PPB
Adrenal Cortex Adenoma								
TUMOR RATES								
OVERALL (a)	2/47 (4%)	0/49 (0%)	3/50 (6%)	1/49 (2%)	0/50 (0%)	1/49 (2%)	0/49 (0%)	0/50 (0%)
POLY-3 ADJUSTED (b)	4.9%	0.0%	6.7%	2.2%	0.0%	2.2%	0.0%	0.0%
TERMINAL (d)	2/31 (7%)	0/27 (0%)	3/40 (8%)	1/38 (3%)	0/34 (0%)	1/37 (3%)	0/35 (0%)	0/32 (0%)
FIRST INCIDENCE	733 (T)	---	733 (T)	733 (T)	---	735 (T)	---	---
STATISTICAL TESTS								
LIFE TABLE	P=0.453N	P=0.269N	P=0.616	P=0.429N	P=0.581N	P=0.517	(e)	(e)
POLY 3	P=0.500N	P=0.246N	P=0.544	P=0.487N	P=0.561N	P=0.502	(e)	(e)
POLY 1.5	P=0.518N	P=0.238N	P=0.535	P=0.475N	P=0.563N	P=0.500	(e)	(e)
POLY 6	P=0.480N	P=0.254N	P=0.558	P=0.458N	P=0.559N	P=0.506	(e)	(e)
LOGISTIC REGRESSION	P=0.453N	(e)	P=0.616	P=0.429N	(e)	P=0.517	(e)	(e)
COCH-ARM / FISHERS	P=0.543N	P=0.237N	P=0.530	P=0.484N	P=0.566N	P=0.495	(e)	(e)

Dose	Males CONTROL	Males 62.5 PPB	Males 125 PPB	Males 250 PPB	Females CONTROL	Females 62.5 PPB	Females 125 PPB	Females 250 PPB
Adrenal Medulla Pheochromocytoma Benign								
TUMOR RATES								
OVERALL (a)	0/47 (0%)	0/49 (0%)	0/50 (0%)	0/49 (0%)	4/50 (8%)	1/49 (2%)	1/48 (2%)	2/49 (4%)
POLY-3 ADJUSTED (b)	0.0%	0.0%	0.0%	0.0%	9.0%	2.2%	2.2%	4.7%
TERMINAL (d)	0/31 (0%)	0/27 (0%)	0/40 (0%)	0/38 (0%)	4/34 (12%)	1/37 (3%)	0/35 (0%)	2/31 (7%)
FIRST INCIDENCE	---	---	---	---	735 (T)	735 (T)	635	735 (T)
STATISTICAL TESTS								
LIFE TABLE	(e)	(e)	(e)	(e)	P=0.352N	P=0.154N	P=0.170N	P=0.379N
POLY 3	(e)	(e)	(e)	(e)	P=0.328N	P=0.175N	P=0.179N	P=0.358N
POLY 1.5	(e)	(e)	(e)	(e)	P=0.325N	P=0.179N	P=0.183N	P=0.352N
POLY 6	(e)	(e)	(e)	(e)	P=0.332N	P=0.169N	P=0.174N	P=0.364N
LOGISTIC REGRESSION	(e)	(e)	(e)	(e)	P=0.334N	P=0.154N	P=0.184N	P=0.379N
COCH-ARM / FISHERS	(e)	(e)	(e)	(e)	P=0.320N	P=0.187N	P=0.194N	P=0.349N

C 64

Statistical Analysis of Primary Tumors in Mice(B6C3F1) - GLUTARALDEHYDE

Terminal Sacrifice at 105 weeks

Dose	Males CONTROL	Males 62.5 PPB	Males 125 PPB	Males 250 PPB	Females CONTROL	Females 62.5 PPB	Females 125 PPB	Females 250 PPB
Adrenal Medulla Pheochromocytoma: Benign, Complex, Malignant, NOS								
TUMOR RATES								
OVERALL (a)	0/47 (0%)	0/49 (0%)	0/50 (0%)	0/49 (0%)	4/50 (8%)	2/49 (4%)	1/48 (2%)	2/49 (4%)
POLY-3 ADJUSTED (b)	0.0%	0.0%	0.0%	0.0%	9.0%	4.4%	2.2%	4.7%
TERMINAL (d)	0/31 (0%)	0/27 (0%)	0/40 (0%)	0/38 (0%)	4/34 (12%)	2/37 (5%)	0/35 (0%)	2/31 (7%)
FIRST INCIDENCE	---	---	---	---	735 (T)	735 (T)	635	735 (T)
STATISTICAL TESTS								
LIFE TABLE	(e)	(e)	(e)	(e)	P=0.301N	P=0.298N	P=0.170N	P=0.379N
POLY 3	(e)	(e)	(e)	(e)	P=0.278N	P=0.332N	P=0.179N	P=0.358N
POLY 1.5	(e)	(e)	(e)	(e)	P=0.275N	P=0.337N	P=0.183N	P=0.352N
POLY 6	(e)	(e)	(e)	(e)	P=0.281N	P=0.323N	P=0.174N	P=0.364N
LOGISTIC REGRESSION	(e)	(e)	(e)	(e)	P=0.285N	P=0.298N	P=0.184N	P=0.379N
COCH-ARM / FISHERS	(e)	(e)	(e)	(e)	P=0.271N	P=0.349N	P=0.194N	P=0.349N

Dose	Males CONTROL	Males 62.5 PPB	Males 125 PPB	Males 250 PPB	Females CONTROL	Females 62.5 PPB	Females 125 PPB	Females 250 PPB
Bone Marrow Hemangiosarcoma								
TUMOR RATES								
OVERALL (a)	1/48 (2%)	1/47 (2%)	0/50 (0%)	1/49 (2%)	1/50 (2%)	3/48 (6%)	1/50 (2%)	0/49 (0%)
POLY-3 ADJUSTED (b)	2.4%	2.6%	0.0%	2.2%	2.2%	6.6%	2.2%	0.0%
TERMINAL (d)	0/31 (0%)	0/27 (0%)	0/40 (0%)	0/38 (0%)	1/34 (3%)	2/37 (5%)	0/35 (0%)	0/32 (0%)
FIRST INCIDENCE	516	685	---	663	735 (T)	672	715	---
STATISTICAL TESTS								
LIFE TABLE	P=0.588N	P=0.748	P=0.504N	P=0.750N	P=0.212N	P=0.336	P=0.748N	P=0.512N
POLY 3	P=0.599N	P=0.736	P=0.488N	P=0.746N	P=0.203N	P=0.309	P=0.754N	P=0.507N
POLY 1.5	P=0.603N	P=0.744	P=0.490N	P=0.750N	P=0.202N	P=0.302	P=0.756N	P=0.506N
POLY 6	P=0.595N	P=0.729	P=0.482N	P=0.740N	P=0.204N	P=0.319	P=0.752N	P=0.509N
LOGISTIC REGRESSION	P=0.650N	P=0.728N	P=0.456N	P=0.741	P=0.205N	P=0.304	P=0.755N	(e)
COCH-ARM / FISHERS	P=0.608N	P=0.747	P=0.490N	P=0.747N	P=0.202N	P=0.293	P=0.753N	P=0.505N

C 05

Statistical Analysis of Primary Tumors in Mice(B6C3F1) GLUTARALDEHYDE

Terminal Sacrifice at 105 weeks

Dose	Males CONTROL	62.5 PPB	125 PPB	250 PPB	Females CONTROL	62.5 PPB	125 PPB	250 PPB
Harderian Gland Adenoma								
TUMOR RATES	#	#	#	#	#	#	#	#
OVERALL (a)	3/50 (6%)	3/50 (6%)	2/50 (4%)	1/50 (2%)	1/50 (2%)	0/50 (0%)	0/50 (0%)	0/50 (0%)
POLY-3 ADJUSTED (b)	7.0%	7.5%	4.4%	2.2%	2.2%	0.0%	0.0%	0.0%
TERMINAL (d)	1/31 (3%)	3/27 (11%)	2/40 (5%)	1/38 (3%)	1/34 (3%)	0/37 (0%)	0/35 (0%)	0/32 (0%)
FIRST INCIDENCE	684	733 (T)	733 (T)	733 (T)	735 (T)	---	---	---
STATISTICAL TESTS								
LIFE TABLE	P=0.127N	P=0.595	P=0.402N	P=0.257N	P=0.314N	P=0.483N	P=0.494N	P=0.512N
POLY 3	P=0.171N	P=0.628	P=0.480N	P=0.285N	P=0.304N	P=0.495N	P=0.494N	P=0.504N
POLY 1.5	P=0.180N	P=0.642	P=0.490N	P=0.293N	P=0.305N	P=0.497N	P=0.496N	P=0.502N
POLY 6	P=0.160N	P=0.611	P=0.463N	P=0.276N	P=0.304N	P=0.493N	P=0.493N	P=0.507N
LOGISTIC REGRESSION	P=0.148N	P=0.613	P=0.467N	P=0.280N	P=0.314N	(e)	(e)	(e)
COCH-ARM / FISHERS	P=0.194N	P=0.661N	P=0.500N	P=0.309N	P=0.306N	P=0.500N	P=0.500N	P=0.500N

Dose	Males CONTROL	62.5 PPB	125 PPB	250 PPB	Females CONTROL	62.5 PPB	125 PPB	250 PPB
Harderian Gland Carcinoma								
TUMOR RATES	#	#	#	#	#	#	#	#
OVERALL (a)	1/50 (2%)	2/50 (4%)	0/50 (0%)	1/50 (2%)	2/50 (4%)	0/50 (0%)	0/50 (0%)	1/50 (2%)
POLY-3 ADJUSTED (b)	2.3%	5.0%	0.0%	2.2%	4.5%	0.0%	0.0%	2.3%
TERMINAL (d)	1/31 (3%)	1/27 (4%)	0/40 (0%)	1/38 (3%)	1/34 (3%)	0/37 (0%)	0/35 (0%)	1/32 (3%)
FIRST INCIDENCE	733 (T)	706	---	733 (T)	708	---	---	735 (T)
STATISTICAL TESTS								
LIFE TABLE	P=0.424N	P=0.457	P=0.449N	P=0.716N	P=0.479N	P=0.216N	P=0.231N	P=0.514N
POLY 3	P=0.487N	P=0.477	P=0.490N	P=0.747N	P=0.461N	P=0.233N	P=0.231N	P=0.509N
POLY 1.5	P=0.493N	P=0.486	P=0.495N	P=0.752N	P=0.461N	P=0.234N	P=0.233N	P=0.504N
POLY 6	P=0.482N	P=0.468	P=0.481N	P=0.739N	P=0.462N	P=0.230N	P=0.230N	P=0.513N
LOGISTIC REGRESSION	P=0.450N	P=0.459	(e)	P=0.716N	P=0.472N	P=0.231N	P=0.231N	P=0.512N
COCH-ARM / FISHERS	P=0.500N	P=0.500	P=0.500N	P=0.753N	P=0.461N	P=0.247N	P=0.247N	P=0.500N

C 06

Statistical Analysis of Primary Tumors in Mice(B6C3F1) - GLUTARALDEHYDE

Terminal Sacrifice at 105 weeks

Dose	Males CONTROL	Males 62.5 PPB	Males 125 PPB	Males 250 PPB	Females CONTROL	Females 62.5 PPB	Females 125 PPB	Females 250 PPB
Harderian Gland Carcinoma or Adenoma								
TUMOR RATES	#	#	#	#	#	#	#	#
OVERALL (a)	4/50 (8%)	5/50 (10%)	2/50 (4%)	2/50 (4%)	3/50 (6%)	0/50 (0%)	0/50 (0%)	1/50 (2%)
POLY-3 ADJUSTED (b)	9.3%	12.5%	4.4%	4.4%	6.7%	0.0%	0.0%	2.3%
TERMINAL (d)	2/31 (7%)	4/27 (15%)	2/40 (5%)	2/38 (5%)	2/34 (6%)	0/37 (0%)	0/35 (0%)	1/32 (3%)
FIRST INCIDENCE	684	706	733 (T)	733 (T)	708	---	---	735 (T)
STATISTICAL TESTS								
LIFE TABLE	P=0.104N	P=0.417	P=0.243N	P=0.266N	P=0.262N	P=0.106N	P=0.116N	P=0.323N
POLY 3	P=0.154N	P=0.455	P=0.316N	P=0.311N	P=0.247N	P=0.115N	P=0.114N	P=0.314N
POLY 1.5	P=0.164N	P=0.473	P=0.327N	P=0.322N	P=0.247N	P=0.116N	P=0.115N	P=0.310N
POLY 6	P=0.143N	P=0.434	P=0.300N	P=0.300N	P=0.248N	P=0.113N	P=0.113N	P=0.318N
LOGISTIC REGRESSION	P=0.126N	P=0.430	P=0.298N	P=0.295N	P=0.255N	P=0.113N	P=0.114N	P=0.317N
COCH-ARM / FISHERS	P=0.178N	P=0.500	P=0.339N	P=0.339N	P=0.247N	P=0.121N	P=0.121N	P=0.309N

Dose	Males CONTROL	Males 62.5 PPB	Males 125 PPB	Males 250 PPB	Females CONTROL	Females 62.5 PPB	Females 125 PPB	Females 250 PPB
Intestine Small: Site Unspecified Polyp Adenomatous								
TUMOR RATES	#	#	#	#	#	#	#	#
OVERALL (a)	0/50 (0%)	0/50 (0%)	0/50 (0%)	0/50 (0%)	0/50 (0%)	0/50 (0%)	0/50 (0%)	2/50 (4%)
POLY-3 ADJUSTED (b)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	4.6%
TERMINAL (d)	0/31 (0%)	0/27 (0%)	0/40 (0%)	0/38 (0%)	0/34 (0%)	0/37 (0%)	0/35 (0%)	2/32 (6%)
FIRST INCIDENCE	---	---	---	---	---	---	---	735 (T)
STATISTICAL TESTS								
LIFE TABLE	(e)	(e)	(e)	(e)	P=0.039 *	(e)	(e)	P=0.225
POLY 3	(e)	(e)	(e)	(e)	P=0.044 *	(e)	(e)	P=0.232
POLY 1.5	(e)	(e)	(e)	(e)	P=0.045 *	(e)	(e)	P=0.235
POLY 6	(e)	(e)	(e)	(e)	P=0.043 *	(e)	(e)	P=0.230
LOGISTIC REGRESSION	(e)	(e)	(e)	(e)	(e)	(e)	(e)	P=0.225
COCH-ARM / FISHERS	(e)	(e)	(e)	(e)	P=0.046 *	(e)	(e)	P=0.247

C 07

Statistical Analysis of Primary Tumors in Mice(B6C3F1) GLUTARALDEHYDE

Terminal Sacrifice at 105 weeks

Dose	Males CONTROL	Males 62.5 PPB	Males 125 PPB	Males 250 PPB	Females CONTROL	Females 62.5 PPB	Females 125 PPB	Females 250 PPB
Liver Hemangiosarcoma								
TUMOR RATES								
OVERALL (a)	2/49 (4%)	0/50 (0%)	3/50 (6%)	2/49 (4%)	0/50 (0%)	2/48 (4%)	1/50 (2%)	1/50 (2%)
POLY-3 ADJUSTED (b)	4.8%	0.0%	6.7%	4.4%	0.0%	4.5%	2.2%	2.3%
TERMINAL (d)	1/31 (3%)	0/27 (0%)	3/40 (8%)	1/38 (3%)	0/34 (0%)	2/37 (5%)	0/35 (0%)	1/32 (3%)
FIRST INCIDENCE	716	---	733 (T)	663	---	735 (T)	687	735 (T)
STATISTICAL TESTS								
LIFE TABLE	P=0.523	P=0.270N	P=0.611	P=0.634N	P=0.476	P=0.257	P=0.510	P=0.488
POLY 3	P=0.477	P=0.248N	P=0.531	P=0.668N	P=0.495	P=0.238	P=0.506	P=0.496
POLY 1.5	P=0.453	P=0.242N	P=0.520	P=0.679N	P=0.500	P=0.235	P=0.505	P=0.498
POLY 6	P=0.505	P=0.257N	P=0.548	P=0.655N	P=0.490	P=0.243	P=0.508	P=0.493
LOGISTIC REGRESSION	P=0.475	P=0.260N	P=0.575	P=0.678N	P=0.490	P=0.257	P=0.490	P=0.488
COCH-ARM / FISHERS	P=0.421	P=0.242N	P=0.510	P=0.691N	P=0.504	P=0.237	P=0.500	P=0.500

Dose	Males CONTROL	Males 62.5 PPB	Males 125 PPB	Males 250 PPB	Females CONTROL	Females 62.5 PPB	Females 125 PPB	Females 250 PPB
Liver Hepatocellular Adenoma								
TUMOR RATES								
OVERALL (a)	19/49 (39%)	10/50 (20%)	20/50 (40%)	11/49 (22%)	11/50 (22%)	11/48 (23%)	7/50 (14%)	3/50 (6%)
POLY-3 ADJUSTED (b)	44.0%	24.3%	43.7%	24.4%	24.6%	24.5%	15.0%	6.8%
TERMINAL (d)	16/31 (52%)	7/27 (26%)	17/40 (43%)	10/38 (26%)	9/34 (27%)	10/37 (27%)	6/35 (17%)	2/32 (6%)
FIRST INCIDENCE	516	573	492	673	701	708	524	616
STATISTICAL TESTS								
LIFE TABLE	P=0.028N*	P=0.085N	P=0.302N	P=0.015N*	P=0.014N*	P=0.505N	P=0.201N	P=0.030N*
POLY 3	P=0.083N	P=0.042N*	P=0.573N	P=0.039N*	P=0.009N**	P=0.592N	P=0.188N	P=0.020N*
POLY 1.5	P=0.106N	P=0.038N*	P=0.564	P=0.047N*	P=0.009N**	P=0.584	P=0.197N	P=0.020N*
POLY 6	P=0.062N	P=0.049N*	P=0.523N	P=0.032N*	P=0.009N**	P=0.569N	P=0.181N	P=0.020N*
LOGISTIC REGRESSION	P=0.078N	P=0.050N	P=0.555N	P=0.033N*	P=0.010N*	P=0.520N	P=0.195N	P=0.024N*
COCH-ARM / FISHERS	P=0.151N	P=0.033N*	P=0.532	P=0.062N	P=0.009N**	P=0.553	P=0.218N	P=0.020N*

C 08

Statistical Analysis of Primary Tumors in Mice(B6C3F1) - GLUTARALDEHYDE

Terminal Sacrifice at 105 weeks

Dose	Males CONTROL	Males 62.5 PPB	Males 125 PPB	Males 250 PPB	Females CONTROL	Females 62.5 PPB	Females 125 PPB	Females 250 PPB
Liver Hepatocellular Carcinoma								
TUMOR RATES								
OVERALL (a)	15/49 (31%)	15/50 (30%)	12/50 (24%)	12/49 (24%)	4/50 (8%)	7/48 (15%)	5/50 (10%)	4/50 (8%)
POLY-3 ADJUSTED (b)	32.6%	33.8%	25.5%	25.6%	8.9%	15.3%	10.8%	9.0%
TERMINAL (d)	3/31 (10%)	4/27 (15%)	8/40 (20%)	6/38 (16%)	2/34 (6%)	3/37 (8%)	4/35 (11%)	1/32 (3%)
FIRST INCIDENCE	498	517	492	558	657	551	672	401
STATISTICAL TESTS								
LIFE TABLE	P=0.129N	P=0.463	P=0.213N	P=0.232N	P=0.480N	P=0.318	P=0.523	P=0.623
POLY 3	P=0.209N	P=0.543	P=0.300N	P=0.305N	P=0.441N	P=0.268	P=0.514	P=0.637
POLY 1.5	P=0.223N	P=0.570	P=0.303N	P=0.313N	P=0.433N	P=0.258	P=0.511	P=0.642
POLY 6	P=0.196N	P=0.510	P=0.297N	P=0.299N	P=0.454N	P=0.283	P=0.515	P=0.630
LOGISTIC REGRESSION	P=0.340N	P=0.472N	P=0.338N	P=0.421N	P=0.418N	P=0.227	P=0.512	P=0.640N
COCH-ARM / FISHERS	P=0.245N	P=0.560N	P=0.304N	P=0.326N	P=0.427N	P=0.239	P=0.500	P=0.643N

Dose	Males CONTROL	Males 62.5 PPB	Males 125 PPB	Males 250 PPB	Females CONTROL	Females 62.5 PPB	Females 125 PPB	Females 250 PPB
Liver Hepatocellular Carcinoma or Hepatocellular Adenoma								
TUMOR RATES								
OVERALL (a)	32/49 (65%)	24/50 (48%)	26/50 (52%)	21/49 (43%)	14/50 (28%)	17/48 (35%)	11/50 (22%)	7/50 (14%)
POLY-3 ADJUSTED (b)	68.6%	53.1%	55.2%	44.6%	30.9%	37.2%	23.5%	15.6%
TERMINAL (d)	19/31 (61%)	11/27 (41%)	21/40 (53%)	14/38 (37%)	10/34 (29%)	13/37 (35%)	9/35 (26%)	3/32 (9%)
FIRST INCIDENCE	498	517	492	558	657	551	524	401
STATISTICAL TESTS								
LIFE TABLE	P=0.006N**	P=0.275N	P=0.035N*	P=0.010N*	P=0.043N*	P=0.442	P=0.297N	P=0.101N
POLY 3	P=0.018N*	P=0.091N	P=0.128N	P=0.014N*	P=0.021N*	P=0.342	P=0.285N	P=0.067N
POLY 1.5	P=0.023N*	P=0.077N	P=0.128N	P=0.016N*	P=0.021N*	P=0.321	P=0.295N	P=0.066N
POLY 6	P=0.015N*	P=0.108N	P=0.127N	P=0.013N*	P=0.023N*	P=0.369	P=0.279N	P=0.068N
LOGISTIC REGRESSION	P=0.030N*	P=0.065N	P=0.120N	P=0.022N*	P=0.024N*	P=0.339	P=0.295N	P=0.072N
COCH-ARM / FISHERS	P=0.033N*	P=0.062N	P=0.127N	P=0.021N*	P=0.022N*	P=0.284	P=0.322N	P=0.070N

C 09

Statistical Analysis of Primary Tumors in Mice(B6C3F1) - GLUTARALDEHYDE

Terminal Sacrifice at 105 weeks

Dose	Males CONTROL	Males 62.5 PPB	Males 125 PPB	Males 250 PPB	Females CONTROL	Females 62.5 PPB	Females 125 PPB	Females 250 PPB
Liver Hepatocellular Carcinoma, Hepatocellular Adenoma, or Hepatoblastoma								
TUMOR RATES								
OVERALL (a)	32/49 (65%)	24/50 (48%)	26/50 (52%)	21/49 (43%)	14/50 (28%)	17/48 (35%)	11/50 (22%)	7/50 (14%)
POLY-3 ADJUSTED (b)	68.6%	53.1%	55.2%	44.6%	30.9%	37.2%	23.5%	15.6%
TERMINAL (d)	19/31 (61%)	11/27 (41%)	21/40 (53%)	14/38 (37%)	10/34 (29%)	13/37 (35%)	9/35 (26%)	3/32 (9%)
FIRST INCIDENCE	498	517	492	558	657	551	524	401
STATISTICAL TESTS								
LIFE TABLE	P=0.006N**	P=0.275N	P=0.035N*	P=0.010N*	P=0.043N*	P=0.442	P=0.297N	P=0.101N
POLY 3	P=0.018N*	P=0.091N	P=0.128N	P=0.014N*	P=0.021N*	P=0.341	P=0.285N	P=0.067N
POLY 1.5	P=0.023N*	P=0.077N	P=0.128N	P=0.016N*	P=0.021N*	P=0.321	P=0.295N	P=0.066N
POLY 6	P=0.015N*	P=0.108N	P=0.127N	P=0.013N*	P=0.023N*	P=0.369	P=0.279N	P=0.068N
LOGISTIC REGRESSION	P=0.030N*	P=0.065N	P=0.120N	P=0.022N*	P=0.024N*	P=0.339	P=0.295N	P=0.072N
COCH-ARM / FISHERS	P=0.033N*	P=0.062N	P=0.127N	P=0.021N*	P=0.022N*	P=0.284	P=0.322N	P=0.070N

Dose	Males CONTROL	Males 62.5 PPB	Males 125 PPB	Males 250 PPB	Females CONTROL	Females 62.5 PPB	Females 125 PPB	Females 250 PPB
Lung Alveolar/Bronchiolar Adenoma								
TUMOR RATES								
OVERALL (a)	8/48 (17%)	10/50 (20%)	9/50 (18%)	7/50 (14%)	2/50 (4%)	4/49 (8%)	2/50 (4%)	2/50 (4%)
POLY-3 ADJUSTED (b)	19.0%	24.3%	19.7%	15.2%	4.5%	8.7%	4.3%	4.6%
TERMINAL (d)	7/31 (23%)	7/27 (26%)	6/40 (15%)	5/38 (13%)	2/34 (6%)	3/37 (8%)	0/35 (0%)	2/32 (6%)
FIRST INCIDENCE	573	517	516	628	735 (T)	463	702	735 (T)
STATISTICAL TESTS								
LIFE TABLE	P=0.189N	P=0.291	P=0.512N	P=0.348N	P=0.491N	P=0.372	P=0.673N	P=0.674
POLY 3	P=0.283N	P=0.371	P=0.574	P=0.427N	P=0.464N	P=0.350	P=0.682N	P=0.686
POLY 1.5	P=0.309N	P=0.396	P=0.554	P=0.443N	P=0.459N	P=0.342	P=0.685N	P=0.690
POLY 6	P=0.253N	P=0.345	P=0.606	P=0.407N	P=0.469N	P=0.361	P=0.678N	P=0.683
LOGISTIC REGRESSION	P=0.298N	P=0.364	P=0.555	P=0.431N	P=0.452N	P=0.313	P=0.680N	P=0.674
COCH-ARM / FISHERS	P=0.346N	P=0.435	P=0.537	P=0.465N	P=0.453N	P=0.329	P=0.691N	P=0.691N

C 10

Statistical Analysis of Primary Tumors in Mice(B6C3F1) GLUTARALDEHYDE

Terminal Sacrifice at 105 weeks

Dose	Males CONTROL	Males 62.5 PPB	Males 125 PPB	Males 250 PPB	Females CONTROL	Females 62.5 PPB	Females 125 PPB	Females 250 PPB
Lung Alveolar/Bronchiolar Carcinoma								
TUMOR RATES								
OVERALL (a)	10/48 (21%)	6/50 (12%)	7/50 (14%)	7/50 (14%)	1/50 (2%)	4/49 (8%)	5/50 (10%)	2/50 (4%)
POLY-3 ADJUSTED (b)	23.3%	14.3%	15.1%	15.3%	2.2%	8.9%	10.8%	4.6%
TERMINAL (d)	7/31 (23%)	3/27 (11%)	5/40 (13%)	5/38 (13%)	1/34 (3%)	3/37 (8%)	4/35 (11%)	2/32 (6%)
FIRST INCIDENCE	454	364	470	673	735 (T)	728	635	735 (T)
STATISTICAL TESTS								
LIFE TABLE	P=0.179N	P=0.288N	P=0.172N	P=0.184N	P=0.453	P=0.207	P=0.113	P=0.479
POLY 3	P=0.253N	P=0.216N	P=0.236N	P=0.245N	P=0.482	P=0.182	P=0.110	P=0.492
POLY 1.5	P=0.271N	P=0.201N	P=0.252N	P=0.255N	P=0.493	P=0.179	P=0.107	P=0.496
POLY 6	P=0.232N	P=0.236N	P=0.214N	P=0.234N	P=0.471	P=0.188	P=0.112	P=0.489
LOGISTIC REGRESSION	P=0.320N	P=0.155N	P=0.272N	P=0.252N	P=0.478	P=0.203	P=0.109	P=0.479
COCH-ARM / FISHERS	P=0.294N	P=0.182N	P=0.266N	P=0.266N	P=0.504	P=0.175	P=0.102	P=0.500

Dose	Males CONTROL	Males 62.5 PPB	Males 125 PPB	Males 250 PPB	Females CONTROL	Females 62.5 PPB	Females 125 PPB	Females 250 PPB
Lung Alveolar/Bronchiolar Carcinoma or Alveolar/Bronchiolar Adenoma								
TUMOR RATES								
OVERALL (a)	18/48 (38%)	15/50 (30%)	15/50 (30%)	14/50 (28%)	3/50 (6%)	8/49 (16%)	7/50 (14%)	4/50 (8%)
POLY-3 ADJUSTED (b)	41.5%	34.8%	31.8%	30.3%	6.7%	17.4%	15.0%	9.2%
TERMINAL (d)	14/31 (45%)	9/27 (33%)	10/40 (25%)	10/38 (26%)	3/34 (9%)	6/37 (16%)	4/35 (11%)	4/32 (13%)
FIRST INCIDENCE	454	364	470	628	735 (T)	463	635	735 (T)
STATISTICAL TESTS								
LIFE TABLE	P=0.082N	P=0.494N	P=0.139N	P=0.114N	P=0.533	P=0.129	P=0.179	P=0.466
POLY 3	P=0.165N	P=0.338N	P=0.230N	P=0.186N	P=0.549N	P=0.107	P=0.174	P=0.488
POLY 1.5	P=0.186N	P=0.315N	P=0.256N	P=0.199N	P=0.538N	P=0.102	P=0.169	P=0.494
POLY 6	P=0.140N	P=0.365N	P=0.194N	P=0.168N	P=0.558	P=0.114	P=0.181	P=0.482
LOGISTIC REGRESSION	P=0.209N	P=0.298N	P=0.284N	P=0.187N	P=0.541N	P=0.097	P=0.169	P=0.466
COCH-ARM / FISHERS	P=0.215N	P=0.284N	P=0.284N	P=0.216N	P=0.525N	P=0.094	P=0.159	P=0.500

Statistical Analysis of Primary Tumors in Mice(B6C3F1) - GLUTARALDEHYDE

Terminal Sacrifice at 105 weeks

Dose	Males CONTROL	Males 62.5 PPB	Males 125 PPB	Males 250 PPB	Females CONTROL	Females 62.5 PPB	Females 125 PPB	Females 250 PPB
Mammary Gland Carcinoma								
TUMOR RATES	#	#	#	#	#	#	#	#
OVERALL (a)	0/50 (0%)	0/50 (0%)	0/50 (0%)	0/50 (0%)	3/50 (6%)	0/50 (0%)	3/50 (6%	0/50 (0%)
POLY-3 ADJUSTED (b)	0.0%	0.0%	0.0%	0.0%	6.7%	0.0%	6.5%	0.0%
TERMINAL (d)	0/31 (0%)	0/27 (0%)	0/40 (0%)	0/38 (0%)	2/34 (6%)	0/37 (0%)	1/35 (3%)	0/32 (0%)
FIRST INCIDENCE	---	---	---	---	664	---	704	---
STATISTICAL TESTS								
LIFE TABLE	(e)	(e)	(e)	(e)	P=0.176N	P=0.111N	P=0.642N	P=0.133N
POLY 3	(e)	(e)	(e)	(e)	P=0.171N	P=0.116N	P=0.650N	P=0.124N
POLY 1.5	(e)	(e)	(e)	(e)	P=0.167N	P=0.117N	P=0.653N	P=0.121N
POLY 6	(e)	(e)	(e)	(e)	P=0.176N	P=0.114N	P=0.648N	P=0.126N
LOGISTIC REGRESSION	(e)	(e)	(e)	(e)	P=0.166N	P=0.118N	P=0.653N	P=0.123N
COCH-ARM / FISHERS	(e)	(e)	(e)	(e)	P=0.163N	P=0.121N	P=0.661N	P=0.121N

Dose	Males CONTROL	Males 62.5 PPB	Males 125 PPB	Males 250 PPB	Females CONTROL	Females 62.5 PPB	Females 125 PPB	Females 250 PPB
Ovary Cystadenoma								
TUMOR RATES								
OVERALL (a)					1/49 (2%)	1/47 (2%)	1/49 (2%)	2/50 (4%)
POLY-3 ADJUSTED (b)					2.3%	2.3%	2.2%	4.6%
TERMINAL (d)					1/34 (3%)	1/36 (3%)	1/35 (3%)	2/32 (6%)
FIRST INCIDENCE					735 (T)	735 (T)	735 (T)	735 (T)
STATISTICAL TESTS								
LIFE TABLE					P=0.324	P=0.749N	P=0.755N	P=0.479
POLY 3					P=0.352	P=0.760N	P=0.753N	P=0.499
POLY 1.5					P=0.357	P=0.758	P=0.755N	P=0.503
POLY 6					P=0.346	P=0.755N	P=0.752N	P=0.495
LOGISTIC REGRESSION					P=0.324	P=0.749N	P=0.755N	P=0.479
COCH-ARM / FISHERS					P=0.363	P=0.742	P=0.753N	P=0.508

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Statistical Analysis of Primary Tumors in Mice(B6C3F1) - GLUTARALDEHYDE

Terminal Sacrifice at 105 weeks

Dose	Males CONTROL	Males 62.5 PPB	Males 125 PPB	Males 250 PPB	Females CONTROL	Females 62.5 PPB	Females 125 PPB	Females 250 PPB
Ovary Luteoma								
TUMOR RATES								
OVERALL (a)					2/49 (4%)	0/47 (0%)	0/49 (0%)	0/50 (0%)
POLY-3 ADJUSTED (b)					4.6%	0.0%	0.0%	0.0%
TERMINAL (d)					1/34 (3%)	0/36 (0%)	0/35 (0%)	0/32 (0%)
FIRST INCIDENCE					702	---	---	---
STATISTICAL TESTS								
LIFE TABLE					P=0.118N	P=0.220N	P=0.231N	P=0.249N
POLY 3					P=0.113N	P=0.237N	P=0.231N	P=0.238N
POLY 1.5					P=0.113N	P=0.240N	P=0.232N	P=0.235N
POLY 6					P=0.114N	P=0.233N	P=0.229N	P=0.241N
LOGISTIC REGRESSION					P=0.113N	P=0.238N	P=0.231N	P=0.238N
COCH-ARM / FISHERS					P=0.113N	P=0.258N	P=0.247N	P=0.242N

Dose	Males CONTROL	Males 62.5 PPB	Males 125 PPB	Males 250 PPB	Females CONTROL	Females 62.5 PPB	Females 125 PPB	Females 250 PPB
Pituitary Gland: Pars Distalis or Unspecified Site Adenoma								
TUMOR RATES								
OVERALL (a)	1/46 (2%)	0/47 (0%)	0/48 (0%)	0/47 (0%)	20/49 (41%)	16/49 (33%)	20/49 (41%)	16/50 (32%)
POLY-3 ADJUSTED (b)	2.5%	0.0%	0.0%	0.0%	44.9%	35.4%	43.0%	35.2%
TERMINAL (d)	1/30 (3%)	0/27 (0%)	0/38 (0%)	0/37 (0%)	17/34 (50%)	15/37 (41%)	16/35 (46%)	11/32 (34%)
FIRST INCIDENCE	733 (T)	---	---	---	616	714	502	552
STATISTICAL TESTS								
LIFE TABLE	P=0.273N	P=0.521N	P=0.453N	P=0.458N	P=0.423N	P=0.168N	P=0.529N	P=0.343N
POLY 3	P=0.302N	P=0.509N	P=0.484N	P=0.481N	P=0.277N	P=0.240N	P=0.511N	P=0.233N
POLY 1.5	P=0.303N	P=0.504N	P=0.488N	P=0.486N	P=0.277N	P=0.247N	P=0.533N	P=0.234N
POLY 6	P=0.301N	P=0.514N	P=0.477N	P=0.474N	P=0.274N	P=0.229N	P=0.489N	P=0.226N
LOGISTIC REGRESSION	P=0.273N	(e)	(e)	(e)	P=0.326N	P=0.189N	P=0.537N	P=0.270N
COCH-ARM / FISHERS	P=0.302N	P=0.495N	P=0.489N	P=0.495N	P=0.281N	P=0.265N	P=0.581N	P=0.241N

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Dose	Males CONTROL	Males 62.5 PPB	Males 125 PPB	Males 250 PPB	Females CONTROL	Females 62.5 PPB	Females 125 PPB	Females 250 PPB
Pituitary Gland: Pars Distalis or Unspecified Site Carcinoma or Adenoma								
TUMOR RATES								
OVERALL (a)	1/46 (2%)	0/47 (0%)	0/48 (0%)	0/47 (0%)	21/49 (43%)	16/49 (33%)	20/49 (41%)	16/50 (32%)
POLY-3 ADJUSTED (b)	2.5%	0.0%	0.0%	0.0%	46.8%	35.4%	43.0%	35.2%
TERMINAL (d)	1/30 (3%)	0/27 (0%)	0/38 (0%)	0/37 (0%)	17/34 (50%)	15/37 (41%)	16/35 (46%)	11/32 (34%)
FIRST INCIDENCE	733 (T)	---	---	---	616	714	502	552
STATISTICAL TESTS								
LIFE TABLE	P=0.273N	P=0.521N	P=0.453N	P=0.458N	P=0.358N	P=0.124N	P=0.447N	P=0.277N
POLY 3	P=0.302N	P=0.509N	P=0.484N	P=0.481N	P=0.225N	P=0.185N	P=0.436N	P=0.179N
POLY 1.5	P=0.303N	P=0.504N	P=0.488N	P=0.486N	P=0.224N	P=0.189N	P=0.454N	P=0.177N
POLY 6	P=0.301N	P=0.514N	P=0.477N	P=0.474N	P=0.226N	P=0.179N	P=0.420N	P=0.179N
LOGISTIC REGRESSION	P=0.273N	(e)	(e)	(e)	P=0.262N	P=0.148N	P=0.456N	P=0.203N
COCH-ARM / FISHERS	P=0.302N	P=0.495N	P=0.489N	P=0.495N	P=0.225N	P=0.202N	P=0.500N	P=0.182N

Dose	Males CONTROL	Males 62.5 PPB	Males 125 PPB	Males 250 PPB	Females CONTROL	Females 62.5 PPB	Females 125 PPB	Females 250 PPB
Skin Fibroma, Fibrosarcoma, Sarcoma, Myxoma, Myxosarcoma, or Fibrous Histiocytoma								
TUMOR RATES	#	#	#	#	#	#	#	#
OVERALL (a)	1/50 (2%)	2/50 (4%)	0/50 (0%)	0/50 (0%)	3/50 (6%)	1/50 (2%)	3/50 (6%)	3/50 (6%)
POLY-3 ADJUSTED (b)	2.3%	4.9%	0.0%	0.0%	6.7%	2.2%	6.5%	6.8%
TERMINAL (d)	0/31 (0%)	0/27 (0%)	0/40 (0%)	0/38 (0%)	1/34 (3%)	1/37 (3%)	2/35 (6%)	2/32 (6%)
FIRST INCIDENCE	712	476	---	---	681	735 (T)	715	660
STATISTICAL TESTS								
LIFE TABLE	P=0.170N	P=0.464	P=0.458N	P=0.473N	P=0.424	P=0.278N	P=0.641N	P=0.640
POLY 3	P=0.181N	P=0.485	P=0.490N	P=0.488N	P=0.442	P=0.300N	P=0.652N	P=0.652
POLY 1.5	P=0.184N	P=0.491	P=0.495N	P=0.493N	P=0.448	P=0.301N	P=0.654N	P=0.657
POLY 6	P=0.178N	P=0.478	P=0.482N	P=0.482N	P=0.434	P=0.297N	P=0.652N	P=0.646
LOGISTIC REGRESSION	P=0.209N	P=0.547	P=0.491N	P=0.489N	P=0.445	P=0.300N	P=0.652N	P=0.658
COCH-ARM / FISHERS	P=0.188N	P=0.500	P=0.500N	P=0.500N	P=0.456	P=0.309N	P=0.661N	P=0.661N

C 14

Statistical Analysis of Primary Tumors in Mice(B6C3F1) - GLUTARALDEHYDE

Terminal Sacrifice at 105 weeks

Dose	Males CONTROL	Males 62.5 PPB	Males 125 PPB	Males 250 PPB	Females CONTROL	Females 62.5 PPB	Females 125 PPB	Females 250 PPB
Skin Fibrosarcoma								
TUMOR RATES	#	#	#	#	#	#	#	#
OVERALL (a)	1/50 (2%)	1/50 (2%)	0/50 (0%)	0/50 (0%)	1/50 (2%)	1/50 (2%)	3/50 (6%)	0/50 (0%)
POLY-3 ADJUSTED (b)	2.3%	2.5%	0.0%	0.0%	2.2%	2.2%	6.5%	0.0%
TERMINAL (d)	0/31 (0%)	0/27 (0%)	0/40 (0%)	0/38 (0%)	1/34 (3%)	1/37 (3%)	2/35 (6%)	0/32 (0%)
FIRST INCIDENCE	712	476	---	---	735 (T)	735 (T)	715	---
STATISTICAL TESTS								
LIFE TABLE	P=0.219N	P=0.740	P=0.458N	P=0.473N	P=0.432N	P=0.743N	P=0.322	P=0.512N
POLY 3	P=0.231N	P=0.749	P=0.490N	P=0.488N	P=0.423N	P=0.756N	P=0.316	P=0.504N
POLY 1.5	P=0.234N	P=0.754	P=0.495N	P=0.493N	P=0.417N	P=0.757N	P=0.313	P=0.502N
POLY 6	P=0.229N	P=0.744	P=0.482N	P=0.482N	P=0.430N	P=0.753N	P=0.319	P=0.507N
LOGISTIC REGRESSION	P=0.257N	P=0.729N	P=0.491N	P=0.489N	P=0.425N	P=0.743N	P=0.317	(e)
COCH-ARM / FISHERS	P=0.236N	P=0.753N	P=0.500N	P=0.500N	P=0.409N	P=0.753N	P=0.309	P=0.500N

Dose	Males CONTROL	Males 62.5 PPB	Males 125 PPB	Males 250 PPB	Females CONTROL	Females 62.5 PPB	Females 125 PPB	Females 250 PPB
Skin Fibrosarcoma, Sarcoma, Myxosarcoma, or Fibrous Histiocytoma								
TUMOR RATES	#	#	#	#	#	#	#	#
OVERALL (a)	1/50 (2%)	2/50 (4%)	0/50 (0%)	0/50 (0%)	3/50 (6%)	1/50 (2%)	3/50 (6%)	3/50 (6%)
POLY-3 ADJUSTED (b)	2.3%	4.9%	0.0%	0.0%	6.7%	2.2%	6.5%	6.8%
TERMINAL (d)	0/31 (0%)	0/27 (0%)	0/40 (0%)	0/38 (0%)	1/34 (3%)	1/37 (3%)	2/35 (6%)	2/32 (6%)
FIRST INCIDENCE	712	476	---	---	681	735 (T)	715	660
STATISTICAL TESTS								
LIFE TABLE	P=0.170N	P=0.464	P=0.458N	P=0.473N	P=0.424	P=0.278N	P=0.641N	P=0.640
POLY 3	P=0.181N	P=0.485	P=0.490N	P=0.488N	P=0.442	P=0.300N	P=0.652N	P=0.652
POLY 1.5	P=0.184N	P=0.491	P=0.495N	P=0.493N	P=0.448	P=0.301N	P=0.654N	P=0.657
POLY 6	P=0.178N	P=0.478	P=0.482N	P=0.482N	P=0.434	P=0.297N	P=0.652N	P=0.646
LOGISTIC REGRESSION	P=0.209N	P=0.547	P=0.491N	P=0.489N	P=0.445	P=0.300N	P=0.652N	P=0.658
COCH-ARM / FISHERS	P=0.188N	P=0.500	P=0.500N	P=0.500N	P=0.456	P=0.309N	P=0.661N	P=0.661N

D 01

Dose	Males CONTROL	Males 62.5 PPB	Males 125 PPB	Males 250 PPB	Females CONTROL	Females 62.5 PPB	Females 125 PPB	Females 250 PPB
Skin								
Sarcoma								
TUMOR RATES	#	#	#	#	#	#	#	#
OVERALL (a)	0/50 (0%)	1/50 (2%)	0/50 (0%)	0/50 (0%)	2/50 (4%)	0/50 (0%)	0/50 (0%)	3/50 (6%)
POLY-3 ADJUSTED (b)	0.0%	2.5%	0.0%	0.0%	4.4%	0.0%	0.0%	6.8%
TERMINAL (d)	0/31 (0%)	0/27 (0%)	0/40 (0%)	0/38 (0%)	0/34 (0%)	0/37 (0%)	0/35 (0%)	2/32 (6%)
FIRST INCIDENCE	---	647	---	---	681	---	---	660
STATISTICAL TESTS								
LIFE TABLE	P=0.544N	P=0.473	(c)	(e)	P=0.228	P=0.221N	P=0.232N	P=0.482
POLY 3	P=0.569N	P=0.488	(e)	(e)	P=0.240	P=0.234N	P=0.232N	P=0.489
POLY 1.5	P=0.568N	P=0.493	(e)	(e)	P=0.242	P=0.235N	P=0.233N	P=0.495
POLY 6	P=0.570N	P=0.483	(e)	(e)	P=0.237	P=0.232N	P=0.233N	P=0.484
LOGISTIC REGRESSION	P=0.585N	P=0.512	(e)	(e)	P=0.245	P=0.241N	P=0.243N	P=0.498
COCH-ARM / FISHERS	P=0.567N	P=0.500	(e)	(e)	P=0.245	P=0.247N	P=0.247N	P=0.500

Dose	Males CONTROL	Males 62.5 PPB	Males 125 PPB	Males 250 PPB	Females CONTROL	Females 62.5 PPB	Females 125 PPB	Females 250 PPB
Spleen								
Hemangiosarcoma								
TUMOR RATES								
OVERALL (a)	1/48 (2%)	1/48 (2%)	1/50 (2%)	1/48 (2%)	1/50 (2%)	3/48 (6%)	1/48 (2%)	1/49 (2%)
POLY-3 ADJUSTED (b)	2.4%	2.6%	2.2%	2.2%	2.2%	6.6%	2.2%	2.3%
TERMINAL (d)	0/31 (0%)	0/27 (0%)	1/40 (3%)	0/38 (0%)	1/34 (3%)	2/37 (5%)	0/35 (0%)	1/32 (3%)
FIRST INCIDENCE	516	685	753 (T)	663	735 (T)	672	715	735 (T)
STATISTICAL TESTS								
LIFE TABLE	P=0.589N	P=0.748	P=0.735N	P=0.750N	P=0.468N	P=0.336	P=0.748N	P=0.748
POLY 3	P=0.610N	P=0.743	P=0.747N	P=0.746N	P=0.452N	P=0.309	P=0.760	P=0.753
POLY 1.5	P=0.619N	P=0.750	P=0.750N	P=0.752N	P=0.450N	P=0.302	P=0.757	P=0.754
POLY 6	P=0.601N	P=0.736	P=0.740N	P=0.740N	P=0.453N	P=0.319	P=0.757N	P=0.751
LOGISTIC REGRESSION	P=0.591	P=0.727N	P=0.753N	P=0.633	P=0.459N	P=0.304	P=0.761N	P=0.748
COCH-ARM / FISHERS	P=0.633N	P=0.753N	P=0.742N	P=0.753N	P=0.449N	P=0.293	P=0.742	P=0.747

D 02

Statistical Analysis of Primary Tumors in Mice(B6C3F1) - GLUTARALDEHYDE

Terminal Sacrifice at 105 weeks

Dose	Males CONTROL	Males 62.5 PPB	Males 125 PPB	Males 250 PPB	Females CONTROL	Females 62.5 PPB	Females 125 PPB	Females 250 PPB
Stomach, Forestomach								
Squamous Cell Carcinoma or Papilloma Squamous								
TUMOR RATES	#	#	#	#	#	#	#	#
OVERALL (a)	0/50 (0%)	2/50 (4%)	0/50 (0%)	0/50 (0%)	1/50 (2%)	1/50 (2%)	2/50 (4%)	0/50 (0%)
POLY-3 ADJUSTED (b)	0.0%	5.0%	0.0%	0.0%	2.2%	2.2%	4.4%	0.0%
TERMINAL (d)	0/31 (0%)	1/27 (4%)	0/40 (0%)	0/38 (0%)	1/34 (3%)	1/37 (3%)	2/35 (6%)	0/32 (0%)
FIRST INCIDENCE	---	718	---	---	735 (T)	735 (T)	735 (T)	---
STATISTICAL TESTS								
LIFE TABLE	P=0.352N	P=0.214	(e)	(e)	P=0.388N	P=0.743N	P=0.510	P=0.512N
POLY 3	P=0.402N	P=0.222	(e)	(e)	P=0.377N	P=0.756N	P=0.510	P=0.504N
POLY 1.5	P=0.403N	P=0.228	(e)	(e)	P=0.372N	P=0.757N	P=0.507	P=0.502N
POLY 6	P=0.401N	P=0.216	(e)	(e)	P=0.382N	P=0.753N	P=0.512	P=0.507N
LOGISTIC REGRESSION	P=0.373N	P=0.211	(e)	(e)	P=0.388N	P=0.743N	P=0.510	(e)
COCH-ARM / FISHERS	P=0.405N	P=0.247	(e)	(e)	P=0.366N	P=0.753N	P=0.500	P=0.500N

Dose	Males CONTROL	Males 62.5 PPB	Males 125 PPB	Males 250 PPB	Females CONTROL	Females 62.5 PPB	Females 125 PPB	Females 250 PPB
Testes								
Adenoma								
TUMOR RATES								
OVERALL (a)	0/48 (0%)	1/50 (2%)	2/50 (4%)	2/50 (4%)				
POLY-3 ADJUSTED (b)	0.0%	2.5%	4.4%	4.4%				
TERMINAL (d)	0/31 (0%)	0/27 (0%)	2/40 (5%)	1/38 (3%)				
FIRST INCIDENCE	---	640	733 (T)	651				
STATISTICAL TESTS								
LIFE TABLE	P=0.216	P=0.484	P=0.296	P=0.273				
POLY 3	P=0.190	P=0.493	P=0.254	P=0.259				
POLY 1.5	P=0.180	P=0.499	P=0.250	P=0.254				
POLY 6	P=0.202	P=0.487	P=0.263	P=0.265				
LOGISTIC REGRESSION	P=0.171	P=0.528	P=0.296	P=0.243				
COCH-ARM / FISHERS	P=0.166	P=0.510	P=0.258	P=0.258				

D 03

Statistical Analysis of Primary Tumors in Mice(B6C3F1) GLUTARALDEHYDE

Terminal Sacrifice at 105 weeks

Dose	Males CONTROL	Males 62.5 PPB	Males 125 PPB	Males 250 PPB	Females CONTROL	Females 62.5 PPB	Females 125 PPB	Females 250 PPB
Thyroid Gland: Follicular Cell Adenoma								
TUMOR RATES								
OVERALL (a)	1/48 (2%)	3/49 (6%)	2/49 (4%)	1/49 (2%)	4/50 (8%)	0/48 (0%)	2/50 (4%)	3/50 (6%)
POLY-3 ADJUSTED (b)	2.4%	7.6%	4.5%	2.2%	9.0%	0.0%	4.4%	6.9%
TERMINAL (d)	1/31 (3%)	3/27 (11%)	2/39 (5%)	1/38 (3%)	4/34 (12%)	0/37 (0%)	2/35 (6%)	3/32 (9%)
FIRST INCIDENCE	733 (T)	733 (T)	733 (T)	733 (T)	735 (T)	---	735 (T)	735 (T)
STATISTICAL TESTS								
LIFE TABLE	P=0.366N	P=0.256	P=0.580	P=0.716N	P=0.531	P=0.053N	P=0.322N	P=0.534N
POLY 3	P=0.439N	P=0.284	P=0.519	P=0.744N	P=0.554	P=0.059N	P=0.324N	P=0.512N
POLY 1.5	P=0.451N	P=0.295	P=0.512	P=0.749N	P=0.563	P=0.062N	P=0.328N	P=0.506N
POLY 6	P=0.426N	P=0.272	P=0.531	P=0.738N	P=0.544	P=0.056N	P=0.321N	P=0.518N
LOGISTIC REGRESSION	P=0.366N	P=0.256	P=0.580	P=0.716N	P=0.531	(c)	P=0.322N	P=0.534N
COCH-ARM / FISHERS	P=0.468N	P=0.316	P=0.508	P=0.747N	P=0.575	P=0.064N	P=0.339N	P=0.500N

Dose	Males CONTROL	Males 62.5 PPB	Males 125 PPB	Males 250 PPB	Females CONTROL	Females 62.5 PPB	Females 125 PPB	Females 250 PPB
Thyroid Gland: Follicular Cell Carcinoma or Adenoma								
TUMOR RATES								
OVERALL (a)	2/48 (4%)	3/49 (6%)	2/49 (4%)	1/49 (2%)	4/50 (8%)	0/48 (0%)	2/50 (4%)	4/50 (8%)
POLY-3 ADJUSTED (b)	4.8%	7.6%	4.5%	2.2%	9.0%	0.0%	4.4%	9.2%
TERMINAL (d)	1/31 (3%)	3/27 (11%)	2/39 (5%)	1/38 (3%)	4/34 (12%)	0/37 (0%)	2/35 (6%)	4/32 (13%)
FIRST INCIDENCE	716	733 (T)	733 (T)	733 (T)	735 (T)	---	735 (T)	735 (T)
STATISTICAL TESTS								
LIFE TABLE	P=0.219N	P=0.438	P=0.610N	P=0.434N	P=0.328	P=0.053N	P=0.322N	P=0.612
POLY 3	P=0.280N	P=0.472	P=0.675N	P=0.475N	P=0.357	P=0.059N	P=0.324N	P=0.631
POLY 1.5	P=0.291N	P=0.487	P=0.681N	P=0.482N	P=0.366	P=0.062N	P=0.328N	P=0.637
POLY 6	P=0.268N	P=0.456	P=0.663N	P=0.465N	P=0.347	P=0.056N	P=0.321N	P=0.626
LOGISTIC REGRESSION	P=0.238N	P=0.442	P=0.650N	P=0.457N	P=0.328	(e)	P=0.322N	P=0.612
COCH-ARM / FISHERS	P=0.306N	P=0.510	P=0.684N	P=0.492N	P=0.378	P=0.064N	P=0.339N	P=0.643N

D 04

Statistical Analysis of Primary Tumors in Mice(B6C3F1) - GLUTARALDEHYDE

Terminal Sacrifice at 105 weeks

Dose	Males CONTROL	Males 62.5 PPB	Males 125 PPB	Males 250 PPB	Females CONTROL	Females 62.5 PPB	Females 125 PPB	Females 250 PPB
Uterus Carcinoma								
TUMOR RATES	#	#	#	#	#	#	#	#
OVERALL (a)					0/50 (0%)	1/50 (2%)	2/50 (4%)	2/50 (4%)
POLY-3 ADJUSTED (b)					0.0%	2.2%	4.3%	4.6%
TERMINAL (d)					0/34 (0%)	0/37 (0%)	1/35 (3%)	2/32 (6%)
FIRST INCIDENCE					---	714	570	735 (T)
STATISTICAL TESTS								
LIFE TABLE					P=0.144	P=0.522	P=0.248	P=0.225
POLY 3					P=0.152	P=0.505	P=0.246	P=0.232
POLY 1.5					P=0.156	P=0.503	P=0.244	P=0.235
POLY 6					P=0.148	P=0.508	P=0.249	P=0.230
LOGISTIC REGRESSION					P=0.162	P=0.503	P=0.194	P=0.225
COCH-ARM / FISHERS					P=0.160	P=0.500	P=0.247	P=0.247

Dose	Males CONTROL	Males 62.5 PPB	Males 125 PPB	Males 250 PPB	Females CONTROL	Females 62.5 PPB	Females 125 PPB	Females 250 PPB
Uterus Leiomyoma								
TUMOR RATES	#	#	#	#	#	#	#	#
OVERALL (a)					0/50 (0%)	0/50 (0%)	2/50 (4%)	1/50 (2%)
POLY-3 ADJUSTED (b)					0.0%	0.0%	4.4%	2.3%
TERMINAL (d)					0/34 (0%)	0/37 (0%)	2/35 (6%)	1/32 (3%)
FIRST INCIDENCE					---	---	735 (T)	735 (T)
STATISTICAL TESTS								
LIFE TABLE					P=0.224	(e)	P=0.245	P=0.488
POLY 3					P=0.233	(e)	P=0.243	P=0.496
POLY 1.5					P=0.239	(e)	P=0.242	P=0.498
POLY 6					P=0.227	(e)	P=0.245	P=0.493
LOGISTIC REGRESSION					(e)	(e)	P=0.245	P=0.438
COCH-ARM / FISHERS					P=0.246	(e)	P=0.247	P=0.500

D 05

Dose	Males CONTROL	Males 62.5 PPB	Males 125 PPB	Males 250 PPB	Females CONTROL	Females 62.5 PPB	Females 125 PPB	Females 250 PPB
Uterus Polyp Stromal								
TUMOR RATES	#	#	#	#	#	#	#	#
OVERALL (a)					3/50 (6%)	4/50 (8%)	3/50 (6%	0/50 (0%)
POLY-3 ADJUSTED (b)					6.7%	8.6%	6.5%	0.0%
TERMINAL (d)					3/34 (9%)	3/37 (8%)	3/35 (9	0/32 (0%)
FIRST INCIDENCE					735 (T)	527	735 (T)	---
STATISTICAL TESTS								
LIFE TABLE					P=0.087N	P=0.539	P=0.651N	P=0.131N
POLY 3					P=0.082N	P=0.520	P=0.649N	P=0.122N
POLY 1.5					P=0.079N	P=0.513	P=0.652N	P=0.121N
POLY 6					P=0.084N	P=0.531	P=0.647N	P=0.124N
LOGISTIC REGRESSION					P=0.079N	P=0.502	P=0.651N	(e)
COCH-ARM / FISHERS					P=0.077N	P=0.500	P=0.661N	P=0.121N

Dose	Males CONTROL	Males 62.5 PPB	Males 125 PPB	Males 250 PPB	Females CONTROL	Females 62.5 PPB	Females 125 PPB	Females 250 PPB
All Organs Hemangiosarcoma								
TUMOR RATES	#	#	#	#	#	#	#	#
OVERALL (a)	3/50 (6%)	1/50 (2%)	4/50 (8%)	2/50 (4%)	3/50 (6%)	6/50 (12%)	2/50 (4%)	1/50 (2%)
POLY-3 ADJUSTED (b)	6.9%	2.5%	8.9%	4.4%	6.7%	13.1%	4.3%	2.3%
TERMINAL (d)	1/31 (3%)	0/27 (0%)	4/40 (10%)	1/38 (3%)	2/34 (6%)	5/37 (14%)	0/35 (0%)	1/32 (3%)
FIRST INCIDENCE	516	685	733 (T)	663	701	672	687	735 (T)
STATISTICAL TESTS								
LIFE TABLE	P=0.438N	P=0.342N	P=0.612	P=0.440N	P=0.131N	P=0.288	P=0.481N	P=0.325N
POLY 3	P=0.495N	P=0.334N	P=0.519	P=0.476N	P=0.117N	P=0.254	P=0.486N	P=0.314N
POLY 1.5	P=0.515N	P=0.323N	P=0.508	P=0.486N	P=0.115N	P=0.251	P=0.490N	P=0.310N
POLY 6	P=0.471N	P=0.347N	P=0.538	P=0.464N	P=0.120N	P=0.261	P=0.482N	P=0.319N
LOGISTIC REGRESSION	P=0.528N	P=0.293N	P=0.507	P=0.525N	P=0.119N	P=0.258	P=0.491N	P=0.317N
COCH-ARM / FISHERS	P=0.544N	P=0.309N	P=0.500	P=0.500N	P=0.114N	P=0.243	P=0.500N	P=0.309N

D 06

Date: 07/13/98 EXPERIMENT: 05184 TEST: 06 GLUTARALDEHYDE

Statistical Analysis of Primary Tumors in Mice(B6C3F1)

Terminal Sacrifice at 105 weeks

Dose	Males CONTROL	Males 62.5 PPB	Males 125 PPB	Males 250 PPB	Females CONTROL	Females 62.5 PPB	Females 125 PPB	Females 250 PPB
All Organs Hemangiosarcoma or Hemangioma								
TUMOR RATES	#	#	#	#	#	#	#	#
OVERALL (a)	3/50 (6%)	1/50 (2%)	4/50 (8%)	2/50 (4%)	3/50 (6%)	7/50 (14%)	2/50 (4%)	1/50 (2%)
POLY-3 ADJUSTED (b)	6.9%	2.5%	8.9%	4.4%	6.7%	15.2%	4.3%	2.3%
TERMINAL (d)	1/31 (3%)	0/27 (0%)	4/40 (10%)	1/38 (3%)	2/34 (6%)	6/37 (16%)	0/35 (0%)	1/32 (3%)
FIRST INCIDENCE	516	685	733 (T)	663	701	672	687	735 (T)
STATISTICAL TESTS								
LIFE TABLE	P=0.438N	P=0.342N	P=0.612	P=0.440N	P=0.112N	P=0.197	P=0.481N	P=0.325N
POLY 3	P=0.495N	P=0.334N	P=0.519	P=0.476N	P=0.097N	P=0.167	P=0.486N	P=0.314N
POLY 1.5	P=0.515N	P=0.323N	P=0.508	P=0.486N	P=0.095N	P=0.164	P=0.490N	P=0.310N
POLY 6	P=0.471N	P=0.347N	P=0.538	P=0.464N	P=0.100N	P=0.173	P=0.482N	P=0.319N
LOGISTIC REGRESSION	P=0.528N	P=0.293N	P=0.507	P=0.525N	P=0.101N	P=0.172	P=0.491N	P=0.317N
COCH-ARM / FISHERS	P=0.544N	P=0.309N	P=0.500	P=0.500N	P=0.095N	P=0.159	P=0.500N	P=0.309N

Dose	Males CONTROL	Males 62.5 PPB	Males 125 PPB	Males 250 PPB	Females CONTROL	Females 62.5 PPB	Females 125 PPB	Females 250 PPB
All Organs Histiocytic Sarcoma								
TUMOR RATES	#	#	#	#	#	#	#	#
OVERALL (a)	3/50 (6%)	1/50 (2%)	0/50 (0%)	0/50 (0%)	1/50 (2%)	0/50 (0%)	1/50 (2%)	1/50 (2%)
POLY-3 ADJUSTED (b)	6.9%	2.5%	0.0%	0.0%	2.2%	0.0%	2.2%	2.3%
TERMINAL (d)	1/31 (3%)	0/27 (0%)	0/40 (0%)	0/38 (0%)	0/34 (0%)	0/37 (0%)	0/35 (0%)	1/32 (3%)
FIRST INCIDENCE	573	616	---	---	558	---	704	735 (T)
STATISTICAL TESTS								
LIFE TABLE	P=0.037N*	P=0.349N	P=0.102N	P=0.106N	P=0.525	P=0.504N	P=0.752N	P=0.749
POLY 3	P=0.039N*	P=0.332N	P=0.112N	P=0.110N	P=0.526	P=0.498N	P=0.757N	P=0.753
POLY 1.5	P=0.041N*	P=0.321N	P=0.116N	P=0.114N	P=0.532	P=0.498N	P=0.757N	P=0.756
POLY 6	P=0.037N*	P=0.344N	P=0.107N	P=0.107N	P=0.519	P=0.496N	P=0.756N	P=0.749
LOGISTIC REGRESSION	P=0.047N*	P=0.285N	P=0.124N	P=0.132N	P=0.539	P=0.584N	P=0.717	P=0.761
COCH-ARM / FISHERS	P=0.044N*	P=0.309N	P=0.121N	P=0.121N	P=0.539	P=0.500N	P=0.753N	P=0.753N

D 07

Statistical Analysis of Primary Tumors in Mice(B6C3F1)
Terminal Sacrifice at 105 weeks

Dose	Males CONTROL	Males 62.5 PPB	Males 125 PPB	Males 250 PPB	Females CONTROL	Females 62.5 PPB	Females 125 PPB	Females 250 PPB
All Organs Malignant Lymphoma: Histiocytic, Lymphocytic, Mixed, NOS, or Undifferentiated Cell Type								
TUMOR RATES	#	#	#	#	#	#	#	#
OVERALL (a)	4/50 [illegible]	5/50 (10%)	1/50 (2%)	5/50 (10%)	12/50 (24%)	12/50 (24%)	8/50 (16%)	12/50 (24%)
POLY-3 ADJUSTED (b)	9.3%	12.4%	2.2%	11.0%	26.7%	26.2%	17.2%	26.5%
TERMINAL (d)	3/31 (10%)	2/27 (7%)	1/40 (3%)	5/38 (13%)	9/34 (27%)	10/37 (27%)	5/35 (14%)	8/32 (25%)
FIRST INCIDENCE	670	640	733 (T)	733 (T)	686	707	672	542
STATISTICAL TESTS								
LIFE TABLE	P=0.475N	P=0.423	P=0.122N	P=0.616	P=0.511	P=0.493N	P=0.211N	P=0.535
POLY 3	P=0.558	P=0.462	P=0.165N	P=0.536	P=0.495N	P=0.570N	P=0.200N	P=0.586N
POLY 1.5	P=0.542	P=0.477	P=0.172N	P=0.521	P=0.495N	P=0.577N	P=0.208N	P=0.587N
POLY 6	P=0.576	P=0.447	P=0.154N	P=0.552	P=0.493N	P=0.557N	P=0.191N	P=0.581N
LOGISTIC REGRESSION	P=0.551N	P=0.450	P=0.155N	P=0.571	P=0.529N	P=0.534N	P=0.199N	P=0.576
COCH-ARM / FISHERS	P=0.518	P=0.500	P=0.181N	P=0.500	P=0.500N	P=0.592N	P=0.227N	P=0.592N

Dose	Males CONTROL	Males 62.5 PPB	Males 125 PPB	Males 250 PPB	Females CONTROL	Females 62.5 PPB	Females 125 PPB	Females 250 PPB
All Organs Benign Tumors								
TUMOR RATES	#	#	#	#	#	#	#	#
OVERALL (a)	27/50 (54%)	24/50 (48%)	29/50 (58%)	19/50 (38%)	32/50 (64%)	32/50 (64%)	30/50 (60%)	26/50 (52%)
POLY-3 ADJUSTED (b)	60.3%	56.2%	62.4%	40.8%	70.5%	67.7%	62.1%	56.7%
TERMINAL (d)	21/31 (68%)	17/27 (63%)	25/40 (63%)	15/38 (40%)	27/34 (79%)	28/37 (76%)	23/35 (66%)	20/32 (63%)
FIRST INCIDENCE	516	517	492	628	616	463	502	552
STATISTICAL TESTS								
LIFE TABLE	P=0.006N**	P=0.560	P=0.258N	P=0.017N*	P=0.222N	P=0.361N	P=0.347N	P=0.248N
POLY 3	P=0.033N*	P=0.430N	P=0.504	P=0.045N*	P=0.079N	P=0.476N	P=0.256N	P=0.116N
POLY 1.5	P=0.049N*	P=0.396N	P=0.460	P=0.057N	P=0.087N	P=0.512N	P=0.311N	P=0.129N
POLY 6	P=0.020N*	P=0.463N	P=0.571	P=0.033N*	P=0.067N	P=0.431N	P=0.200N	P=0.097N
LOGISTIC REGRESSION	P=0.032N*	P=0.472N	P=0.507	P=0.042N*	P=0.124N	P=0.523N	P=0.342N	P=0.186N
COCH-ARM / FISHERS	P=0.086N	P=0.345N	P=0.420	P=0.080N	P=0.102N	P=0.582N	P=0.418N	P=0.156N

D 08

Statistical Analysis of Primary Tumors in Mice(B6C3F1)
Terminal Sacrifice at 105 weeks

Dose	Males CONTROL	Males 62.5 PPB	Males 125 PPB	Males 250 PPB	Females CONTROL	Females 62.5 PPB	Females 125 PPB	Females 250 PPB
All Organs Malignant Tumors								
TUMOR RATES	#	#	#	#	#	#	#	#
OVERALL (a)	33/50 (66%)	28/50 (56%)	23/50 (46%)	22/50 (44%)	24/50 (48%)	27/50 (54%)	24/50 (48%)	25/50 (50%)
POLY-3 ADJUSTED (b)	67.2%	58.2%	47.5%	46.1%	51.6%	56.6%	50.3%	53.8%
TERMINAL (d)	15/31 (48%)	8/27 (30%)	17/40 (43%)	14/38 (37%)	15/34 (44%)	18/37 (49%)	15/35 (43%)	17/32 (53%)
FIRST INCIDENCE	454	364	470	558	558	492	570	401
STATISTICAL TESTS								
LIFE TABLE	P=0.006N**	P=0.457N	P=0.016N*	P=0.016N*	P=0.409	P=0.507	P=0.510N	P=0.420
POLY 3	P=0.018N*	P=0.208N	P=0.037N*	P=0.027N*	P=0.526	P=0.391	P=0.531N	P=0.498
POLY 1.5	P=0.017N*	P=0.[illegible]N	P=0.[illegible]N*	P=0.024N*	P=0.538N	P=0.378	P=0.543N	P=0.508
POLY 6	P=0.021N*	P=0.256N	P=0.040N*	P=0.032N*	P=0.501	P=0.408	P=0.524N	P=0.479
LOGISTIC REGRESSION	P=0.030N*	P=0.130N	P=0.044N*	P=0.030N*	P=0.5[illegible]	P=0.367	P=0.544N	P=0.486
COCH-ARM / FISHERS	P=0.016N*	P=0.206N	P=0.035N*	P=0.022N*	P=0.5[illegible]	P=0.345	P=0.579N	P=0.500

Dose	Males CONTROL	Males 62.5 PPB	Males 125 PPB	Males 250 PPB	Females CONTROL	Females 62.5 PPB	Females 125 PPB	Females 250 PPB
All Organs Malignant and Benign Tumors								
TUMOR RATES	#	#	#	#	#	#	#	#
OVERALL (a)	44/50 (88%)	42/50 (84%)	39/50 (78%)	33/50 (66%)	41/50 (82%)	45/50 (90%)	41/50 (82%)	40/50 (80%)
POLY-3 ADJUSTED (b)	89.6%	86.9%	80.4%	68.6%	87.4%	91.6%	82.6%	82.8%
TERMINAL (d)	26/31 (84%)	21/27 (78%)	32/40 (80%)	24/38 (63%)	31/34 (91%)	34/37 (92%)	27/35 (77%)	27/32 (84%)
FIRST INCIDENCE	454	364	470	558	558	463	502	401
STATISTICAL TESTS								
LIFE TABLE	P<0.001N**	P=0.388	P=0.019N*	P=0.005N**	P=0.489	P=0.536	P=0.472N	P=0.496
POLY 3	P=0.002N**	P=0.459N	P=0.159N	P=0.009N**	P=0.185N	P=0.356	P=0.348N	P=0.362N
POLY 1.5	P=0.002N**	P=0.431N	P=0.151N	P=0.008N**	P=0.215N	P=0.296	P=0.435N	P=0.405N
POLY 6	P=0.003N**	P=0.480N	P=0.175N	P=0.011N*	P=0.156N	P=0.424	P=0.264N	P=0.318N
LOGISTIC REGRESSION	P=0.002N**	P=0.412N	P=0.133N	P=0.007N**	P=0.316N	P=0.219	P=0.516N	P=0.544N
COCH-ARM / FISHERS	P=0.003N**	P=0.387N	P=0.143N	P=0.008N**	P=0.292N	P=0.194	P=0.602N	P=0.500N

(a) Number of tumor-bearing animals / number of animals examined at site.
(b) Poly-3 adjusted lifetime tumor incidence.
(d) Observed incidence at terminal kill.
(f) Beneath the control incidence are the P-values associated with the trend test. Beneath the dosed group incidence are the P-values corresponding to pairwise comparisons between the controls and that dosed group. The life table analysis regards tumors in animals dying prior to terminal kill as

D 09

being (directly or indirectly) the cause of death.
Logistic regression is an alternative
method for analyzing the incidence of non-fatal tumors. The Cochran-Armitage
and Fishers exact tests compare directly the overall incidence rates
For all tests a negative trend is indicated by N
(e) Value of Statistic cannot be computed.
(I) Interim sacrifice
(T) Terminal sacrifice
Tumor rates based on number of animals necropsied.
* To the right of any statistical result, indicates significance at (P<=0.05).
** To the right of any statistical result, indicates significance at (P<=0.01).

D 10

INCIDENCE RATES OF NONNEOPLASTIC LESIONS BY ANATOMIC SITE (a)
GLUTARALDEHYDE

CORE STUDY

Facility: Battelle Northwest

Chemical CAS #: 111-30-8

Lock Date: 07/28/97

Cage Range: All

Reasons For Removal: All

Removal Date Range: All

Treatment Groups: Include All

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

D 11

INCIDENCE RATES OF NONNEOPLASTIC LESIONS BY ANATOMIC SITE (a)
GLUTARALDEHYDE

FISCHER 344 RATS FEMALE	CONTROL	250 PPB	500 PPB	750 PPB
DISPOSITION SUMMARY				
Animals Initially In Study	50	50	50	50
Early Deaths				
Moribund Sacrifice	22	17	32	34
Natural Death	2	2	3	2
Survivors				
Terminal Sacrifice	26	31	15	14
Animals Examined Microscopically	50	50	50	50
ALIMENTARY SYSTEM				
Intestine Large, Colon	(48)	(49)	(49)	(49)
Diverticulum				1 (2%)
Parasite Metazoan	2 (4%)	4 (8%)	1 (2%)	1 (2%)
Intestine Large, Rectum	(48)	(50)	(49)	(49)
Parasite Metazoan	3 (6%)	4 (8%)	4 (8%)	
Intestine Large, Cecum	(48)	(48)	(49)	(49)
Parasite Metazoan	5 (10%)	4 (8%)	3 (6%)	3 (6%)
Liver	(50)	(50)	(50)	(50)
Angiectasis	1 (2%)		2 (4%)	
Basophilic Focus	1 (2%)	2 (4%)	1 (2%)	1 (2%)
Basophilic Focus, Multiple	1 (2%)		2 (4%)	2 (4%)
Clear Cell Focus	6 (12%)	4 (8%)	4 (8%)	3 (6%)
Clear Cell Focus, Multiple		3 (6%)	2 (4%)	1 (2%)
Hematopoietic Cell Proliferation	1 (2%)		1 (2%)	
Hepatodiaphragmatic Nodule	3 (6%)	6 (12%)	3 (6%)	3 (6%)
Inflammation, Granulomatous		1 (2%)		
Necrosis	2 (4%)			
Vacuolization Cytoplasmic	5 (10%)	1 (2%)		3 (6%)
Mesentery	(10)	(9)	(7)	(3)
Inflammation, Granulomatous			1 (14%)	
Fat, Necrosis	9 (90%)	9 (100%)	7 (100%)	3 (100%)
Pancreas	(50)	(50)	(50)	(50)
Acinus, Atrophy	3 (6%)	3 (6%)	3 (6%)	4 (8%)
Salivary Glands	(50)	(50)	(50)	(50)
Atrophy	1 (2%)			
Stomach, Forestomach	(49)	(50)	(50)	(50)
Erosion				1 (2%)
Hyperkeratosis			1 (2%)	
Inflammation, Suppurative	3 (6%)	4 (8%)	2 (4%)	4 (8%)
Ulcer	3 (6%)	2 (4%)	2 (4%)	2 (4%)
Epithelium, Hyperplasia	3 (6%)	4 (8%)	3 (6%)	5 (10%)
Stomach, Glandular	(49)	(49)	(50)	(50)
Erosion		1 (2%)	1 (2%)	
Inflammation, Suppurative		1 (2%)	2 (4%)	

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

D 12

INCIDENCE RATES OF NONNEOPLASTIC LESIONS BY ANATOMIC SITE (a)
GLUTARALDEHYDE

FISCHER 344 RATS FEMALE	CONTROL	250 PPB	500 PPB	750 PPB
ALIMENTARY SYSTEM - CONT				
Tongue	(1)	(1)		
Hyperkeratosis		1 (100%)		
Hyperplasia		1 (100%)		
Tooth	(1)	(2)		(3)
Degeneration	1 (100%)	2 (100%)		2 (67%)
Inflammation, Suppurative		1 (50%)		
CARDIOVASCULAR SYSTEM				
Blood Vessel	(50)	(50)	(50)	(49)
Inflammation	1 (2%)	1 (2%)		1 (2%)
Mineralization			1 (2%)	
Thrombosis		1 (2%)		
Heart	(50)	(50)	(50)	(50)
Atrium, Thrombosis	1 (2%)	1 (2%)		
Myocardium, Fibrosis	3 (6%)	1 (2%)	4 (8%)	1 (2%)
ENDOCRINE SYSTEM				
Adrenal Cortex	(50)	(50)	(50)	(49)
Atrophy		1 (2%)		
Fibrosis	1 (2%)			
Hematopoietic Cell Proliferation	1 (2%)		1 (2%)	
Hemorrhage			1 (2%)	1 (2%)
Vacuolization Cytoplasmic	7 (14%)	6 (12%)	11 (22%)	9 (18%)
Adrenal Medulla	(50)	(50)	(50)	(49)
Hyperplasia	2 (4%)	1 (2%)	2 (4%)	1 (2%)
Islets, Pancreatic	(49)	(50)	(50)	(50)
Hyperplasia	1 (2%)			
Parathyroid Gland	(42)	(39)	(44)	(3[illegible])
Hyperplasia			2 (5%)	
Pituitary Gland	(50)	(50)	(50)	(49)
Cyst	3 (6%)	1 (2%)	3 (6%)	2 (4%)
Hemorrhage	1 (2%)		1 (2%)	1 (2%)
Pars Distalis, Hyperplasia	3 (6%)	4 (8%)	4 (8%)	7 (14%)
Thyroid Gland	(50)	(50)	(49)	(49)
C-Cell, Hyperplasia	3 (6%)	4 (8%)	4 (8%)	4 (8%)
GENERAL BODY SYSTEM				
None				

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

D 13

INCIDENCE RATES OF NONNEOPLASTIC LESIONS BY ANATOMIC SITE (a)
GLUTARALDEHYDE

FISCHER 344 RATS FEMALE	CONTROL	250 PPB	500 PPB	750 PPB
GENITAL SYSTEM				
Clitoral Gland	(49)	(50)	(50)	(50)
Cyst	1 (2%)			
Hyperplasia	4 (8%)	7 (14%)		2 (4%)
Inflammation, Suppurative	1 (2%)	1 (2%)		1 (2%)
Ovary	(50)	(50)	(50)	(49)
Cyst	2 (4%)	3 (6%)	7 (14%)	3 (6%)
Cyst, Multiple				1 (2%)
Bilateral, Cyst	1 (2%)			
Oviduct			(1)	
Cyst			1 (100%)	
Uterus	(50)	(50)	(50)	(50)
Cyst				1 (2%)
Hemorrhage	1 (2%)		1 (2%)	
Hydrometra			1 (2%)	
Cervix, Myometrium, Hypertrophy		1 (2%)		
Vagina	(1)			
Inflammation	1 (100%)			
HEMATOPOIETIC SYSTEM				
Bone Marrow	(50)	(50)	(50)	(50)
Fibrosis			2 (4%)	
Lymph Node, Bronchial	(46)	(46)	(48)	(42)
Fibrosis			1 (2%)	
Lymph Node, Mesenteric	(50)	(50)	(50)	(50)
Fibrosis				1 (2%)
Infiltration Cellular, Histiocyte	1 (2%)			
Spleen	(50)	(50)	(50)	(50)
Accessory Spleen			1 (2%)	1 (2%)
Fibrosis	5 (10%)	7 (14%)	8 (16%)	4 (8%)
Hematopoietic Cell Proliferation	2 (4%)	1 (2%)	1 (2%)	
Hemorrhage	1 (2%)		2 (4%)	1 (2%)
Thymus	(50)	(50)	(50)	(49)
Cyst			1 (2%)	
INTEGUMENTARY SYSTEM				
Mammary Gland	(50)	(50)	(50)	(50)
Galactocele	2 (4%)	2 (4%)		
Hyperplasia				1 (2%)
Metaplasia, Squamous	1 (2%)			
Epithelium, Hyperplasia			2 (4%)	
Skin	(50)	(50)	(50)	(50)
Cyst Epithelial Inclusion	1 (2%)	3 (6%)		

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

D 14

INCIDENCE RATES OF NONNEOPLASTIC LESIONS BY ANATOMIC SITE (a)
GLUTARALDEHYDE

FISCHER 344 RATS FEMALE	CONTROL	250 PPB	500 PPB	750 PPB
INTEGUMENTARY SYSTEM - CONT				
Hyperkeratosis	2 (4%)			1 (2%)
Inflammation, Suppurative			1 (2%)	
Ulcer			1 (2%)	
Hair Follicle, Inflammation, Chronic				
Subcutaneous Tissue, Inflammation	1 (2%)			
MUSCULOSKELETAL SYSTEM				
Bone	(50)	(50)	(50)	(50)
Osteopetrosis			1 (2%)	
Sternum, Cyst				1 (2%)
NERVOUS SYSTEM				
Brain	(49)	(50)	(50)	(50)
Hemorrhage	3 (6%)	1 (2%)	7 (14%)	3 (6%)
Hydrocephalus	10 (20%)	10 (20%)	7 (14%)	2 (4%)
Spinal Cord	(1)	(2)		(4)
Demyelination		2 (100%)		2 (50%)
Neuron, Degeneration	1 (100%)			
RESPIRATORY SYSTEM				
Larynx	(49)	(50)	(50)	(49)
Foreign Body	4 (8%)	3 (6%)	2 (4%)	6 (12%)
Epiglottis, Inflammation, Suppurative	1 (2%)		2 (4%)	5 (10%)
Epiglottis, Metaplasia, Squamous				1 (2%)
Glands, Inflammation	20 (41%)	16 (32%)	18 (36%)	19 (39%)
Squamous Epithelium, Hyperplasia	5 (10%)	1 (2%)	1 (2%)	
Lung	(50)	(50)	(50)	(49)
Hemorrhage	1 (2%)			
Inflammation, Chronic	1 (2%)			1 (2%)
Necrosis	1 (2%)			
Alveolar Epithelium, Hyperplasia	7 (14%)	4 (8%)	2 (4%)	4 (8%)
Alveolus, Emphysema				2 (4%)
Alveolus, Hemorrhage	1 (2%)		1 (2%)	
Alveolus, Infiltration Cellular, Histiocyte	29 (58%)	24 (48%)	22 (44%)	35 (71%)
Alveolus, Inflammation, Suppurative	2 (4%)	1 (2%)		1 (2%)
Interstitium, Fibrosis	9 (18%)	13 (26%)	17 (34%)	24 (49%)
Venule, Thrombosis		1 (2%)		
Nose	(50)	(50)	(50)	(49)
Concretion	2 (4%)			
Foreign Body	5 (10%)	3 (6%)	2 (4%)	
Goblet Cell, Respiratory Epithelium,				

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

E 01

INCIDENCE RATES OF NONNEOPLASTIC LESIONS BY ANATOMIC SITE (a)
GLUTARALDEHYDE

FISCHER 344 RATS FEMALE	CONTROL	250 PPB	500 PPB	750 PPB
RESPIRATORY SYSTEM - CONT				
Hyperplasia	1 (2%)	3 (6%)	5 (10%)	8 (16%)
Nasolacrimal Duct, Inflammation	4 (8%)	2 (4%)	2 (4%)	1 (2%)
Olfactory Epithelium, Atrophy				2 (4%)
Olfactory Epithelium, Degeneration, Hyaline	4 (8%)	5 (10%)	12 (24%)	15 (31%)
Olfactory Epithelium, Inflammation			1 (2%)	
Respiratory Epithelium, Hyperplasia	1 (2%)	6 (12%)	15 (30%)	29 (59%)
Respiratory Epithelium, Inflammation	5 (10%)	9 (18%)	26 (52%)	42 (86%)
Respiratory Epithelium, Metaplasia, Squamous	1 (2%)	1 (2%)	11 (22%)	16 (33%)
Septum, Respiratory Epithelium, Ulcer			1 (2%)	
Squamous Epithelium, Hyperplasia	3 (6%)	15 (30%)	29 (58%)	45 (92%)
Squamous Epithelium, Inflammation	6 (12%)	26 (52%)	42 (84%)	48 (98%)
Pleura		(2)		
Hyperplasia, Focal		1 (50%)		
Inflammation, Chronic		1 (50%)		
Trachea	(49)	(50)	(50)	(50)
Inflammation, Suppurative				1 (2%)
SPECIAL SENSES SYSTEM				
Eye	(2)	(2)	(3)	
Atrophy		1 (50%)		
Cataract	1 (50%)	1 (50%)	3 (100%)	
Degeneration	1 (50%)			
URINARY SYSTEM				
Kidney	(49)	(50)	(50)	(50)
Cyst				1 (2%)
Mineralization	1 (2%)			
Nephropathy, Chronic	38 (78%)	42 (84%)	37 (74%)	33 (66%)
Pelvis, Dilatation	1 (2%)			

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

E 02

INCIDENCE RATES OF NONNEOPLASTIC LESIONS BY ANATOMIC SITE (a)
GLUTARALDEHYDE

FISCHER 344 RATS MALE	CONTROL	250 PPB	500 PPB	750 PPB
DISPOSITION SUMMARY				
Animals Initially In Study	50	50	50	50
Early Deaths				
Moribund Sacrifice	33	30	32	37
Natural Death	5	6	9	7
Survivors				
Terminal Sacrifice	11	14	9	6
Natural Death	1			
Animals Examined Microscopically	50	50	50	50
ALIMENTARY SYSTEM				
Esophagus	(50)	(50)	(50)	(50)
Foreign Body	1 (2%)			
Ulcer	1 (2%)			
Intestine Large, Colon	(49)	(48)	(48)	(45)
Mineralization			1 (2%)	
Parasite Metazoan	2 (4%)	3 (6%)		
Muscularis, Mineralization	1 (2%)			
Intestine Large, Rectum	(50)	(48)	(49)	(46)
Diverticulum				1 (2%)
Parasite Metazoan		4 (8%)	2 (4%)	3 (7%)
Intestine Large, Cecum	(47)	(46)	(48)	(45)
Parasite Metazoan	3 (6%)	1 (2%)	9 (19%)	2 (4%)
Intestine Small, Jejunum	(47)	(46)	(43)	(44)
Necrosis				1 (2%)
Intestine Small, Ileum	(46)	(46)	(44)	(44)
Inflammation, Focal, Suppurative	1 (2%)			
Liver	(50)	(50)	(50)	(50)
Angiectasis	2 (4%)	2 (4%)	1 (2%)	3 (6%)
Basophilic Focus	1 (2%)	1 (2%)		
Clear Cell Focus		4 (8%)	1 (2%)	1 (2%)
Clear Cell Focus, Multiple			2 (4%)	
Hepatodiaphragmatic Nodule	1 (2%)	2 (4%)		
Inflammation, Suppurative	1 (2%)			
Necrosis	1 (2%)	2 (4%)	1 (2%)	
Thrombosis	1 (2%)			
Vacuolization Cytoplasmic	7 (14%)	1 (2%)	2 (4%)	1 (2%)
Bile Duct, Hyperplasia	3 (6%)			2 (4%)
Hepatocyte, Degeneration, Focal	3 (6%)			1 (2%)
Hepatocyte, Hyperplasia	1 (2%)			
Mesentery	(10)	(7)	(6)	(7)
Hemorrhage			1 (17%)	
Thrombosis			1 (17%)	
Fat, Necrosis	8 (80%)	6 (86%)	5 (83%)	6 (86%)

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

E 03

INCIDENCE RATES OF NONNEOPLASTIC LESIONS BY ANATOMIC SITE (a)
GLUTARALDEHYDE

FISCHER 344 RATS MALE	CONTROL	250 PPB	500 PPB	750 PPB
ALIMENTARY SYSTEM - CONT				
Pancreas	(50)	(49)	(50)	(48)
Angiectasis	1 (2%)			
Hemorrhage	1 (2%)			
Acinus, Atrophy	9 (18%)	3 (6%)	2 (4%)	5 (10%)
Stomach, Forestomach	(49)	(49)	(50)	(48)
Hemorrhage				1 (2%)
Inflammation, Suppurative	8 (16%)	3 (6%)	3 (6%)	5 (10%)
Mineralization	4 (8%)	1 (2%)	1 (2%)	
Ulcer	5 (10%)	7 (14%)	4 (8%)	2 (4%)
Epithelium, Hyperplasia	11 (22%)	2 (4%)	2 (4%)	4 (8%)
Stomach, Glandular	(49)	(49)	(50)	(48)
Erosion	1 (2%)		1 (2%)	2 (4%)
Inflammation, Suppurative		1 (2%)	1 (2%)	
Ulcer		2 (4%)		
Epithelium, Mineralization	9 (18%)	5 (10%)	3 (6%)	4 (8%)
Epithelium, Necrosis			1 (2%)	
Tongue	(1)	(2)		(1)
Hyperkeratosis		1 (50%)		
Tooth	(1)			(8)
Degeneration	1 (100%)			8 (100%)
Inflammation				1 (13%)
CARDIOVASCULAR SYSTEM				
Blood Vessel	(45)	(50)	(50)	(50)
Inflammation	1 (2%)	2 (4%)		
Mineralization	7 (16%)	3 (6%)	1 (2%)	4 (8%)
Heart	(50)	(50)	(50)	(50)
Mineralization	6 (12%)	2 (4%)	1 (2%)	4 (8%)
Atrium, Thrombosis	3 (6%)	2 (4%)	1 (2%)	
Myocardium, Fibrosis	12 (24%)	10 (20%)	8 (16%)	7 (14%)
Myocardium, Ventricle, Hypertrophy			1 (2%)	
Valve, Thrombosis	1 (2%)			
ENDOCRINE SYSTEM				
Adrenal Cortex	(50)	(50)	(50)	(49)
Accessory Adrenal Cortical Nodule			1 (2%)	
Hemorrhage	1 (2%)			1 (2%)
Hyperplasia				1 (2%)
Vacuolization Cytoplasmic	9 (18%)	6 (12%)	8 (16%)	2 (4%)
Adrenal Medulla	(50)	(50)	(50)	(49)
Hyperplasia	12 (24%)	9 (18%)	6 (12%)	2 (4%)
Bilateral, Hyperplasia	1 (2%)			
Islets, Pancreatic	(50)	(49)	(50)	(48)

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

E 04

INCIDENCE RATES OF NONNEOPLASTIC LESIONS BY ANATOMIC SITE (a)
GLUTARALDEHYDE

FISCHER 344 RATS MALE	CONTROL	250 PPB	500 PPB	750 PPB
ENDOCRINE SYSTEM - CONT				
Hyperplasia	1 (2%)		1 (2%)	
Parathyroid Gland	(42)	(38)	(45)	(41)
Hyperplasia	7 (17%)	7 (18%)	1 (2%)	3 (7%)
Pituitary Gland	(50)	(49)	(50)	(50)
Cyst	2 (4%)	2 (4%)	1 (2%)	1 (2%)
Hemorrhage	1 (2%)		3 (6%)	3 (6%)
Pars Distalis, Hyperplasia	6 (12%)	5 (10%)	4 (8%)	1 (2%)
Thyroid Gland	(50)	(50)	(50)	(50)
C-Cell, Hyperplasia	6 (12%)	2 (4%)	8 (16%)	5 (10%)
Follicular Cell, Hyperplasia			1 (2%)	
GENERAL BODY SYSTEM				
None				
GENITAL SYSTEM				
Epididymis	(50)	(50)	(50)	(50)
Inflammation		1 (2%)		
Spermatocele	1 (2%)			
Preputial Gland	(50)	(50)	(50)	(50)
Cyst			1 (2%)	
Hyperplasia		1 (2%)	2 (4%)	
Inflammation, Suppurative	5 (10%)	2 (4%)	3 (6%)	1 (2%)
Prostate	(50)	(50)	(50)	(50)
Hyperplasia		1 (2%)	2 (4%)	
Inflammation	9 (18%)	4 (8%)	5 (10%)	3 (6%)
Seminal Vesicle	(50)	(50)	(50)	(49)
Inflammation, Chronic				1 (2%)
Inflammation, Suppurative	3 (6%)	1 (2%)		
Testes	(50)	(50)	(50)	(50)
Arteriole, Inflammation	1 (2%)			
Bilateral, Interstitial Cell, Hyperplasia	4 (8%)		1 (2%)	4 (8%)
Germinal Epithelium, Atrophy	12 (24%)	9 (18%)	13 (26%)	6 (12%)
HEMATOPOIETIC SYSTEM				
Bone Marrow	(50)	(50)	(50)	(50)
Fibrosis	7 (14%)	5 (10%)	2 (4%)	3 (6%)
Lymph Node, Bronchial	(39)	(42)	(40)	(42)
Fibrosis	1 (3%)	1 (2%)		
Lymph Node, Mandibular	(47)	(48)	(49)	(49)
Hyperplasia			1 (2%)	
Lymph Node, Mediastinal	(47)	(50)	(50)	(50)

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

E 05

INCIDENCE RATES OF NONNEOPLASTIC LESIONS BY ANATOMIC SITE (a)
GLUTARALDEHYDE

FISCHER 344 RATS MALE	CONTROL	250 PPB	500 PPB	750 PPB
HEMATOPOIETIC SYSTEM - CONT				
Hemorrhage	1 (2%)			
Spleen	(50)	(50)	(50)	(50)
Accessory Spleen				1 (2%)
Fibrosis	15 (30%)	15 (30%)	16 (32%)	9 (18%)
Hematopoietic Cell Proliferation		1 (2%)		
Hemorrhage		1 (2%)	1 (2%)	
Infarct		3 (6%)		
INTEGUMENTARY SYSTEM				
Mammary Gland	(49)	(50)	(50)	(50)
Galactocele	2 (4%)	1 (2%)	5 (10%)	
Skin	(50)	(50)	(50)	(50)
Cyst Epithelial Inclusion	2 (4%)	2 (4%)		
Hyperkeratosis				1 (2%)
Hyperplasia	1 (2%)			1 (2%)
Ulcer		1 (2%)		1 (2%)
MUSCULOSKELETAL SYSTEM				
Bone	(50)	(50)	(50)	(50)
Tibia, Fracture	1 (2%)			
NERVOUS SYSTEM				
Brain	(50)	(50)	(50)	(50)
Hemorrhage	3 (6%)	4 (8%)	10 (20%)	1 (2%)
Hydrocephalus	5 (10%)	7 (14%)	10 (20%)	5 (10%)
Mineralization			1 (2%)	
RESPIRATORY SYSTEM				
Larynx	(50)	(50)	(50)	(50)
Foreign Body	1 (2%)	2 (4%)	3 (6%)	2 (4%)
Epiglottis, Inflammation, Suppurative	1 (2%)			1 (2%)
Glands, Inflammation	28 (56%)	18 (36%)	18 (36%)	26 (52%)
Squamous Epithelium, Hyperplasia	1 (2%)		1 (2%)	1 (2%)
Lung	(50)	(50)	(50)	(50)
Mineralization			1 (2%)	
Alveolar Epithelium, Hyperplasia	9 (18%)	3 (6%)	5 (10%)	4 (8%)
Alveolus, Emphysema	1 (2%)			
Alveolus, Hemorrhage	3 (6%)	2 (4%)	1 (2%)	1 (2%)
Alveolus, Infiltration Cellular, Histiocyte	23 (46%)	15 (30%)	14 (28%)	11 (22%)

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

E 06

INCIDENCE RATES OF NONNEOPLASTIC LESIONS BY ANATOMIC SITE (a)
GLUTARALDEHYDE

FISCHER 344 RATS MALE	CONTROL	250 PPB	500 PPB	750 PPB
RESPIRATORY SYSTEM - CONT				
Alveolus, Inflammation, Suppurative		2 (4%)		2 (4%)
Alveolus, Metaplasia, Osseous		1 (2%)	1 (2%)	
Alveolus, Mineralization	4 (8%)	3 (6%)	1 (2%)	4 (8%)
Bronchiole, Foreign Body				1 (2%)
Bronchiole, Hyperplasia			1 (2%)	
Bronchiole, Inflammation, Suppurative			1 (2%)	
Interstitium, Fibrosis	8 (16%)	14 (28%)	17 (34%)	7 (14%)
Nose	(50)	(50)	(50)	(50)
Foreign Body	2 (4%)	2 (4%)	1 (2%)	
Goblet Cell, Respiratory Epithelium, Hyperplasia	1 (2%)		6 (12%)	6 (12%)
Nasolacrimal Duct, Inflammation		3 (6%)		
Olfactory Epithelium, Atrophy				4 (8%)
Olfactory Epithelium, Degeneration, Hyaline	4 (8%)	8 (16%)	9 (18%)	14 (28%)
Olfactory Epithelium, Foreign Body	1 (2%)		1 (2%)	
Olfactory Epithelium, Hyperplasia		1 (2%)		
Olfactory Epithelium, Inflammation	1 (2%)	1 (2%)	1 (2%)	
Respiratory Epithelium, Hyperplasia	6 (12%)	5 (10%)	17 (34%)	35 (70%)
Respiratory Epithelium, Inflammation	17 (34%)	10 (20%)	25 (50%)	43 (86%)
Respiratory Epithelium, Metaplasia, Squamous	1 (2%)	2 (4%)	11 (22%)	24 (48%)
Squamous Epithelium, Foreign Body	1 (2%)			
Squamous Epithelium, Hyperplasia	3 (6%)	11 (22%)	39 (78%)	48 (96%)
Squamous Epithelium, Inflammation	6 (12%)	17 (34%)	41 (82%)	49 (98%)
Pleura	(2)			
Inflammation, Suppurative	1 (50%)			
Trachea	(50)	(50)	(50)	(50)
Mineralization		1 (2%)		
SPECIAL SENSES SYSTEM				
Eye	(1)	(3)	(3)	
Cataract	1 (100%)	3 (100%)	2 (67%)	
Inflammation, Suppurative			1 (33%)	
URINARY SYSTEM				
Kidney	(50)	(50)	(50)	(50)
Cyst		2 (4%)	1 (2%)	2 (4%)
Infarct		1 (2%)		
Mineralization	3 (6%)	1 (2%)		
Nephropathy, Chronic	43 (86%)	48 (96%)	48 (96%)	38 (76%)
Papilla, Transitional Epithelium, Hyperplasia	1 (2%)	1 (2%)		
Pelvis, Dilatation	1 (2%)			
Pelvis, Inflammation, Suppurative	1 (2%)			
Renal Tubule, Atrophy	1 (2%)			

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

E 07

INCIDENCE RATES OF NONNEOPLASTIC LESIONS BY ANATOMIC SITE (a)
GLUTARALDEHYDE

FISCHER 344 RATS MALE	CONTROL	250 PPB	500 PPB	750 PPB
URINARY SYSTEM - CONT				
Renal Tubule, Atypia Cellular	1 (2%)			
Renal Tubule, Regeneration	1 (2%)			
Urinary Bladder	(50)	(49)	(50)	(48)
Inflammation, Suppurative	1 (2%)			
Transitional Epithelium, Hyperplasia	2 (4%)		1 (2%)	

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

E 08

---------- END OF REPORT ----------

E 09

CORE STUDY

Facility: Battelle Northwest

Chemical CAS #: 111-30-8

Lock Date: 07/28/97

Cage Range: All

Reasons For Removal: All

Removal Date Range: All

Treatment Groups: Include All

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

E 10

FISCHER 344 RATS FEMALE	CONTROL	250 PPB	500 PPB	750 PPB
DISPOSITION SUMMARY				
Animals Initially in Study	50	50	50	50
Early Deaths				
Moribund Sacrifice	22	17	32	34
Natural Death	2	2	3	2
Survivors				
Terminal Sacrifice	26	31	15	14
Animals Examined Microscopically	50	50	50	50
ALIMENTARY SYSTEM				
Esophagus	(50)	(50)	(50)	(49)
Liver	(50)	(50)	(50)	(50)
Rhabdomyosarcoma, Metastatic, Skeletal Muscle			1 (2%)	
Mesentery	(10)	(9)	(7)	(3)
Sarcoma	2 (20%)			
Oral Mucosa	(1)			(1)
Gingival, Squamous Cell Carcinoma	1 (100%)			
Lingual, Squamous Cell Carcinoma				1 (100%)
Pancreas	(50)	(50)	(50)	(50)
Stomach, Glandular	(49)	(49)	(50)	(50)
Tongue	(1)	(1)		
Squamous Cell Papilloma	1 (100%)			
CARDIOVASCULAR SYSTEM				
Heart	(50)	(50)	(50)	(50)
ENDOCRINE SYSTEM				
Adrenal Cortex	(50)	(50)	(50)	(49)
Adrenal Medulla	(50)	(50)	(50)	(49)
Pheochromocytoma Malignant		1 (2%)		1 (2%)
Pheochromocytoma Benign			1 (2%)	
Islets, Pancreatic	(49)	(50)	(50)	(50)
Adenoma		1 (2%)		
Carcinoma			1 (2%)	
Pituitary Gland	(50)	(50)	(50)	(49)
Pars Distalis, Adenoma	37 (74%)	37 (74%)	27 (54%)	24 (49%)
Thyroid Gland	(50)	(50)	(49)	(49)
C-Cell, Adenoma	2 (4%)	1 (2%)	2 (4%)	
C-Cell, Carcinoma		2 (4%)		

E11

FISCHER 344 RATS FEMALE	CONTROL	250 PPB	500 PPB	750 PPB
ENDOCRINE SYSTEM - cont				
Follicular Cell, Adenoma				2 (4%)
GENERAL BODY SYSTEM				
None				
GENITAL SYSTEM				
Clitoral Gland	(49)	(50)	(50)	(50)
Adenoma	3 (6%)	3 (6%)	1 (2%)	
Carcinoma	3 (6%)	2 (4%)	1 (2%)	1 (2%)
Ovary	(50)	(50)	(50)	(49)
Granulosa Cell Tumor Malignant				1 (2%)
Granulosa-Theca Tumor Malignant	1 (2%)		1 (2%)	
Uterus	(50)	(50)	(50)	(50)
Deciduoma Benign			1 (2%)	
Polyp Stromal	8 (16%)	10 (20%)	8 (16%)	3 (6%)
Sarcoma Stromal			1 (2%)	
Serosa, Leiomyoma				1 (2%)
HEMATOPOIETIC SYSTEM				
Bone Marrow	(50)	(50)	(50)	(50)
Lymph Node	(2)	(3)	(3)	(2)
Iliac, Sarcoma, Metastatic, Skin	1 (50%)			
Lymph Node, Bronchial	(46)	(46)	(48)	(42)
Sarcoma, Metastatic, Skin	1 (2%)			
Lymph Node, Mandibular	(48)	(49)	(48)	(46)
Lymph Node, Mesenteric	(50)	(50)	(50)	(50)
Lymph Node, Mediastinal	(50)	(50)	(50)	(49)
Sarcoma, Metastatic, Skin	1 (2%)			
Spleen	(50)	(50)	(50)	(50)
Thymus	(50)	(50)	(50)	(49)
INTEGUMENTARY SYSTEM				
Mammary Gland	(50)	(50)	(50)	(50)
Carcinoma	5 (10%)	8 (16%)	3 (6%)	1 (2%)
Fibroadenoma	15 (30%)	18 (36%)	15 (30%)	9 (18%)
Fibroadenoma, Multiple	9 (18%)	5 (10%)	3 (6%)	1 (2%)
Skin	(50)	(50)	(50)	(50)
Fibroma			1 (2%)	
Fibrosarcoma	1 (2%)			

E 12

FISCHER 344 RATS FEMALE	CONTROL	250 PPB	500 PPB	750 PPB
INTEGUMENTARY SYSTEM - cont				
Keratoacanthoma	2 (4%)			
Schwannoma Benign		1 (2%)		
Squamous Cell Papilloma		1 (2%)	1 (2%)	
Lip, Squamous Cell Carcinoma	1 (2%)			
Subcutaneous Tissue, Fibrosarcoma		1 (2%)		
Subcutaneous Tissue, Sarcoma	1 (2%)			
MUSCULOSKELETAL SYSTEM				
Bone	(50)	(50)	(50)	(50)
Squamous Cell Carcinoma, Metastatic, Oral Mucosa				1 (2%)
Mandible, Squamous Cell Carcinoma, Metastatic, Skin	1 (2%)			
Mandible, Squamous Cell Carcinoma, Metastatic, Oral Mucosa	1 (2%)			
Skeletal Muscle	(1)		(1)	
Rhabdomyosarcoma			1 (100%)	
Squamous Cell Carcinoma, Metastatic, Oral Mucosa	1 (100%)			
NERVOUS SYSTEM				
None				
RESPIRATORY SYSTEM				
Lung	(50)	(50)	(50)	(40)
Alveolar/Bronchiolar Adenoma			1 (2%)	
Sarcoma, Metastatic, Mesentery	1 (2%)			
Sarcoma, Metastatic, Skin	1 (2%)			
Squamous Cell Carcinoma, Metastatic, Oral Mucosa	1 (2%)			
SPECIAL SENSES SYSTEM				
Zymbal's Gland			(1)	
Carcinoma			1 (100%)	

E 13

NTP Experiment-Test: 05184-05 INCIDENCE RATES OF NEOPLASMS BY ANATOMIC SITE (SYSTEMIC LESIONS ABRIDGED) (a)
Study Type: CHRONIC GLUTARALDEHYDE
Route: RESPIRATORY EXPOSURE WHOLE BODY

Report: PEIRPT05
Date: 06/12/98
Time: 10:08:28

FISCHER 344 RATS FEMALE	CONTROL	250 PPB	500 PPB	750 PPB
URINARY SYSTEM				
Kidney	(49)	(50)	(50)	(50)
SYSTEMIC LESIONS				
Multiple Organs	*(50)	*(50)	*(50)	*(50)
Leukemia Mononuclear	18 (36%)	20 (40%)	25 (50%)	12 (24%)

* Number of animals with any tissue examined microscopically

E 14

FISCHER 344 RATS FEMALE	CONTROL	250 PPB	500 PPB	750 PPB
TUMOR SUMMARY				
Total Animals with Primary Neoplasms (b)	49	46	49	36
Total Primary Neoplasms	110	111	95	57
Total Animals with Benign Neoplasms	42	43	40	31
Total Benign Neoplasms	77	77	61	40
Total Animals with Malignant Neoplasms	27	26	29	16
Total Malignant Neoplasms	33	34	34	17
Total Animals with Metastatic Neoplasms	4		1	1
Total Metastatic Neoplasm	9		1	1
Total Animals with Malignant Neoplasms Uncertain Primary Site				
Total Animals with Neoplasms Uncertain-Benign or Malignant				
Total Uncertain Neoplasms				

a Number of animals examined microscopically at site and number of animals with lesion
b Primary tumors: all tumors except metastatic tumors

F 01

FISCHER 344 RATS MALE	CONTROL	250 PPB	500 PPB	750 PPB
DISPOSITION SUMMARY				
Animals Initially in Study	50	50	50	50
Early Deaths				
Moribund Sacrifice	33	30	32	37
Natural Death	5	6	9	7
Survivors				
Terminal Sacrifice	11	14	9	6
Natural Death	1			
Animals Examined Microscopically	50	50	50	50
ALIMENTARY SYSTEM				
Intestine Large, Colon	(49)	(48)	(48)	(45)
Carcinoma, Metastatic, Pancreas	1 (2%)			
Intestine Large, Cecum	(47)	(46)	(48)	(45)
Intestine Small, Jejunum	(47)	(46)	(43)	(44)
Carcinoma	1 (2%)			
Carcinoma, Metastatic, Pancreas	1 (2%)			
Liver	(50)	(50)	(50)	(50)
Hepatocellular Carcinoma		1 (2%)		
Mesentery	(10)	(7)	(6)	(7)
Carcinoma, Metastatic, Pancreas	1 (10%)			
Oral Mucosa			(1)	(1)
Squamous Cell Carcinoma			1 (100%)	
Pharyngeal, Squamous Cell Papilloma				1 (100%)
Pancreas	(50)	(45)	(50)	(48)
Carcinoma	1 (2%)			
Stomach, Forestomach	(49)	(49)	(50)	(48)
Squamous Cell Papilloma			1 (2%)	
Tongue	(1)	(2)		(1)
Squamous Cell Papilloma		1 (50%)		1 (100%)
CARDIOVASCULAR SYSTEM				
Heart	(50)	(50)	(50)	(50)
ENDOCRINE SYSTEM				
Adrenal Cortex	(50)	(50)	(50)	(49)
Adenoma			1 (2%)	
Adrenal Medulla	(50)	(50)	(50)	(49)
Pheochromocytoma Malignant	1 (2%)	2 (4%)	2 (4%)	1 (2%)

F 02

FISCHER 344 RATS MALE	CONTROL	250 PPB	500 PPB	750 PPB
ENDOCRINE SYSTEM - cont				
Pheochromocytoma Complex	1 (2%)		1 (2%)	
Pheochromocytoma Benign	2 (4%)	4 (8%)	6 (12%)	2 (4%)
Bilateral, Pheochromocytoma Malignant		1 (2%)		
Bilateral, Pheochromocytoma Benign	2 (4%)	1 (2%)		
Islets, Pancreatic	(50)	(49)	(50)	(48)
Adenoma	1 (2%)	3 (6%)	1 (2%)	1 (2%)
Carcinoma	4 (8%)	1 (2%)	1 (2%)	1 (2%)
Pituitary Gland	(50)	(49)	(50)	(50)
Pars Distalis, Adenoma	32 (64%)	26 (53%)	26 (52%)	20 (40%)
Pars Intermedia, Adenoma				1 (2%)
Thyroid Gland	(50)	(50)	(50)	(50)
C-Cell, Adenoma	1 (2%)	4 (8%)	2 (4%)	2 (4%)
C-Cell, Carcinoma		1 (2%)		
Follicular Cell, Adenoma	1 (2%)			
Follicular Cell, Carcinoma		1 (2%)		
GENERAL BODY SYSTEM				
Tissue NOS	(1)	(2)		
ORGAN OF ZUCKERKANDL, PARAGANGLIOMA MALIGNANT		1 (50%)		
GENITAL SYSTEM				
Epididymis	(50)	(50)	(50)	(50)
Carcinoma, Metastatic, Pancreas	1 (2%)			
Preputial Gland	(50)	(50)	(50)	(50)
Adenoma	1 (2%)	2 (4%)		
Carcinoma		2 (4%)	1 (2%)	2 (4%)
Seminal Vesicle	(50)	(50)	(50)	(49)
Carcinoma, Metastatic, Pancreas	1 (2%)			
Testes	(50)	(50)	(50)	(50)
Bilateral, Interstitial Cell, Adenoma	26 (52%)	32 (64%)	27 (54%)	25 (50%)
Interstitial Cell, Adenoma	10 (20%)	12 (24%)	13 (26%)	6 (12%)
HEMATOPOIETIC SYSTEM				
Bone Marrow	(50)	(50)	(50)	(50)
Lymph Node	(1)	(4)	(1)	(4)
Lymph Node, Bronchial	(39)	(42)	(40)	(42)
Lymph Node, Mandibular	(47)	(48)	(49)	(49)
Lymph Node, Mesenteric	(50)	(49)	(50)	(50)
Carcinoma, Metastatic, Pancreas	1 (2%)			
Lymph Node, Mediastinal	(47)	(50)	(50)	(50)
Spleen	(50)	(50)	(50)	(50)

F 03

FISCHER 344 RATS MALE	CONTROL	250 PPB	500 PPB	750 PPB
HEMATOPOIETIC SYSTEM - cont				
Thymus	(50)	(50)	(50)	(50)
INTEGUMENTARY SYSTEM				
Mammary Gland	(49)	(50)	(50)	(50)
Adenoma				1 (2%)
Carcinoma	1 (2%)	2 (4%)		
Fibroadenoma	1 (2%)	3 (6%)	2 (4%)	2 (4%)
Skin	(50)	(50)	(50)	(50)
Basal Cell Adenoma		1 (2%)		
Fibroma		2 (4%)		
Keratoacanthoma	1 (2%)	5 (10%)	2 (4%)	1 (2%)
Squamous Cell Carcinoma				1 (2%)
Squamous Cell Papilloma			1 (2%)	
Trichoepithelioma	1 (2%)			
Lip, Basal Cell Adenoma			1 (2%)	
Pinna, Squamous Cell Papilloma				1 (2%)
Sebaceous Gland, Adenoma	1 (2%)			
Sebaceous Gland, Carcinoma		1 (2%)		
Subcutaneous Tissue, Fibroma	4 (8%)	1 (2%)		1 (2%)
Subcutaneous Tissue, Fibrosarcoma		2 (4%)		
Subcutaneous Tissue, Lipoma			1 (2%)	
Subcutaneous Tissue, Sarcoma			1 (2%)	
MUSCULOSKELETAL SYSTEM				
Bone	(50)	(50)	(50)	(50)
Mandible, Osteosarcoma	1 (2%)			
NERVOUS SYSTEM				
None				
RESPIRATORY SYSTEM				
Lung	(50)	(50)	(50)	(50)
Alveolar/Bronchiolar Adenoma		1 (2%)		3 (6%)
Alveolar/Bronchiolar Adenoma, Multiple			1 (2%)	
Alveolar/Bronchiolar Carcinoma				1 (2%)
Carcinoma, Metastatic, Pancreas	1 (2%)			
Carcinoma, Metastatic, Skin		1 (2%)		
Fibrosarcoma, Metastatic, Skin		1 (2%)		
Osteosarcoma, Metastatic, Bone	1 (2%)			

F 04

NTP Experiment-Test: 05184-05 INCIDENCE RATES OF NEOPLASMS BY ANATOMIC SITE (SYSTEMIC LESIONS ABRIDGED) (a)
Study Type: CHRONIC GLUTARALDEHYDE
Route: RESPIRATORY EXPOSURE WHOLE BODY

Report: PEIRPT05
Date: 06/12/98
Time: 10:08.28

FISCHER 344 RATS MALE	CONTROL	250 PPB	500 PPB	750 PPB
RESPIRATORY SYSTEM - cont				
Sarcoma Stromal, Metastatic, Kidney			1 (2%)	
SPECIAL SENSES SYSTEM				
Zymbal's Gland	(1)	(3)	(1)	
Adenoma		1 (33%)		
Carcinoma	1 (100%)	2 (67%)	1 (100%)	
URINARY SYSTEM				
Kidney	(50)	(50)	(50)	(50)
Stromal Nephroma			1 (2%)	
Renal Tubule, Adenoma		3 (6%)		1 (2%)
Renal Tubule, Carcinoma				1 (2%)
Urinary Bladder	(50)	(49)	(50)	(48)
Papilloma			1 (2%)	
SYSTEMIC LESIONS				
Multiple Organs	*(50)	*(50)	*(50)	*(50)
Leukemia Mononuclear	21 (42%)	24 (48%)	25 (50%)	16 (32%)
Mesothelioma Malignant	2 (4%)	1 (2%)		1 (2%)

* Number of animals with any tissue examined microscopically

F 05

FISCHER 344 RATS MALE	CONTROL	250 PPB	500 PPB	750 PPB
TUMOR SUMMARY				
Total Animals with Primary Neoplasms (b)	49	50	50	38
Total Primary Neoplasms	118	144	120	93
Total Animals with Benign Neoplasms	48	48	50	38
Total Benign Neoplasms	84	103	86	69
Total Animals with Malign Neoplasms	28	33	31	19
Total Malignant Neoplas	34	41	34	24
Total Animals with Metastatic Neoplasms	3	2	1	1
Total Metastatic Neoplasm	10	2	1	3
Total Animals with Malignant Neoplasms Uncertain Primary Site				
Total Animals with Neoplasms Uncertain-Benign or Malignant				
Total Uncertain Neoplasms				

a Number of animals examined microscopically at site and number of animals with lesion
b Primary tumors: all tumors except metastatic tumors

F 06

CORE STUDY

REASONS FOR REMOVAL: ALL

REMOVAL DATE RANGE: ALL

TREATMENT GROUPS: INCLUDE ALL

F 08

NTP
LAB: Battelle Northwest

STATISTICAL ANALYSIS OF PRIMARY TUMORS
GLUTARALDEHYDE

REPORT: PEIRPT08
DATE: 06/12/98

EXPERIMENT: 05184 TEST: 05
TEST TYPE: CHRONIC
CONT: NO1-ES-25335
PATHOLOGIST: RENNE, ROGER

CAGES FROM 0000 TO LAST CAGE
ROUTE: RESPIRATORY EXPOSURE WHOLE BODY

TIME: 10:09:17

NTP C#: 55425C
CAS: 111-30-8

Rats(FISCHER 344)

FOR ALL DOSES THE TUMOR RATES IN THE FOLLOWING TISSUES/ORGANS ARE BASED ON NUMBER OF TISSUES EXAMINED. IN OTHER TISSUES/ORGANS RATES ARE BASED ON THE NUMBER OF ANIMALS NECROPSIED.

Adrenal Cortex
Adrenal Medulla
Clitoral/Preputial Gland
Islets, Pancreatic
Kidney
Liver
Lung
Ovary
Pancreas
Pituitary Gland
Testes
Thyroid Gland
Urinary Bladder

F 09

NTP
LAB: Battelle Northwest
EXPERIMENT: 05184 TEST: 05
TEST TYPE: CHRONIC
CONT: NO1-ES-25335
PATHOLOGIST: RENNE, ROGER

STATISTICAL ANALYSIS OF PRIMARY TUMORS
GLUTARALDEHYDE

CAGES FROM 0000 TO LAST CAGE
ROUTE: RESPIRATORY EXPOSURE WHOLE BODY

REPORT: PEIRPT08
DATE: 06/12/98
TIME: 10:09:17

NTP C#: 55425C
CAS: 111-30-8

SUMMARY OF STATISTICALLY SIGNIFICANT (P<=.05) RESULTS
IN THE ANALYSIS OF GLUTARALDEHYDE

Male Rats

Organ	Morphology
Lung	Alveolar/Bronchiolar Adenoma
	Alveolar/Bronchiolar Carcinoma or Alveolar/Bronchiolar Adenoma
Pituitary Gland: Pars Distalis or Unspecified Site	Adenoma
Skin	Fibroma
	Fibroma, Fibrosarcoma, Sarcoma, Myxoma, Myxosarcoma, or Fibrous Histiocytoma
Testes	Adenoma
All Organs	Benign Tumors
	Malignant Tumors
	Malignant and Benign Tumors

Female Rats

Organ	Morphology
Clitoral/Preputial Gland	Adenoma
	Carcinoma or Adenoma
Mammary Gland	Carcinoma
	Carcinoma or Adenoma
	Fibroadenoma
	Fibroma, Fibroadenoma or Adenoma
	Fibroma, Fibroadenoma, Carcinoma, or Adenoma
Mesentery	Sarcoma
Pituitary Gland: Pars Distalis or Unspecified Site	Adenoma
Skin	Fibrosarcoma, Sarcoma, Myxosarcoma, or Fibrous Histiocytoma
Thyroid Gland: Follicular Cell	Adenoma
	Carcinoma or Adenoma
All Organs	Leukemia: Lymphocytic, Monocytic, Mononuclear, or Undifferentiated
	Benign Tumors
	Malignant Tumors
	Malignant and Benign Tumors

F 10

Statistical Analysis of Primary Tumors in Rats(FISCHER 344)
Terminal Sacrifice at 105 weeks

Dose	Males CONTROL	Males 250 PPB	Males 500 PPB	Males 750 PPB	Females CONTROL	Females 250 PPB	Females 500 PPB	Females 750 PPB
Adrenal Medulla Pheochromocytoma Benign								
TUMOR RATES								
OVERALL (a)	4/50 (8%)	5/50 (10%)	6/50 (12%)	2/49 (4%)	0/50 (0%)	0/50 (0%)	1/50 (2%)	0/49 (0%)
POLY-3 ADJUSTED (b)	11.4%	12.7%	16.5%	7.3%	0.0%	0.0%	2.8%	0.0%
TERMINAL (d)	2/12 (17%)	2/14 (14%)	1/9 (11%)	0/6 (0%)	0/26 (0%)	0/31 (0%)	1/15 (7%)	0/14 (0%)
FIRST INCIDENCE	702	632	617	673	---	---	730 (T)	---
STATISTICAL TESTS								
LIFE TABLE	P=0.510	P=0.610	P=0.293	P=0.525N	P=0.386	(e)	P=0.390	(e)
POLY 3	P=0.514N	P=0.571	P=0.386	P=0.456N	P=0.450	(e)	P=0.469	(e)
POLY 1.5	P=0.490N	P=0.543	P=0.383	P=0.444N	P=0.457	(e)	P=0.482	(e)
POLY 6	P=0.535N	P=0.609	P=0.390	P=0.463N	P=0.447	(e)	P=0.452	(e)
LOGISTIC REGRESSION	P=0.503N	P=0.612	P=0.352	P=0.487N	(e)	(e)	P=0.390	(e)
COCH-ARM / FISHERS	P=0.335N	P=0.500	P=0.370	P=0.349N	P=0.497	(e)	P=0.500	(e)

Dose	Males CONTROL	Males 250 PPB	Males 500 PPB	Males 750 PPB	Females CONTROL	Females 250 PPB	Females 500 PPB	Females 750 PPB
Adrenal Medulla Pheochromocytoma Malignant								
TUMOR RATES								
OVERALL (a)	1/50 (2%)	3/50 (6%)	2/50 (4%)	1/49 (2%)	0/50 (0%)	1/50 (2%)	0/50 (0%)	1/49 (2%)
POLY-3 ADJUSTED (b)	2.8%	7.6%	5.5%	3.0%	0.0%	2.3%	0.0%	3.2%
TERMINAL (d)	0/12 (0%)	1/14 (7%)	0/9 (0%)	0/6 (0%)	0/26 (0%)	0/31 (0%)	0/15 (0%)	1/14 (7%)
FIRST INCIDENCE	689	579	593	646	---	437	---	730 (T)
STATISTICAL TESTS								
LIFE TABLE	P=0.491	P=0.374	P=0.472	P=0.683	P=0.283	P=0.496	(e)	P=0.377
POLY 3	P=0.541	P=0.344	P=0.509	P=0.704	P=0.341	P=0.506	(e)	P=0.446
POLY 1.5	P=0.550	P=0.329	P=0.507	P=0.709	P=0.353	P=0.502	(e)	P=0.457
POLY 6	P=0.535	P=0.365	P=0.510	P=0.702	P=0.326	P=0.512	(e)	P=0.435
LOGISTIC REGRESSION	P=0.559	P=0.340	P=0.504	P=0.708	P=0.419	P=0.542	(e)	P=0.377
COCH-ARM / FISHERS	P=0.507N	P=0.309	P=0.500	P=0.747	P=0.371	P=0.500	(e)	P=0.495

Statistical Analysis of Primary Tumors in Rats(FISCHER 344)
Terminal Sacrifice at 105 weeks

Dose	Males CONTROL	Males 250 PPB	Males 500 PPB	Males 750 PPB	Females CONTROL	Females 250 PPB	Females 500 PPB	Females 750 PPB
Adrenal Medulla Pheochromocytoma Benign								
TUMOR RATES								
OVERALL (a)	4/50 (8%)	5/50 (10%)	6/50 (12%)	2/49 (4%)	0/50 (0%)	0/50 (0%)	1/50 (2%)	0/49 (0%)
POLY-3 ADJUSTED (b)	11.4%	12.7%	16.5%	7.3%	0.0%	0.0%	2.8%	0.0%
TERMINAL (d)	2/12 (17%)	2/14 (14%)	1/9 (11%)	0/6 (0%)	0/26 (0%)	0/31 (0%)	1/15 (7%)	0/14 (0%)
FIRST INCIDENCE	702	632	617	673	---	---	730 (T)	---
STATISTICAL TESTS								
LIFE TABLE	P=0.510	P=0.610	P=0 293	P=0.525N	P=0.386	(e)	P=0.390	(c)
POLY 3	P=0.514N	P=0.571	P=0.386	P=0.456N	P=0.450	(e)	P=0.469	(e)
POLY 1.5	P=0.490N	P=0.543	P=0.383	P=0.444N	P=0.457	(e)	P=0.482	(e)
POLY 6	P=0.535N	P=0.609	P=0.390	P=0.463N	P=0.447	(e)	P=0.452	(e)
LOGISTIC REGRESSION	P=0.503N	P=0.612	P=0.352	P=0.487N	(e)	(e)	P=0.390	(e)
COCH-ARM / FISHERS	P=0.335N	P=0.500	P=0.370	P=0.349N	P=0.497	(e)	P=0.500	(e)

Dose	Males CONTROL	Males 250 PPB	Males 500 PPB	Males 750 PPB	Females CONTROL	Females 250 PPB	Females 500 PPB	Females 750 PPB
Adrenal Medulla Pheochromocytoma Malignant								
TUMOR RATES								
OVERALL (a)	1/50 (2%)	3/50 (6%)	2/50 (4%)	1/49 (2%)	0/50 (0%)	1/50 (2%)	0/50 (0%)	1/49 (2%)
POLY-3 ADJUSTED (b)	2.8%	7.6%	5.5%	3.6%	0.0%	2.3%	0.0%	3.2%
TERMINAL (d)	0/12 (0%)	1/14 (7%)	0/9 (0%)	0/6 (0%)	0/26 (0%)	0/31 (0%)	0/15 (0%)	1/14 (7%)
FIRST INCIDENCE	689	579	593	646	---	437	---	730 (T)
STATISTICAL TESTS								
LIFE TABLE	P=0.491	P=0.374	P=0.472	P=0.683	P=0.283	P=0.496	(e)	P=0.377
POLY 3	P=0.541	P=0.344	P=0.509	P=0.704	P=0.341	P=0.506	(e)	P=0.446
POLY 1.5	P=0.550	P=0.329	P=0.507	P=0.709	P=0.353	P=0.502	(e)	P=0.457
POLY 6	P=0.535	P=0.365	P=0.510	P=0.702	P=0.326	P=0.512	(e)	P=0.435
LOGISTIC REGRESSION	P=0.559	P=0.340	P=0.504	P=0.708	P=0.419	P=0.542	(e)	P=0.377
COCH-ARM / FISHERS	P=0.507N	P=0.309	P=0.500	P=0.747	P=0.371	P=0.500	(e)	P=0.495

F11

Dose	Males CONTROL	Males 250 PPB	Males 500 PPB	Males 750 PPB	Females CONTROL	Females 250 PPB	Females 500 PPB	Females 750 PPB
Adrenal Medulla Pheochromocytoma: Benign, Complex, Malignant, NOS								
TUMOR RATES								
OVERALL (a)	6/50 (12%)	7/50 (14%)	9/50 (18%)	3/49 (6%)	0/50 (0%)	1/50 (2%)	1/50 (2%)	1/49 (2%)
POLY-3 ADJUSTED (b)	17.0%	17.5%	24.2%	10.8%	0.0%	2.3%	2.8%	3.2%
TERMINAL (d)	3/12 (25%)	2/14 (14%)	1/9 (11%)	0/6 (0%)	0/26 (0%)	0/31 (0%)	1/15 (7%)	1/14 (7%)
FIRST INCIDENCE	689	579	593	646	---	437	730 (T)	730 (T)
STATISTICAL TESTS								
LIFE TABLE	P=0.493	P=0.595N	P=0.220	P=0.475N	P=0.181	P=0.496	P=0.390	P=0.377
POLY 3	P=0.503N	P=0.595	P=0.317	P=0.370N	P=0.241	P=0.506	P=0.469	P=0.446
POLY 1.5	P=0.477N	P=0.557	P=0.307	P=0.359N	P=0.256	P=0.502	P=0.482	P=0.457
POLY 6	P=0.522N	P=0.598N	P=0.335	P=0.372N	P=0.226	P=0.512	P=0.452	P=0.435
LOGISTIC REGRESSION	P=0.475N	P=0.620N	P=0.280	P=0.399N	P=0.298	P=0.542	P=0.390	P=0.377
COCH-ARM / FISHERS	P=0.295N	P=0.500	P=0.288	P=0.254N	P=0.297	P=0.500	P=0.500	P=0.495

Dose	Males CONTROL	Males 250 PPB	Males 500 PPB	Males 750 PPB	Females CONTROL	Females 250 PPB	Females 500 PPB	Females 750 PPB
Clitoral/Preputial Gland Adenoma								
TUMOR RATES								
OVERALL (a)	1/50 (2%)	2/50 (4%)	0/50 (0%)	0/50 (0%)	3/49 (6%)	3/50 (6%)	1/50 (2%)	0/50 (0%)
POLY-3 ADJUSTED (b)	2.9%	5.1%	0.0%	0.0%	7.3%	7.1%	2.8%	0.0%
TERMINAL (d)	1/12 (8%)	1/14 (7%)	0/9 (0%)	0/6 (0%)	2/26 (8%)	2/31 (7%)	1/15 (7%)	0/14 (0%)
FIRST INCIDENCE	729 (T)	495	---	---	694	694	730 (T)	---
STATISTICAL TESTS								
LIFE TABLE	P=0.228N	P=0.538	P=0.557N	P=0.638N	P=0.131N	P=0.592N	P=0.503N	P=0.231N
POLY 3	P=0.189N	P=0.541	P=0.497N	P=0.548N	P=0.080N	P=0.650N	P=0.356N	P=0.170N
POLY 1.5	P=0.183N	P=0.525	P=0.497N	P=0.541N	P=0.066N	P=0.655N	P=0.330N	P=0.155N
POLY 6	P=0.196N	P=0.561	P=0.499N	P=0.553N	P=0.098N	P=0.639N	P=0.391N	P=0.186N
LOGISTIC REGRESSION	P=0.165N	P=0.506	(c)	(e)	P=0.093N	P=0.632N	P=0.440N	P=0.191N
COCH-ARM / FISHERS	P=0.149N	P=0.500	P=0.500N	P=0.500N	P=0.041N*	P=0.651N	P=0.301N	P=0.117N

F12

Statistical Analysis of Primary Tumors in Rats(FISCHER 344)
Terminal Sacrifice at 105 weeks

Dose	Males CONTROL	Males 250 PPB	Males 500 PPB	Males 750 PPB	Females CONTROL	Females 250 PPB	Females 500 PPB	Females 750 PPB
Clitoral/Preputial Gland Carcinoma								
TUMOR RATES								
OVERALL (a)	0/50 (0%)	2/50 (4%)	1/50 (2%)	2/50 (4%)	3/49 (6%)	2/50 (4%)	1/50 (2%)	1/50 (2%)
POLY-3 ADJUSTED (b)	0.0%	5.1%	2.8%	7.1%	7.3%	4.8%	2.8%	3.1%
TERMINAL (d)	0/12 (0%)	0/14 (0%)	0/9 (0%)	0/6 (0%)	2/26 (8%)	2/31 (7%)	0/15 (0%)	1/14 (7%)
FIRST INCIDENCE	---	617	689	620	630	730 (T)	634	730 (T)
STATISTICAL TESTS								
LIFE TABLE	P=0.137	P=0.300	P=0.460	P=0.206	P=0.339N	P=0.436N	P=0.459N	P=0.527N
POLY 3	P=0.178	P=0.262	P=0.504	P=0.190	P=0.220N	P=0.490N	P=0.354N	P=0.401N
POLY 1.5	P=0.181	P=0.252	P=0.503	P=0.195	P=0.196N	P=0.494N	P=0.329N	P=0.374N
POLY 6	P=0.175	P=0.276	P=0.503	P=0.187	P=0.249N	P=0.481N	P=0.386N	P=0.429N
LOGISTIC REGRESSION	P=0.151	P=0.249	P=0.500	P=0.187	P=0.239N	P=0.471N	P=0.348N	P=0.432N
COCH-ARM / FISHERS	P=0.209	P=0.247	P=0.500	P=0.247	P=0.146N	P=0.490N	P=0.301N	P=0.301N

Dose	Males CONTROL	Males 250 PPB	Males 500 PPB	Males 750 PPB	Females CONTROL	Females 250 PPB	Females 500 PPB	Females 750 PPB
Clitoral/Preputial Gland Carcinoma or Adenoma								
TUMOR RATES								
OVERALL (a)	1/50 (2%)	4/50 (8%)	1/50 (2%)	2/50 (4%)	6/49 (12%)	5/50 (10%)	2/50 (4%)	1/50 (2%)
POLY-3 ADJUSTED (b)	2.9%	10.0%	2.8%	7.1%	14.5%	11.8%	5.5%	3.1%
TERMINAL (d)	1/12 (8%)	1/14 (7%)	0/9 (0%)	0/6 (0%)	4/26 (15%)	4/31 (13%)	1/15 (7%)	1/14 (7%)
FIRST INCIDENCE	729 (T)	495	689	620	660	694	634	730 (T)
STATISTICAL TESTS								
LIFE TABLE	P=0.398	P=0.238	P=0.705	P=0.386	P=0.107N	P=0.401N	P=0.328N	P=0.197N
POLY 3	P=0.502	P=0.218	P=0.758N	P=0.422	P=0.042N*	P=0.485N	P=0.179N	P=0.109N
POLY 1.5	P=0.508	P=0.202	P=0.757N	P=0.431	P=0.032N*	P=0.491N	P=0.155N	P=0.092N
POLY 6	P=0.498	P=0.241	P=0.760N	P=0.419	P=0.057N	P=0.471N	P=0.214N	P=0.128N
LOGISTIC REGRESSION	P=0.482	P=0.187	P=0.735	P=0.406	P=0.054N	P=0.454N	P=0.212N	P=0.129N
COCH-ARM / FISHERS	P=0.564N	P=0.181	P=0.753N	P=0.500	P=0.016N*	P=0.486N	P=0.128N	P=0.053N

F 13

Statistical Analysis of Primary Tumors in Rats(FISCHER 344) GLUTARALDEHYDE

Terminal Sacrifice at 105 weeks

Dose	Males CONTROL	Males 250 PPB	Males 500 PPB	Males 750 PPB	Females CONTROL	Females 250 PPB	Females 500 PPB	Females 750 PPB
Islets, Pancreatic Adenoma								
TUMOR RATES								
OVERALL (a)	1/50 (2%)	3/49 (6%)	1/50 (2%)	1/48 (2%)	0/49 (0%)	1/50 (2%)	0/50 (0%)	0/50 (0%)
POLY-3 ADJUSTED (b)	2.8%	7.8%	2.8%	3.7%	0.0%	2.4%	0.0%	0.0%
TERMINAL (d)	0/12 (0%)	3/14 (21%)	0/9 (0%)	1/6 (17%)	0/26 (0%)	1/31 (3%)	0/15 (0%)	0/14 (0%)
FIRST INCIDENCE	708	729 (T)	726	729 (T)	---	730 (T)	---	---
STATISTICAL TESTS								
LIFE TABLE	P=0.502	P=0.376	P=0.725	P=0.669	P=0.614N	P=0.535	(e)	(e)
POLY 3	P=0.519N	P=0.538	P=0.759N	P=0.702	P=0.588N	P=0.506	(e)	(e)
POLY 1.5	P=0.508N	P=0.324	P=0.758N	P=0.708	P=0.562N	P=0.503	(e)	(e)
POLY 6	P=0.532N	P=0.356	P=0.763	P=0.697	P=0.618N	P=0.511	(e)	(e)
LOGISTIC REGRESSION	P=0.564	P=0.378	P=0.748	P=0.687	(e)	P=0.535	(e)	(e)
COCH-ARM / FISHERS	P=0.437N	P=0.301	P=0.753N	P=0.742	P=0.497N	P=0.505	(e)	(e)

Dose	Males CONTROL	Males 250 PPB	Males 500 PPB	Males 750 PPB	Females CONTROL	Females 250 PPB	Females 500 PPB	Females 750 PPB
Islets, Pancreatic Carcinoma								
TUMOR RATES								
OVERALL (a)	4/50 (8%)	1/49 (2%)	1/50 (2%)	1/48 (2%)	0/49 (0%)	0/50 (0%)	1/50 (2%)	0/50 (0%)
POLY-3 ADJUSTED (b)	11.2%	2.6%	2.8%	3.7%	0.0%	0.0%	2.8%	0.0%
TERMINAL (d)	1/12 (8%)	0/14 (0%)	0/9 (0%)	0/6 (0%)	0/26 (0%)	0/31 (0%)	0/15 (0%)	0/14 (0%)
FIRST INCIDENCE	612	708	702	689	---	---	617	---
STATISTICAL TESTS								
LIFE TABLE	P=0.153N	P=0.133N	P=0.228N	P=0.324N	P=0.461	(e)	P=0.473	(e)
POLY 3	P=0.116N	P=0.152N	P=0.175N	P=0.265N	P=0.450	(e)	P=0.475	(e)
POLY 1.5	P=0.111N	P=0.163N	P=0.174N	P=0.255N	P=0.460	(e)	P=0.488	(e)
POLY 6	P=0.122N	P=0.[illegible]0N	P=0.179N	P=0.274N	P=0.444	(e)	P=0.460	(e)
LOGISTIC REGRESSION	P=0.122N	P=0.135N	P=0.178N	P=0.268N	P=0.518	(e)	P=0.523	(e)
COCH-ARM / FISHERS	P=0.089N	P=0.187N	P=0.181N	P=0.194N	P=0.503	(e)	P=0.505	(e)

F 14

Statistical Analysis of Primary Tumors in Rats(FISCHER 344) - GLUTARALDEHYDE

Terminal Sacrifice at 105 weeks

Dose	Males CONTROL	Males 250 PPB	Males 500 PPB	Males 750 PPB	Females CONTROL	Females 250 PPB	Females 500 PPB	Females 750 PPB
Islets, Pancreatic Carcinoma or Adenoma								
TUMOR RATES								
OVERALL (a)	5/50 (10%)	4/49 (8%)	2/50 (4%)	2/48 (4%)	0/49 (0%)	1/50 (2%)	1/50 (2%)	0/50 (0%)
POLY-3 ADJUSTED (b)	14.0%	10.3%	5.6%	7.3%	0.0%	2.4%	2.8%	0.0%
TERMINAL (d)	1/12 (8%)	3/14 (21%)	0/9 (0%)	1/6 (17%)	0/26 (0%)	1/31 (3%)	0/15 (0%)	0/14 (0%)
FIRST INCIDENCE	612	708	702	689	---	730 (T)	617	---
STATISTICAL TESTS								
LIFE TABLE	P=0.260N	P=0.382N	P=0.285N	P=0.408N	P=0.524	P=0.535	P=0.473	(e)
POLY 3	P=0.158N	P=0.449N	P=0.212N	P=0.333N	P=0.547	P=0.506	P=0.475	(e)
POLY 1.5	P=0.150N	P=0.471N	P=0.211N	P=0.319N	P=0.567	P=0.503	P=0.488	(e)
POLY 6	P=0.169N	P=0.426N	P=0.218N	P=0.347N	P=0.527	P=0.511	P=0.460	(e)
LOGISTIC REGRESSION	P=0.179N	P=0.381N	P=0.217N	P=0.341N	P=0.596	P=0.535	P=0.523	(e)
COCH-ARM / FISHERS	P=0.107N	P=0.513N	P=0.218N	P=0.235N	P=0.621N	P=0.505	P=0.505	(e)

Dose	Males CONTROL	Males 250 PPB	Males 500 PPB	Males 750 PPB	Females CONTROL	Females 250 PPB	Females 500 PPB	Females 750 PPB
Kidney: Renal Tubule Adenoma								
TUMOR RATES								
OVERALL (a)	0/50 (0%)	3/50 (6%)	0/50 (0%)	1/50 (2%)	0/49 (0%)	0/50 (0%)	0/50 (0%)	0/50 (0%)
POLY-3 ADJUSTED (b)	0.0%	7.7%	0.0%	3.6%	0.0%	0.0%	0.0%	0.0%
TERMINAL (d)	0/12 (0%)	0/14 (0%)	0/9 (0%)	0/6 (0%)	0/26 (0%)	0/31 (0%)	0/15 (0%)	0/14 (0%)
FIRST INCIDENCE	---	675	---	720	---	---	---	---
STATISTICAL TESTS								
LIFE TABLE	P=0.454	P=0.156	(e)	P=0.419	(e)	(e)	(e)	(e)
POLY 3	P=0.559	P=0.137	(e)	P=0.453	(e)	(e)	(e)	(e)
POLY 1.5	P=0.561	P=0.130	(e)	P=0.459	(e)	(e)	(e)	(e)
POLY 6	P=0.556	P=0.148	(e)	P=0.448	(e)	(e)	(e)	(e)
LOGISTIC REGRESSION	P=0.493	P=0.152	(e)	P=0.428	(e)	(e)	(e)	(e)
COCH-ARM / FISHERS	P=0.589N	P=0.121	(e)	P=0.500	(e)	(e)	(e)	(e)

G 01

Statistical Analysis of Primary Tumors in Rats(FISCHER 344) GLUTARALDEHYDE

Terminal Sacrifice at 105 weeks

Dose	Males CONTROL	Males 250 PPB	Males 500 PPB	Males 750 PPB	Females CONTROL	Females 250 PPB	Females 500 PPB	Females 750 PPB
Kidney: Renal Tubul Carcinoma or Adenoma								
TUMOR RATES								
OVERALL (a)	0/50 (0%)	3/50 (6%)	0/50 (0%)	2/50 (4%)	0/49 (0%)	0/50 (0%)	0/50 (0%)	0/50 (0%)
POLY-3 ADJUSTED (b)	0.0%	7.7%	0.0%	7.2%	0.0%	0.0%	0.0%	0.0%
TERMINAL (d)	0/12 (0%)	0/14 (0%)	0/9 (0%)	0/6 (0%)	0/26 (0%)	0/31 (0%)	0/15 (0%)	0/14 (0%)
FIRST INCIDENCE	---	675	---	652	---	---	---	---
STATISTICAL TESTS								
LIFE TABLE	P=0.212	P=0.156	(e)	P=0.161	(e)	(e)	(e)	(e)
POLY 3	P=0.322	P=0.137	(e)	P=0.189	(e)	(e)	(e)	(e)
POLY 1.5	P=0.323	P=0.130	(e)	P=0.195	(e)	(e)	(e)	(e)
POLY 6	P=0.319	P=0.148	(e)	P=0.185	(e)	(e)	(e)	(e)
LOGISTIC REGRESSION	P=0.247	P=0.152	(e)	P=0.179	(e)	(e)	(e)	(e)
COCH-ARM / FISHERS	P=0.343	P=0.121	(e)	P=0.247	(e)	(e)	(e)	(e)

Dose	Males CONTROL	Males 250 PPB	Males 500 PPB	Males 750 PPB	Females CONTROL	Females 250 PPB	Females 500 PPB	Females 750 PPB
Lung Alveolar/Bronchiolar Adenoma								
TUMOR RATES								
OVERALL (a)	0/50 (0%)	1/50 (2%)	1/50 (2%)	3/50 (6%)	0/50 (0%)	0/50 (0%)	1/50 (2%)	0/49 (0%)
POLY-3 ADJUSTED (b)	0.0%	2.6%	2.8%	10.6%	0.0%	0.0%	2.8%	0.0%
TERMINAL (d)	0/12 (0%)	1/14 (7%)	0/9 (0%)	1/6 (17%)	0/26 (0%)	0/31 (0%)	1/15 (7%)	0/14 (0%)
FIRST INCIDENCE	---	729 (T)	533	589	---	---	730 (T)	---
STATISTICAL TESTS								
LIFE TABLE	P=0.020 *	P=0.531	P=0.495	P=0.069	P=0.386	(e)	P=0.390	(e)
POLY 3	P=0.046 *	P=0.520	P=0.506	P=0.084	P=0.450	(e)	P=0.469	(e)
POLY 1.5	P=0.047 *	P=0.512	P=0.505	P=0.087	P=0.457	(e)	P=0.482	(e)
POLY 6	P=0.0[illegible]5 *	P=0.530	P=0.507	P=0.082	P=0.447	(e)	P=0.452	(e)
LOGISTIC REGRESSION	P=0.038 *	P=0.531	P=0.458	P=0.087	(e)	(e)	P=0.390	(e)
COCH-ARM / FISHERS	P=0.053	P=0.500	P=0.500	P=0.121	P=0.497	(e)	P=0.500	(e)

Statistical Analysis of Primary Tumors in Rats(FISCHER 344) - GLUTARALDEHYDE

Terminal Sacrifice at 105 weeks

Dose	Males CONTROL	250 PPB	500 PPB	750 PPB	males CONTROL	250 PPB	500 PPB	750 PPB
Lung Alveolar/Bronchiolar Carcinoma or Alveolar/Bronchiolar Adenoma								
TUMOR RATES								
OVERALL (a)	0/50 (0%)	1/50 (2%)	1/50 (2%)	3/50 (6%)	0/50 (0%)	0/50 (0%)	1/50 (2%)	0/49 (0%)
POLY-3 ADJUSTED (b)	0.0%	2.6%	2.8%	10.6%	0.0%	0.0%	2.8%	0.0%
TERMINAL (d)	0/12 (0%)	1/14 (7%)	0/9 (0%)	1/6 (17%)	0/26 (0%)	0/31 (0%)	1/15 (7%)	0/14 (0%)
FIRST INCIDENCE	---	729 (T)	533	589	---	---	730 (T)	---
STATISTICAL TESTS								
LIFE TABLE	P=0.020 *	P=0.521	P=0.495	P=0.069	P=0.386	(e)	P=0.390	(e)
POLY 3	P=0.046 *	P=0.520	P=0.506	P=0.084	P=0.450	(e)	P=0.469	(e)
POLY 1.5	P=0.047 *	P=0.512	P=0.505	P=0.087	P=0.457	(e)	P=0.482	(e)
POLY 6	P=0.045 *	P=0.530	P=0.507	P=0.082	P=0.447	(e)	P=0.452	(e)
LOGISTIC REGRESSION	P=0.038 *	P=0.531	P=0.458	P=0.087	(e)	(e)	P=0.390	(e)
COCH-ARM / FISHERS	P=0.053	P=0.500	P=0.500	P=0.121	P=0.497	(e)	P=0.500	(e)

Dose	Males CONTROL	250 PPB	500 PPB	750 PPB	Females CONTROL	250 PPB	500 PPB	750 PPB
Mammary Gland Carcinoma								
TUMOR RATES	#	#	#	#	#	#	#	#
OVERALL (a)	1/50 (2%)	2/50 (4%)	0/50 (0%)	0/50 (0%)	5/50 (10%)	8/50 (16%)	3/50 (6%)	1/50 (2%)
POLY-3 ADJUSTED (b)	2.8%	5.2%	0.0%	0.0%	11.8%	18.5%	8.2%	3.1%
TERMINAL (d)	0/12 (0%)	1/14 (7%)	0/9 (0%)	0/6 (0%)	3/26 (12%)	5/31 (16%)	0/15 (0%)	0/14 (0%)
FIRST INCIDENCE	694	708	---	---	589	593	654	463
STATISTICAL TESTS								
LIFE TABLE	P=0.216N	P=0.580	P=0.545N	P=0.571N	P=0.162N	P=0.358	P=0.586N	P=0.243N
POLY 3	P=0.190N	P=0.534	P=0.498N	P=0.548N	P=0.097N	P=0.289	P=0.441N	P=0.173N
POLY 1.5	P=0.183N	P=0.521	P=0.497N	P=0.541N	P=0.074N	P=0.277	P=0.405N	P=0.153N
POLY 6	P=0.197N	P=0.551	P=0.501N	P=0.554N	P=0.128N	P=0.312	P=0.486N	P=0.193N
LOGISTIC REGRESSION	P=0.189N	P=0.568	P=0.502N	P=0.556N	P=0.053N	P=0.275	P=0.421N	P=0.122N
COCH-ARM / FISHERS	P=0.149N	P=0.500	P=0.500N	P=0.500N	P=0.035N*	P=0.277	P=0.357N	P=0.102N

G 03

Statistical Analysis of Primary Tumors in Rats(FISCHER 344) GLUTARALDEHYDE

Terminal Sacrifice at 105 weeks

Dose	Males CONTROL	Males 250 PPB	Males 500 PPB	Males 750 PPB	Females CONTROL	Females 250 PPB	Females 500 PPB	Females 750 PPB
Mammary Gland Carcinoma or Adenoma								
TUMOR RATES	#	#	#	#	#	#	#	#
OVERALL (a)	1/50 (2%)	2/50 (4%)	0/50 (0%)	1/50 (2%)	5/50 (10%)	8/50 (16%)	3/50 (6%)	1/50 (2%)
POLY-3 ADJUSTED (b)	2.8%	5.2%	0.0%	3.6%	11.8%	18.5%	8.2%	3.1%
TERMINAL (d)	0/12 (0%)	1/14 (7%)	0/9 (0%)	0/6 (0%)	3/26 (12%)	5/31 (16%)	0/15 (0%)	0/14 (0%)
FIRST INCIDENCE	694	708	---	638	589	593	654	463
STATISTICAL TESTS								
LIFE TABLE	P=0.530N	P=0.580	P=0.545N	P=0.693	P=0.162N	P=0.358	P=0.586N	P=0.243N
POLY 3	P=0.457N	P=0.534	P=0.498N	P=0.707	P=0.097N	P=0.289	P=0.441N	P=0.173N
POLY 1.5	P=0.451N	P=0.521	P=0.497N	P=0.714	P=0.074N	P=0.277	P=0.405N	P=0.153N
POLY 6	P=0.465N	P=0.551	P=0.501N	P=0.703	P=0.128N	P=0.312	P=0.486N	P=0.193N
LOGISTIC REGRESSION	P=0.491N	P=0.568	P=0.502N	P=0.711	P=0.053N	P=0.275	P=0.421N	P=0.122N
COCH-ARM / FISHERS	P=0.411N	P=0.500	P=0.500N	P=0.753N	P=0.035N*	P=0.277	P=0.357N	P=0.103N

Dose	Males CONTROL	Males 250 PPB	Males 500 PPB	Males 750 PPB	Females CONTROL	Females 250 PPB	Females 500 PPB	Females 750 PPB
Mammary Gland Fibroadenoma								
TUMOR RATES	#	#	#	#	#	#	#	#
OVERALL (a)	1/50 (2%)	3/50 (6%)	2/50 (4%)	2/50 (4%)	24/50 (48%)	23/50 (46%)	18/50 (36%)	10/50 (20%)
POLY-3 ADJUSTED (b)	2.8%	7.7%	5.6%	7.1%	54.6%	52.2%	45.4%	28.9%
TERMINAL (d)	0/12 (0%)	2/14 (14%)	1/9 (11%)	1/6 (17%)	14/26 (54%)	16/31 (52%)	5/15 (33%)	2/14 (14%)
FIRST INCIDENCE	657	712	721	508	566	561	533	514
STATISTICAL TESTS								
LIFE TABLE	P=0.225	P=0.383	P=0.462	P=0.360	P=0.270N	P=0.289N	P=0.391	P=0.170N
POLY 3	P=0.354	P=0.338	P=0.502	P=0.422	P=0.014N*	P=0.496N	P=0.263N	P=0.017N*
POLY 1.5	P=0.365	P=0.326	P=0.504	P=0.431	P=0.008N**	P=0.512N	P=0.212N	P=0.011N*
POLY 6	P=0.341	P=0.353	P=0.497	P=0.415	P=0.024N*	P=0.467N	P=0.326N	P=0.023N*
LOGISTIC REGRESSION	P=0.319	P=0.371	P=0.492	P=0.446	P=0.017N*	P=0.486N	P=0.230N	P=0.022N*
COCH-ARM / FISHERS	P=0.436	P=0.309	P=0.500	P=0.500	P<0.001N**	P=0.500N	P=0.156N	P=0.003N**

G 04

Statistical Analysis of Primary Tumors in Rats(FISCHER 344)
Terminal Sacrifice at 105 weeks

Dose	Males CONTROL	Males 250 PPB	Males 500 PPB	Males 750 PPB	Females CONTROL	Females 250 PPB	Females 500 PPB	Females 750 PPB
Mammary Gland Fibroma, Fibroadenoma or Adenoma								
TUMOR RATES	#	#	#	#	#	#	#	#
OVERALL (a)	1/50 (2%)	3/50 (6%)	2/50 (4%)	3/50 (6%)	24/50 (48%)	23/50 (46%)	18/50 (36%)	10/50 (20%)
POLY-3 ADJUSTED (b)	2.8%	7.7%	5.6%	10.5%	54.6%	52.2%	45.4%	28.9%
TERMINAL (d)	0/12 (0%)	2/14 (14%)	1/9 (11%)	1/6 (17%)	14/26 (54%)	16/31 (52%)	5/15 (33%)	2/14 (14%)
FIRST INCIDENCE	657	712	721	508	566	561	533	514
STATISTICAL TESTS								
LIFE TABLE	P=0.109	P=0.383	P=0.462	P=0.189	P=0.270N	P=0.289N	P=0.391	P=0.170N
POLY 3	P=0.212	P=0.338	P=0.502	P=0.231	P=0.014N*	P=0.496N	P=0.263N	P=0.017N*
POLY 1.5	P=0.220	P=0.326	P=0.504	P=0.239	P=0.008N**	P=0.512N	P=0.212N	P=0.011N*
POLY 6	P=0.203	P=0.353	P=0.497	P=0.227	P=0.024N*	P=0.467N	P=0.326N	P=0.023N*
LOGISTIC REGRESSION	P=0.173	P=0.371	P=0.492	P=0.248	P=0.017N*	P=0.486N	P=0.330N	P=0.022N*
COCH-ARM / FISHERS	P=0.271	P=0.309	P=0.500	P=0.309	P<0.001N**	P=0.500N	P=0.156N	P=0.003N**

Dose	Males CONTROL	Males 250 PPB	Males 500 PPB	Males 750 PPB	Females CONTROL	Females 250 PPB	Females 500 PPB	Females 750 PPB
Mammary Gland Fibroma, Fibroadenoma, Carcinoma or Adenoma								
TUMOR RATES	#	#	#	#	#	#	#	#
OVERALL (a)	2/50 (4%)	5/50 (10%)	2/50 (4%)	3/50 (6%)	26/50 (52%)	27/50 (54%)	21/50 (42%)	11/50 (22%)
POLY-3 ADJUSTED (b)	5.6%	12.9%	5.6%	10.5%	58.5%	60.1%	52.1%	31.1%
TERMINAL (d)	0/12 (0%)	3/14 (21%)	1/9 (11%)	1/6 (17%)	15/26 (58%)	18/31 (58%)	5/15 (33%)	2/14 (14%)
FIRST INCIDENCE	657	708	721	508	566	561	533	463
STATISTICAL TESTS								
LIFE TABLE	P=0.302	P=0.316	P=0.642	P=0.341	P=0.278N	P=0.405N	P=0.285	P=0.159N
POLY 3	P=0.464	P=0.252	P=0.695N	P=0.401	P=0.010N*	P=0.524	P=0.349N	P=0.011N*
POLY 1.5	P=0.476	P=0.239	P=0.691N	P=0.412	P=0.005N**	P=0.497	P=0.287N	P=0.007N**
POLY 6	P=0.450	P=0.267	P=0.691	P=0.395	P=0.017N*	P=0.571	P=0.413N	P=0.015N*
LOGISTIC REGRESSION	P=0.407	P=0.294	P=0.691	P=0.414	P=0.009N**	P=0.500	P=0.414N	P=0.013N*
COCH-ARM / FISHERS	P=0.553	P=0.218	P=0.691N	P=0.500	P<0.001N**	P=0.500	P=0.212N	P=0.003N**

G 05

Statistical Analysis of Primary Tumors in Rats(FISCHER 344) GLUTARALDEHYDE

Terminal Sacrifice at 105 weeks

Dose	Males CONTROL	Males 250 PPB	Males 500 PPB	Males 750 PPB	Females CONTROL	Females 250 PPB	Females 500 PPB	Females 750 PPB
Mesentery Sarcoma								
TUMOR RATES	#	#	#	#	#	#	#	#
OVERALL (a)	0/50 (0%)	0/50 (0%)	0/50 (0%)	0/50 (0%)	2/50 (4%)	0/50 (0%)	0/50 (0%)	0/50 (0%)
POLY-3 ADJUSTED (b)	0.0%	0.0%	0.0%	0.0%	4.7%	0.0%	0.0%	0.0%
TERMINAL (d)	0/12 (0%)	0/14 (0%)	0/9 (0%)	0/6 (0%)	0/26 (0%)	0/31 (0%)	0/15 (0%)	0/14 (0%)
FIRST INCIDENCE	---	---	---	---	518	---	---	---
STATISTICAL TESTS								
LIFE TABLE	(e)	(e)	(e)	(e)	P=0.086N	P=0.222N	P=0.313N	P=0.353N
POLY 3	(e)	(e)	(e)	(e)	P=0.068N	P=0.238N	P=0.277N	P=0.305N
POLY 1.5	(e)	(e)	(e)	(e)	P=0.063N	P=0.240N	P=0.259N	P=0.287N
POLY 6	(e)	(e)	(e)	(e)	P=0.075N	P=0.234N	P=0.300N	P=0.323N
LOGISTIC REGRESSION	(e)	(e)	(e)	(e)	P=0.045N*	P=0.229N	P=0.216N	P=0.224N
COCH-ARM / FISHERS	(e)	(e)	(e)	(e)	P=0.056N	P=0.247N	P=0.247N	P=0.247N

Dose	Males CONTROL	Males 250 PPB	Males 500 PPB	Males 750 PPB	Females CONTROL	Females 250 PPB	Females 500 PPB	Females 750 PPB
Oral Cavity (Oral Mucosa, Tongue, Pharynx, Tooth, Gingiva) Papilloma Squamous or Papilloma								
TUMOR RATES	#	#	#	#	#	#	#	#
OVERALL (a)	0/50 (0%)	1/50 (2%)	0/50 (0%)	2/50 (4%)	1/50 (2%)	0/50 (0%)	0/50 (0%)	0/50 (0%)
POLY-3 ADJUSTED (b)	0.0%	2.6%	0.0%	7.3%	2.4%	0.0%	0.0%	0.0%
TERMINAL (d)	0/12 (0%)	0/14 (0%)	0/9 (0%)	1/6 (17%)	0/26 (0%)	0/31 (0%)	0/15 (0%)	0/14 (0%)
FIRST INCIDENCE	---	675	---	720	698	---	---	---
STATISTICAL TESTS								
LIFE TABLE	P=0.075	P=0.532	(e)	P=0.130	P=0.228N	P=0.482N	P=0.578N	P=0.568N
POLY 3	P=0.156	P=0.521	(e)	P=0.187	P=0.215N	P=0.499N	P=0.531N	P=0.553N
POLY 1.5	P=0.154	P=0.513	(e)	P=0.194	P=0.205N	P=0.501N	P=0.518N	P=0.540N
POLY 6	P=0.154	P=0.532	(e)	P=0.181	P=0.227N	P=0.494N	P=0.549N	P=0.565N
LOGISTIC REGRESSION	P=0.092	P=0.519	(e)	P=0.145	P=0.211N	P=0.499N	P=0.541N	P=0.558N
COCH-ARM / FISHERS	P=0.149	P=0.500	(e)	P=0.247	P=0.185N	P=0.500N	P=0.500N	P=0.500N

G 06

Statistical Analysis of Primary Tumors in Rats(FISCHER 344) - GLUTARALDEHYDE

Terminal Sacrifice at 105 weeks

Dose	Males CONTROL	Males 250 PPB	Males 500 PPB	Males 750 PPB	Females CONTROL	Females 250 PPB	Females 500 PPB	Females 750 PPB
Oral Cavity (Oral Mucosa, Tongue, Pharynx, Tooth, Gingiva) Squamous Cell Carcinoma, Papilloma Squamous, or Papilloma								
TUMOR RATES	#	#	#	#	#	#	#	#
OVERALL (a)	0/50 (0%)	1/50 (2%)	1/50 (2%)	2/50 (4%)	2/50 (4%)	0/50 (0%)	0/50 (0%)	1/50 (2%)
POLY-3 ADJUSTED (b)	0.0%	2.6%	2.8%	7.3%	4.8%	0.0%	0.0%	3.1%
TERMINAL (d)	0/12 (0%)	0/14 (0%)	0/9 (0%)	1/6 (17%)	0/26 (0%)	0/31 (0%)	0/15 (0%)	0/14 (0%)
FIRST INCIDENCE	---	675	688	720	666	---	---	512
STATISTICAL TESTS								
LIFE TABLE	P=0.059	P=0.532	P=0.481	P=0.130	P=0.394N	P=0.227N	P=0.324N	P=0.617N
POLY 3	P=0.112	P=0.521	P=0.504	P=0.187	P=0.335N	P=0.237N	P=0.275N	P=0.587N
POLY 1.5	P=0.114	P=0.513	P=0.503	P=0.194	P=0.321N	P=0.239N	P=0.258N	P=0.567N
POLY 6	P=0.109	P=0.532	P=0.503	P=0.181	P=0.353N	P=0.232N	P=0.298N	P=0.607N
LOGISTIC REGRESSION	P=0.075	P=0.519	P=0.500	P=0.145	P=0.281N	P=0.238N	P=0.259N	P=0.502N
COCH-ARM / FISHERS	P=0.129	P=0.500	P=0.500	P=0.247	P=0.301N	P=0.247N	P=0.247N	P=0.500N

Dose	Males CONTROL	Males 250 PPB	Males 500 PPB	Males 750 PPB	Females CONTROL	Females 250 PPB	Females 500 PPB	Females 750 PPB
Pituitary Gland: Pars Distalis or Unspecified Site Adenoma								
TUMOR RATES								
OVERALL (a)	32/50 (64%)	26/49 (53%)	26/50 (52%)	20/50 (40%)	37/50 (74%)	37/50 (74%)	27/50 (54%)	24/49 (49%)
POLY-3 ADJUSTED (b)	71.0%	62.2%	58.8%	61.0%	81.1%	80.2%	64.5%	66.7%
TERMINAL (d)	8/12 (67%)	10/14 (71%)	3/9 (33%)	4/6 (67%)	22/26 (85%)	26/31 (84%)	9/15 (60%)	9/14 (64%)
FIRST INCIDENCE	392	550	393	502	542	561	469	474
STATISTICAL TESTS								
LIFE TABLE	P=0.437N	P=0.068N	P=0.303N	P=0.393N	P=0.304	P=0.256N	P=0.377	P=0.457
POLY 3	P=0.136N	P=0.246N	P=0.149N	P=0.237N	P=0.022N*	P=0.562N	P=0.050N	P=0.092N
POLY 1.5	P=0.101N	P=0.205N	P=0.142N	P=0.152N	P=0.011N*	P=0.599	P=0.037N*	P=0.061N
POLY 6	P=0.171N	P=0.319N	P=0.161N	P=0.332N	P=0.042N*	P=0.471N	P=0.072N	P=0.124N
LOGISTIC REGRESSION	P=0.065N	P=0.126N	P=0.162N	P=0.083N	P=0.044N*	P=0.573	P=0.107N	P=0.155N
COCH-ARM / FISHERS	P=0.012N*	P=0.184N	P=0.156N	P=0.014N*	P<0.001N**	P=0.590N	P=0.030N*	P=0.009N**

G 07

Statistical Analysis of Primary Tumors in Rats(FISCHER 344)
Terminal Sacrifice at 105 weeks

Dose	Males CONTROL	250 PPB	500 PPB	750 PPB	Females CONTROL	250 PPB	500 PPB	750 PPB
Skin Basal or Sq. Cell Carcinoma, Carcinoma, Basosq. Tumor (M or B), Basal Cell Adenoma, Adenoma, Papilloma, Sq Papilloma, Keratoacanthoma, Trichoepitheliom								
TUMOR RATES	#	#	#	#	#	#	#	#
OVERALL (a)	1/50 (2%)	6/50 (12%)	4/50 (8%)	3/50 (6%)	3/50 (6%)	1/50 (2%)	1/50 (2%)	0/50 (0%)
POLY-3 ADJUSTED (b)	2.8%	15.1%	11.1%	10.5%	7.1%	2.4%	2.8%	0.0%
TERMINAL (d)	0/12 (0%)	2/14 (14%)	1/9 (11%)	1/6 (17%)	1/26 (4%)	1/31 (3%)	1/15 (7%)	0/14 (0%)
FIRST INCIDENCE	652	638	617	502	680	730 (T)	730 (T)	---
STATISTICAL TESTS								
LIFE TABLE	P=0.162	P=0.105	P=0.173	P=0.181	P=0.130N	P=0.272N	P=0.497N	P=0.221N
POLY 3	P=0.240	P=0.074	P=0.183	P=0.231	P=0.085N	P=0.305N	P=0.366N	P=0.176N
POLY 1.5	P=0.252	P=0.067	P=0.183	P=0.239	P=0.074N	P=0.308N	P=0.339N	P=0.160N
POLY 6	P=0.230	P=0.086	P=0.180	P=0.226	P=0.099N	P=0.297N	P=0.402N	P=0.193N
LOGISTIC REGRESSION	P=0.239	P=0.075	P=0.181	P=0.248	P=0.091N	P=0.299N	P=0.396N	P=0.172N
COCH-ARM / FISHERS	P=0.355	P=0.056	P=0.181	P=0.309	P=0.053N	P=0.309N	P=0.309N	P=0.121N

Dose	Males CONTROL	250 PPB	500 PPB	750 PPB	Females CONTROL	250 PPB	500 PPB	750 PPB
Skin Fibroma								
TUMOR RATES	#	#	#	#	#	#	#	#
OVERALL (a)	4/50 (8%)	3/50 (6%)	0/50 (0%)	1/50 (2%)	0/50 (0%)	0/50 (0%)	1/50 (2%)	0/50 (0%)
POLY-3 ADJUSTED (b)	11.2%	7.6%	0.0%	3.6%	0.0%	0.0%	2.8%	0.0%
TERMINAL (d)	1/12 (8%)	1/14 (7%)	0/9 (0%)	1/6 (17%)	0/26 (0%)	0/31 (0%)	0/15 (0%)	0/14 (0%)
FIRST INCIDENCE	638	550	---	729 (T)	---	---	619	---
STATISTICAL TESTS								
LIFE TABLE	P=0.088N	P=0.409N	P=0.088N	P=0.346N	P=0.460	(e)	P=0.462	(e)
POLY 3	P=0.051N	P=0.444N	P=0.059N	P=0.264N	P=0.448	(e)	P=0.471	(e)
POLY 1.5	P=0.048N*	P=0.465N	P=0.058N	P=0.250N	P=0.457	(e)	P=0.484	(e)
POLY 6	P=0.055N	P=0.419N	P=0.060N	P=0.280N	P=0.442	(e)	P=0.457	(e)
LOGISTIC REGRESSION	P=0.055N	P=0.455N	P=0.061N	P=0.269N	P=0.514	(e)	P=0.518	(e)
COCH-ARM / FISHERS	P=0.038N*	P=0.500N	P=0.059N	P=0.181N	P=0.500	(e)	P=0.500	(e)

Statistical Analysis of Primary Tumors in Rats(FISCHER 344) - GLUTARALDEHYDE

Terminal Sacrifice at 105 weeks

Dose	Males CONTROL	Males 250 PPB	Males 500 PPB	Males 750 PPB	Females CONTROL	Females 250 PPB	Females 500 PPB	Females 750 PPB
Skin Fibroma, Fibrosarcoma, Sarcoma, Myxoma, Myxosarcoma, or Fibrous Histiocytoma								
TUMOR RATES	#	#	#	#	#	#	#	#
OVERALL (a)	4/50 (8%)	5/50 (10%)	1/50 (2%)	1/50 (2%)	2/50 (4%)	1/50 (2%)	1/50 (2%)	0/50 (0%)
POLY-3 ADJUSTED (b)	11.2%	12.5%	2.8%	3.6%	4.7%	2.4%	2.8%	0.0%
TERMINAL (d)	1/12 (8%)	2/14 (14%)	0/9 (0%)	1/6 (17%)	0/26 (0%)	0/31 (0%)	0/15 (0%)	0/14 (0%)
FIRST INCIDENCE	638	533	666	729 (T)	533	674	619	---
STATISTICAL TESTS								
LIFE TABLE	P=0.123N	P=0.597	P=0.223N	P=0.346N	P=0.198N	P=0.499N	P=0.570N	P=0.332N
POLY 3	P=0.079N	P=0.574	P=0.174N	P=0.264N	P=0.196N	P=0.502N	P=0.557N	P=0.306N
POLY 1.5	P=0.073N	P=0.546	P=0.174N	P=0.250N	P=0.176N	P=0.504N	P=0.533N	P=0.288N
POLY 6	P=0.088N	P=0.609	P=0.178N	P=0.280N	P=0.220N	P=0.496N	P=0.587N	P=0.326N
LOGISTIC REGRESSION	P=0.072N	P=0.533	P=0.176N	P=0.269N	P=0.109N	P=0.489N	P=0.459N	P=0.203N
COCH-ARM / FISHERS	P=0.048N*	P=0.500	P=0.181N	P=0.181N	P=0.129N	P=0.500N	P=0.500N	P=0.247N

Dose	Males CONTROL	Males 250 PPB	Males 500 PPB	Males 750 PPB	Females CONTROL	Females 250 PPB	Females 500 PPB	Females 750 PPB
Skin Fibrosarcoma								
TUMOR RATES	#	#	#	#	#	#	#	#
OVERALL (a)	0/50 (0%)	2/50 (4%)	0/50 (0%)	0/50 (0%)	1/50 (2%)	1/50 (2%)	0/50 (0%)	0/50 (0%)
POLY-3 ADJUSTED (b)	0.0%	5.1%	0.0%	0.0%	2.4%	2.4%	0.0%	0.0%
TERMINAL (d)	0/12 (0%)	1/14 (7%)	0/9 (0%)	0/6 (0%)	0/26 (0%)	0/31 (0%)	0/15 (0%)	0/14 (0%)
FIRST INCIDENCE	---	533	---	---	533	674	---	---
STATISTICAL TESTS								
LIFE TABLE	P=0.470N	P=0.267	(e)	(e)	P=0.223N	P=0.760N	P=0.522N	P=0.569N
POLY 3	P=0.443N	P=0.263	(e)	(e)	P=0.229N	P=0.761	P=0.534N	P=0.555N
POLY 1.5	P=0.434N	P=0.253	(e)	(e)	P=0.209N	P=0.759	P=0.519N	P=0.541N
POLY 6	P=0.451N	P=0.277	(e)	(e)	P=0.252N	P=0.756N	P=0.552N	P=0.568N
LOGISTIC REGRESSION	P=0.387N	P=0.224	(e)	(e)	P=0.140N	P=0.754N	P=0.472N	P=0.433N
COCH-ARM / FISHERS	P=0.375N	P=0.247	(e)	(e)	P=0.170N	P=0.753N	P=0.500N	P=0.500N

Dose	Males CONTROL	250 PPB	500 PPB	750 PPB	Females CONTROL	250 PPB	500 PPB	750 PPB
Skin Fibrosarcoma, Sarcoma, Myxosarcoma, or Fibrous Histiocytoma								
TUMOR RATES	#	#	#	#	#	#	#	#
OVERALL (a)	0/50 (0%)	2/50 (4%)	1/50 (2%)	0/50 (0%)	2/50 (4%)	1/50 (2%)	0/50 (0%)	0/50 (0%)
POLY-3 ADJUSTED (b)	0.0%	5.1%	2.8%	0.0%	4.7%	2.4%	0.0%	0.0%
TERMINAL (d)	0/12 (0%)	1/14 (7%)	0/9 (0%)	0/6 (0%)	0/26 (0%)	0/31 (0%)	0/15 (0%)	0/14 (0%)
FIRST INCIDENCE	---	533	666	---	633	674	---	---
STATISTICAL TESTS								
LIFE TABLE	P=0.607	P=0.267	P=0.500	(e)	P=0.095N	P=0.499N	P=0.286N	P=0.332N
POLY 3	P=0.610N	P=0.263	P=0.504	(e)	P=0.087N	P=0.502N	P=0.278N	P=0.306N
POLY 1.5	P=0.595N	P=0.253	P=0.504	(e)	P=0.077N	P=0.504N	P=0.260N	P=0.288N
POLY 6	P=0.622	P=0.277	P=0.504	(e)	P=0.100N	P=0.496N	P=0.303N	P=0.326N
LOGISTIC REGRESSION	P=0.532N	P=0.224	P=0.502	(e)	P=0.048N*	P=0.489N	P=0.209N	P=0.203N
COCH-ARM / FISHERS	P=0.500N	P=0.247	P=0.500	(e)	P=0.059N	P=0.500N	P=0.247N	P=0.247N

Dose	Males CONTROL	250 PPB	500 PPB	750 PPB	Females CONTROL	250 PPB	500 PPB	750 PPB
Skin Keratoacanthoma								
TUMOR RATES	#	#	#	#	#	#	#	#
OVERALL (a)	1/50 (2%)	5/50 (10%)	2/50 (4%)	1/50 (2%)	2/50 (4%)	0/50 (0%)	0/50 (0%)	0/50 (0%)
POLY-3 ADJUSTED (b)	2.8%	12.7%	5.6%	3.5%	4.8%	0.0%	0.0%	0.0%
TERMINAL (d)	0/12 (0%)	2/14 (14%)	0/9 (0%)	0/5 (0%)	1/26 (4%)	0/31 (0%)	0/15 (0%)	0/14 (0%)
FIRST INCIDENCE	652	638	666	502	682	---	---	---
STATISTICAL TESTS								
LIFE TABLE	P=0.552N	P=0.163	P=0.498	P=0.692	P=0.094N	P=0.214N	P=0.355N	P=0.357N
POLY 3	P=0.502N	P=0.126	P=0.505	P=0.709	P=0.068N	P=0.236N	P=0.274N	P=0.302N
POLY 1.5	P=0.487N	P=0.116	P=0.505	P=0.715	P=0.063N	P=0.238N	P=0.258N	P=0.285N
POLY 6	P=0.517N	P=0.139	P=0.501	P=0.705	P=0.074N	P=0.230N	P=0.296N	P=0.319N
LOGISTIC REGRESSION	P=0.470N	P=0.131	P=0.502	P=0.771N	P=0.075N	P=0.233N	P=0.292N	P=0.310N
COCH-ARM / FISHERS	P=0.380N	P=0.102	P=0.500	P=0.753N	P=0.056N	P=0.247N	P=0.247N	P=0.247N

C 10

Statistical Analysis of Primary Tumors in Rats(FISCHER 344) - GLUTARALDEHYDE

Terminal Sacrifice at 105 weeks

Dose	Males CONTROL	Males 250 PPB	Males 500 PPB	Males 750 PPB	Females CONTROL	Females 250 PPB	Females 500 PPB	Females 750 PPB
Skin Squamous Cell Papilloma, Papilloma, Squamous Cell Carcinoma or Keratoacanthoma								
TUMOR RATES	#	#	#	#	#	#	#	#
OVERALL (a)	1/50 (2%)	5/50 (10%)	3/50 (6%)	3/50 (6%)	3/50 (6%)	1/50 (2%)	1/50 (2%)	0/50 (0%)
POLY-3 ADJUSTED (b)	2.8%	12.7%	8.3%	10.5%	7.1%	2.4%	2.8%	0.0%
TERMINAL (d)	0/12 (0%)	2/14 (14%)	0/9 (0%)	1/6 (17%)	1/26 (4%)	1/31 (3%)	1/15 (7%)	0/14 (0%)
FIRST INCIDENCE	652	638	617	502	682	730 (T)	730 (T)	---
STATISTICAL TESTS								
LIFE TABLE	P=0.173	P=0.163	P=0.315	P=0.181	P=0.130N	P=0.272N	P=0.497N	P=0.221N
POLY 3	P=0.252	P=0.126	P=0.312	P=0.231	P=0.085N	P=0.305N	P=0.366N	P=0.176N
POLY 1.5	P=0.262	P=0.116	P=0.312	P=0.239	P=0.074N	P=0.308N	P=0.339N	P=0.160N
POLY 6	P=0.245	P=0.139	P=0.311	P=0.226	P=0.099N	P=0.297N	P=0.402N	P=0.193N
LOGISTIC REGRESSION	P=0.243	P=0.131	P=0.309	P=0.248	P=0.091N	P=0.299N	P=0.396N	P=0.172N
COCH-ARM / FISHERS	P=0.345	P=0.102	P=0.309	P=0.309	P=0.053N	P=0.309N	P=0.309N	P=0.121N

Dose	Males CONTROL	Males 250 PPB	Males 500 PPB	Males 750 PPB	Females CONTROL	Females 250 PPB	Females 500 PPB	Females 750 PPB
Skin Squamous Cell Papilloma, Papilloma, or Keratoacanthoma								
TUMOR RATES	#	#	#	#	#	#	#	#
OVERALL (a)	1/50 (2%)	5/50 (10%)	3/50 (6%)	2/50 (4%)	2/50 (4%)	1/50 (2%)	1/50 (2%)	0/50 (0%)
POLY-3 ADJUSTED (b)	2.8%	12.7%	8.3%	7.1%	4.8%	2.4%	2.8%	0.0%
TERMINAL (d)	0/12 (0%)	2/14 (14%)	0/9 (0%)	1/6 (17%)	1/26 (4%)	1/31 (3%)	1/15 (7%)	0/14 (0%)
FIRST INCIDENCE	652	638	617	502	682	730 (T)	730 (T)	---
STATISTICAL TESTS								
LIFE TABLE	P=0.303	P=0.163	P=0.315	P=0.354	P=0.255N	P=0.453N	P=0.676N	P=0.357N
POLY 3	P=0.384	P=0.126	P=0.312	P=0.422	P=0.192N	P=0.498N	P=0.555N	P=0.302N
POLY 1.5	P=0.397	P=0.116	P=0.312	P=0.431	P=0.174N	P=0.502N	P=0.531N	P=0.285N
POLY 6	P=0.372	P=0.139	P=0.311	P=0.415	P=0.214N	P=0.490N	P=0.586N	P=0.319N
LOGISTIC REGRESSION	P=0.391	P=0.131	P=0.309	P=0.450	P=0.206N	P=0.486N	P=0.610N	P=0.310N
COCH-ARM / FISHERS	P=0.500	P=0.102	P=0.309	P=0.500	P=0.129N	P=0.500N	P=0.500N	P=0.247N

Dose	Males CONTROL	Males 250 PPB	Males 500 PPB	Males 750 PPB	Females CONTROL	Females 250 PPB	Females 500 PPB	Females 750 PPB
Testes Adenoma								
TUMOR RATES								
OVERALL (a)	36/50 (72%)	44/50 (88%)	40/50 (80%)	31/50 (62%)				
POLY-3 ADJUSTED (b)	85.9%	92.2%	88.1%	87.4%				
TERMINAL (d)	12/12 (100%)	13/14 (93%)	9/9 (100%)	6/6 (100%)				
FIRST INCIDENCE	495	356	365	449				
STATISTICAL TESTS								
LIFE TABLE	P=0.093	P=0.499	P=0.174	P=0.164				
POLY 3	P=0.553	P=0.219	P=0.507	P=0.571				
POLY 1.5	P=0.547	P=0.109	P=0.383	P=0.554				
POLY 6	P=0.534N	P=0.548	P=0.695N	P=0.735				
LOGISTIC REGRESSION	P=0.304	P=0.119	P=0.269	P=0.288				
COCH-ARM / FISHERS	P=0.093N	P=0.039 *	P=0.241	P=0.198N				

Dose	Males CONTROL	Males 250 PPB	Males 500 PPB	Males 750 PPB	Females CONTROL	Females 250 PPB	Females 500 PPB	Females 750 PPB
Thyroid Gland: C-Cell Adenoma								
TUMOR RATES								
OVERALL (a)	1/50 (2%)	4/50 (8%)	2/50 (4%)	2/50 (4%)	2/50 (4%)	1/50 (2%)	2/49 (4%)	0/49 (0%)
POLY-3 ADJUSTED (b)	2.9%	10.2%	5.5%	7.1%	4.8%	2.4%	5.7%	0.0%
TERMINAL (d)	1/12 (8%)	0/14 (0%)	0/9 (0%)	0/6 (0%)	2/26 (8%)	1/31 (3%)	2/15 (13%)	0/14 (0%)
FIRST INCIDENCE	729 (T)	615	638	564	730 (T)	730 (T)	730 (T)	---
STATISTICAL TESTS								
LIFE TABLE	P=0.351	P=0.264	P=0.488	P=0.365	P=0.415N	P=0.439N	P=0.484	P=0.382N
POLY 3	P=0.419	P=0.214	P=0.511	P=0.426	P=0.312N	P=0.497N	P=0.629	P=0.303N
POLY 1.5	P=0.425	P=0.200	P=0.508	P=0.432	P=0.287N	P=0.501N	P=0.654	P=0.288N
POLY 6	P=0.418	P=0.236	P=0.514	P=0.425	P=0.338N	P=0.487N	P=0.596	P=0.317N
LOGISTIC REGRESSION	P=0.406	P=0.222	P=0.503	P=0.426	P=0.415N	P=0.438N	P=0.484	(e)
COCH-ARM / FISHERS	P=0.500	P=0.181	P=0.500	P=0.500	P=0.215N	P=0.500N	P=0.684	P=0.253N

G 12

Statistical Analysis of Primary Tumors in Rats(FISCHER 344) - GLUTARALDEHYDE

Terminal Sacrifice at 105 weeks

Dose	Males CONTROL	Males 250 PPB	Males 500 PPB	Males 750 PPB	Females CONTROL	Females 250 PPB	Females 500 PPB	Females 750 PPB
Thyroid Gland: C-Cell Carcinoma								
TUMOR RATES								
OVERALL (a)	0/50 (0%)	1/50 (2%)	0/50 (0%)	0/50 (0%)	0/50 (0%)	2/50 (4%)	0/49 (0%)	0/49 (0%)
POLY-3 ADJUSTED (b)	0.0%	2.6%	0.0%	0.0%	0.0%	4.8%	0.0%	0.0%
TERMINAL (d)	0/12 (0%)	1/14 (7%)	0/9 (0%)	0/6 (0%)	0/26 (0%)	2/31 (7%)	0/15 (0%)	0/14 (0%)
FIRST INCIDENCE	---	729 (T)	---	---	---	730 (T)	---	---
STATISTICAL TESTS								
LIFE TABLE	P=0.608N	P=0.531	(e)	(e)	P=0.528N	P=0.277	(e)	(e)
POLY 3	P=0.563N	P=0.520	(e)	(e)	P=0.487N	P=0.239	(e)	(e)
POLY 1.5	P=0.555N	P=0.512	(e)	(e)	P=0.456N	P=0.236	(e)	(e)
POLY 6	P=0.571N	P=0.530	(e)	(e)	P=0.522N	P=0.245	(e)	(e)
LOGISTIC REGRESSION	(e)	P=0.531	(e)	(e)	(e)	P=0.277	(e)	(e)
COCH-ARM / FISHERS	P=0.500N	P=0.500	(e)	(e)	P=0.380N	P=0.247	(e)	(e)

Dose	Males CONTROL	Males 250 PPB	Males 500 PPB	Males 750 PPB	Females CONTROL	Females 250 PPB	Females 500 PPB	Females 750 PPB
Thyroid Gland: C-Cell Carcinoma or Adenoma								
TUMOR RATES								
OVERALL (a)	1/50 (2%)	5/50 (10%)	2/50 (4%)	2/50 (4%)	2/50 (4%)	3/50 (6%)	2/49 (4%)	0/49 (0%)
POLY-3 ADJUSTED (b)	2.9%	12.7%	5.5%	7.1%	4.8%	7.1%	5.7%	0.0%
TERMINAL (d)	1/12 (8%)	1/14 (7%)	0/9 (0%)	0/6 (0%)	2/26 (8%)	3/31 (10%)	2/15 (13%)	0/14 (0%)
FIRST INCIDENCE	729 (T)	615	638	564	730 (T)	730 (T)	730 (T)	---
STATISTICAL TESTS								
LIFE TABLE	P=0.382	P=0.168	P=0.488	P=0.365	P=0.370N	P=0.581	P=0.484	P=0.382N
POLY 3	P=0.471	P=0.128	P=0.511	P=0.426	P=0.264N	P=0.504	P=0.629	P=0.303N
POLY 1.5	P=0.477	P=0.117	P=0.508	P=0.432	P=0.234N	P=0.498	P=0.654	P=0.288N
POLY 6	P=0.472	P=0.145	P=0.514	P=0.425	P=0.298N	P=0.517	P=0.596	P=0.317N
LOGISTIC REGRESSION	P=0.451	P=0.140	P=0.503	P=0.426	P=0.370N	P=0.581	P=0.484	(e)
COCH-ARM / FISHERS	P=0.558	P=0.102	P=0.500	P=0.500	P=0.157N	P=0.500	P=0.684	P=0.253N

G 13

G 14

CONT:

Dose	Males CONTROL	Males 250 PPB	Males 500 PPB	Males 750 PPB	Females CONTROL	Females 250 PPB	Females 500 PPB	Females 750 PPB
Thyroid Gland: Follicular Cell Adenoma								
TUMOR RATES								
OVERALL (a)	1/50 (2%)	0/50 (0%)	0/50 (0%)	0/50 (0%)	0/50 (0%)	0/50 (0%)	0/49 (0%)	2/49 (4%)
POLY-3 ADJUSTED (b)	2.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	6.2%
TERMINAL (d)	0/12 (0%)	0/14 (0%)	0/9 (0%)	0/6 (0%)	0/26 (0%)	0/31 (0%)	0/15 (0%)	0/14 (0%)
FIRST INCIDENCE	638	---	---	---	---	---	---	654
STATISTICAL TESTS								
LIFE TABLE	P=0.194N	P=0.461N	P=0.480N	P=0.548N	P=0.034 *	(e)	(e)	P=0.165
POLY 3	P=0.212N	P=0.482N	P=0.499N	P=0.549N	P=0.055	(e)	(e)	P=0.184
POLY 1.5	P=0.206N	P=0.488N	P=0.498N	P=0.542N	P=0.056	(e)	(e)	P=0.194
POLY 5	P=0.217N	P=0.474N	P=0.503N	P=0.556N	P=0.051	(e)	(e)	P=0.176
LOGISTIC REGRESSION	P=0.188N	P=0.505N	P=0.500N	P=0.534N	P=0.043 *	(e)	(e)	P=0.196
COCH-ARM / FISHERS	P=0.185N	P=0.500N	P=0.500N	P=0.500N	P=0.055	(e)	(e)	P=0.242

Dose	Males CONTROL	Males 250 PPB	Males 500 PPB	Males 750 PPB	Females CONTROL	Females 250 PPB	Females 500 PPB	Females 750 PPB
Thyroid Gland: Follicular Cell Carcinoma or Adenoma								
TUMOR RATES								
OVERALL (a)	1/50 (2%)	1/50 (2%)	0/50 (0%)	0/50 (0%)	0/50 (0%)	0/50 (0%)	0/49 (0%)	2/49 (4%)
POLY-3 ADJUSTED (b)	2.8%	2.6%	0.0%	0.0%	0.0%	0.0%	0.0%	6.2%
TERMINAL (d)	0/12 (0%)	0/14 (0%)	0/9 (0%)	0/6 (0%)	0/26 (0%)	0/31 (0%)	0/15 (0%)	0/14 (0%)
FIRST INCIDENCE	638	675	---	---	---	---	---	654
STATISTICAL TESTS								
LIFE TABLE	P=0.199N	P=0.721N	P=0.480N	P=0.548N	P=0.034 *	(e)	(e)	P=0.165
POLY 3	P=0.208N	P=0.740N	P=0.499N	P=0.549N	P=0.055	(e)	(e)	P=0.184
POLY 1.5	P=0.201N	P=0.747N	P=0.498N	P=0.542N	P=0.056	(e)	(e)	P=0.194
POLY 6	P=0.216N	P=0.730N	P=0.503N	P=0.556N	P=0.051	(e)	(e)	P=0.176
LOGISTIC REGRESSION	P=0.186N	P=0.757N	P=0.500N	P=0.534N	P=0.043 *	(e)	(e)	P=0.196
COCH-ARM / FISHERS	P=0.170N	P=0.753N	P=0.500N	P=0.500N	P=0.055	(e)	(e)	P=0.242

A 01

Dose	Males CONTROL	Males 250 PPB	Males 500 PPB	Males 750 PPB	Females CONTROL	Females 250 PPB	Females 500 PPB	Females 750 PPB
Uterus Polyp Stromal								
TUMOR RATES	#	#	#	#	#	#	#	#
OVERALL (a)					8/50 (16%)	10/50 (20%)	8/50 (16%)	3/50 (6%)
POLY-3 ADJUSTED (b)					18.6%	23.1%	21.1%	9.3%
TERMINAL (d)					3/26 (12%)	6/31 (19%)	2/15 (13%)	1/14 (7%)
FIRST INCIDENCE					566	612	455	641
STATISTICAL TESTS								
LIFE TABLE					P=0.397N	P=0.504	P=0.310	P=0.315N
POLY 3					P=0.239N	P=0.400	P=0.499	P=0.215N
POLY 1.5					P=0.181N	P=0.391	P=0.547	P=0.180N
POLY 6					P=0.313N	P=0.423	P=0.437	P=0.253N
LOGISTIC REGRESSION					P=0.145N	P=0.396	P=0.592	P=0.185N
COCH-ARM / FISHERS					P=0.075N	P=0.398	P=0.607N	P=0.100N

Dose	Males CONTROL	Males 250 PPB	Males 500 PPB	Males 750 PPB	Females CONTROL	Females 250 PPB	Females 500 PPB	Females 750 PPB
Uterus Sarcoma Stromal or Polyp Stromal								
TUMOR RATES	#	#	#	#	#	#	#	#
OVERALL (a)					8/50 (16%)	10/50 (20%)	8/50 (16%)	3/50 (6%)
POLY-3 ADJUSTED (b)					18.6%	23.1%	21.1%	9.3%
TERMINAL (d)					3/26 (12%)	6/31 (19%)	2/15 (13%)	1/14 (7%)
FIRST INCIDENCE					566	612	455	641
STATISTICAL TESTS								
LIFE TABLE					P=0.397N	P=0.504	P=0.310	P=0.315N
POLY 3					P=0.239N	P=0.400	P=0.499	P=0.215N
POLY 1.5					P=0.181N	P=0.391	P=0.547	P=0.180N
POLY 6					P=0.313N	P=0.423	P=0.437	P=0.253N
LOGISTIC REGRESSION					P=0.145N	P=0.396	P=0.592	P=0.185N
COCH-ARM / FISHERS					P=0.075N	P=0.398	P=0.607N	P=0.100N

A 02

Statistical Analysis of Prima Tumors in Rats(FISCHER 344) - GLUTARALDEHYDE

Terminal Sacrifice at 105 weeks

Dose	Males CONTROL	Males 250 PPB	Males 500 PPB	Males 750 PPB	Females CONTROL	Females 250 PPB	Females 500 PPB	Females 750 PPB
Zymbal's Gland Carcinoma								
TUMOR RATES	#	#	#	#	#	#	#	#
OVERALL (a)	1/50 (2%)	2/50 (4%)	1/50 (2%)	0/50 (0%)	0/50 (0%)	0/50 (0%)	1/50 (2%)	0/50 (0%)
POLY-3 ADJUSTED (b)	2.8%	5.1%	2.8%	0.0%	0.0%	0.0%	2.8%	0.0%
TERMINAL (d)	0/12 (0%)	1/14 (7%)	0/9 (0%)	0/6 (0%)	0/26 (0%)	0/31 (0%)	1/15 (7%)	0/14 (0%)
FIRST INCIDENCE	652	652	581	---	---	---	730 (T)	---
STATISTICAL TESTS								
LIFE TABLE	P=0.335N	P=0.557	P=0.747N	P=0.570N	P=0.386	(e)	P=0.390	(e)
POLY 3	P=0.339N	P=0.534	P=0.757N	P=0.549N	P=0.449	(e)	P=0.469	(e)
POLY 1.5	P=0.324N	P=0.522	P=0.757N	P=0.542N	P=0.458	(e)	P=0.482	(e)
POLY 6	P=0.354N	P=0.551	P=0.760N	P=0.556N	P=0.445	(e)	P=0.452	(e)
LOGISTIC REGRESSION	P=0.282N	P=0.535	P=0.759	P=0.541N	(e)	(e)	P=0.390	(e)
COCH-ARM / FISHERS	P=0.249N	P=0.500	P=0.75 N	P=0.500N	P=0.500	(e)	P=0.500	(e)

Dose	Males CONTROL	Males 250 PPB	Males 500 PPB	Males 750 PPB	Females CONTROL	Females 250 PPB	Females 500 PPB	Females 750 PPB
Zymbal's Gland Carcinoma or Adenoma								
TUMOR RATES	#	#	#	#	#	#	#	#
OVERALL (a)	1/50 (2%)	3/50 (6%)	1/50 (2%)	0/50 (0%)	0/50 (0%)	0/50 (0%)	1/50 (2%)	0/50 (0%)
POLY-3 ADJUSTED (b)	2.8%	7.7%	2.8%	0.0%	0.0%	0.0%	2.8%	0.0%
TERMINAL (d)	0/12 (0%)	1/14 (7%)	0/9 (0%)	0/6 (0%)	0/26 (0%)	0/31 (0%)	1/15 (7%)	0/14 (0%)
FIRST INCIDENCE	652	652	581	---	---	---	730 (T)	---
STATISTICAL TESTS								
LIFE TABLE	P=0.298N	P=0.367	P=0.747N	P=0.570N	P=0.386	(e)	P=0.390	(e)
POLY 3	P=0.296N	P=0.342	P=0.757N	P=0.549N	P=0.449	(e)	P=0.469	(e)
POLY 1.5	P=0.282N	P=0.328	P=0.757N	P=0.542N	P=0.458	(e)	P=0.482	(e)
POLY 6	P=0.310N	P=0.362	P=0.760N	P=0.556N	P=0.445	(e)	P=0.452	(e)
LOGISTIC REGRESSION	P=0.246N	P=0.340	P=0.759	P=0.541N	(e)	(e)	P=0.390	(e)
COCH-ARM / FISHERS	P=0.209N	P=0.309	P=0.753N	P=0.500N	P=0.500	(e)	P=0.500	(e)

A 03

Dose	Males CONTROL	Males 250 PPB	Males 500 PPB	Males 750 PPB	Females CONTROL	Females 250 PPB	Females 500 PPB	Females 750 PPB
All Organs								
Leukemia: Lymphocytic, Monocytic, Mononuclear, or Undifferentiated								
TUMOR RATES	#	#	#	#	#	#	#	#
OVERALL (a)	21/50 (42%)	24/50 (48%)	25/50 (50%)	16/50 (32%)	18/50 (36%)	20/50 (40%)	25/50 (50%)	12/50 (24%)
POLY-3 ADJUSTED (b)	51.4%	53.2%	58.6%	50.5%	39.7%	45.2%	57.5%	33.4%
TERMINAL (d)	5/12 (42%)	4/14 (29%)	3/9 (33%)	1/6 (17%)	7/26 (27%)	11/31 (36%)	4/15 (27%)	3/14 (21%)
FIRST INCIDENCE	495	449	481	449	533	542	353	514
STATISTICAL TESTS								
LIFE TABLE	P=0.312	P=0.507N	P=0.263	P=0.501	P=0.154	P=0.559N	P=0.018 *	P=0.537
POLY 3	P=0.439	P=0.522	P=0.324	P=0.566N	P=0.410	P=0.375	P=0.065	P=0.401N
POLY 1.5	P=0.505	P=0.456	P=0.309	P=0.500N	P=0.521	P=0.381	P=0.083	P=0.326N
POLY 6	P=0.389	P=0.586N	P=0.347	P=0.587	P=0.314	P=0.381	P=0.050	P=0.470N
LOGISTIC REGRESSION	P=0.428N	P=0.353	P=0.285	P=0.474N	P=0.369N	P=0.414	P=0.135	P=0.264N
COCH-ARM / FISHERS	P=0.203N	P=0.344	P=0.274	P=0.204N	P=0.217N	P=0.418	P=0.113	P=0.138N

Dose	Males CONTROL	Males 250 PPB	Males 500 PPB	Males 750 PPB	Females CONTROL	Females 250 PPB	Females 500 PPB	Females 750 PPB
All Organs								
Mesothelioma: Benign, Malignant, NOS								
TUMOR RATES	#	#	#	#	#	#	#	#
OVERALL (a)	2/50 (4%)	1/50 (2%)	0/50 (0%)	1/50 (2%)	0/50 (0%)	0/50 (0%)	0/50 (0%)	0/50 (0%)
POLY-3 ADJUSTED (b)	5.6%	2.6%	0.0%	3.6%	0.0%	0.0%	0.0%	0.0%
TERMINAL (d)	0/12 (0%)	1/14 (7%)	0/9 (0%)	0/6 (0%)	0/26 (0%)	0/31 (0%)	0/15 (0%)	0/14 (0%)
FIRST INCIDENCE	638	729 (T)	---	666	---	---	---	---
STATISTICAL TESTS								
LIFE TABLE	P=0.340N	P=0.446N	P=0.233N	P=0.597N	(e)	(e)	(e)	(e)
POLY 3	P=0.278N	P=0.470N	P=0.236N	P=0.585N	(e)	(e)	(e)	(e)
POLY 1.5	P=0.273N	P=0.481N	P=0.235N	P=0.578N	(e)	(e)	(e)	(e)
POLY 6	P=0.286N	P=0.459N	P=0.241N	P=0.597N	(e)	(e)	(e)	(e)
LOGISTIC REGRESSION	P=0.300N	P=0.461N	P=0.235N	P=0.578N	(e)	(e)	(e)	(e)
COCH-ARM / FISHERS	P=0.249N	P=0.500N	P=0.247N	P=0.500N	(e)	(e)	(e)	(e)

A 04

Statistical Analysis of Primary Tumors in Rats(FISCHER 344) GLUTARALDEHYDE

Terminal Sacrifice at 105 weeks

Dose	Males CONTROL	Males 250 PPB	Males 500 PPB	Males 750 PPB	Females CONTROL	Females 250 PPB	Females 500 PPB	Females 750 PPB
All Organs Mesothelioma: Malignant								
TUMOR RATES	#	#	#	#	#	#	#	#
OVERALL (a)	2/50 (4%)	1/50 (2%)	0/50 (0%)	1/50 (2%)	0/50 (0%)	0/50 (0%)	0/50 (0%)	0/50 (0%)
POLY-3 ADJUSTED (b)	5.6%	2.6%	0.0%	3.6%	0.0%	0.0%	0.0%	0.0%
TERMINAL (d)	0/12 (0%)	1/14 (7%)	0/9 (0%)	0/6 (0%)	0/26 (0%)	0/31 (0%)	0/15 (0%)	0/14 (0%)
FIRST INCIDENCE	638	729 (T)	---	666	---	---	---	---
STATISTICAL TESTS								
LIFE TABLE	P=0.340N	P=0.446N	P=0.233N	P=0.597N	(e)	(e)	(e)	(e)
POLY 3	P=0.278N	P=0.470N	P=0.236N	P=0.585N	(e)	(e)	(e)	(e)
POLY 1.5	P=0.273N	P=0.481N	P=0.235N	P=0.573N	(e)	(e)	(e)	(e)
POLY 6	P=0.286N	P=0.459N	P=0.241N	P=0.597N	(e)	(e)	(e)	(e)
LOGISTIC REGRESSION	P=0.300N	P=0.461N	P=0.235N	P=0.578N	(e)	(e)	(e)	(e)
COCH-ARM / FISHERS	P=0.249N	P=0.500N	P=0.247N	P=0.500N	(e)	(e)	(e)	(e)

Dose	Males CONTROL	Males 250 PPB	Males 500 PPB	Males 750 PPB	Females CONTROL	Females 250 PPB	Females 500 PPB	Females 750 PPB
All Organs Benign Tumors								
TUMOR RATES	#	#	#	#	#	#	#	#
OVERALL (a)	48/50 (96%)	48/50 (96%)	50/50 (100%)	38/50 (76%)	42/50 (84%)	43/50 (86%)	40/50 (80%)	31/50 (62%)
POLY-3 ADJUSTED (b)	98.6%	98.2%	100.0%	97.9%	90.8%	92.2%	88.8%	80.9%
TERMINAL (d)	12/12 (100%)	14/14 (100%)	9/9 (100%)	6/6 (100%)	25/26 (96%)	29/31 (94%)	14/15 (93%)	10/14 (71%)
FIRST INCIDENCE	392	356	365	106	542	561	455	474
STATISTICAL TESTS								
LIFE TABLE	P=0.140	P=0.197N	P=0.307	P=0.314	P=0.034 *	P=0.270N	P=0.022 *	P=0.201
POLY 3	P=0.625	P=0.811N	P=0.684	P=0.809N	P=0.079N	P=0.552	P=0.517N	P=0.132N
POLY 1.5	P=0.363N	P=0.678N	P=0.553	P=0.347N	P=0.048N*	P=0.478	P=0.460N	P=0.094N
POLY 6	P=0.515	P=0.961	P=0.890	P=0.960	P=0.100N	P=0.658N	P=0.574N	P=0.142N
LOGISTIC REGRESSION	P=0.332N	P=0.489N	P=0.376	P=0.345N	P=0.236N	P=0.430	P=0.433	P=0.332N
COCH-ARM / FISHERS	P<0.001N**	P=0.691N	P=0.247	P=0.004N**	P=0.004N**	P=0.500	P=0.398N	P=0.012N*

A 05

Dose	Males CONTROL	Males 250 PPB	Males 500 PPB	Males 750 PPB	Females CONTROL	Females 250 PPB	Females 500 PPB	Females 750 PPB
All Organs Malignant Tumors								
TUMOR RATES	#	#	#	#	#	#	#	#
OVERALL (a)	28/50 (56%)	33/50 (66%)	31/50 (62%)	19/50 (38%)	27/50 (54%)	26/50 (52%)	29/50 (58%)	16/50 (32%)
POLY-3 ADJUSTED (b)	66.5%	71.1%	69.5%	59.0%	57.8%	56.7%	63.2%	44.1%
TERMINAL (d)	6/12 (50%)	7/14 (50%)	3/9 (33%)	2/6 (33%)	11/26 (42%)	14/31 (45%)	4/15 (27%)	5/14 (36%)
FIRST INCIDENCE	495	449	481	449	518	437	276	463
STATISTICAL TESTS								
LIFE TABLE	P=0.457	P=0.540N	P=0.313	P=0.494N	P=0.301	P=0.329N	P=0.071	P=0.478N
POLY 3	P=0.338N	P=0.401	P=0.471	P=0.328N	P=0.259N	P=0.541N	P=0.369	P=0.152N
POLY 1.5	P=0.269N	P=0.323	P=0.423	P=0.258N	P=0.175N	P=0.538N	P=0.405	P=0.102N
POLY 6	P=0.395N	P=0.496	P=0.535	P=0.400N	P=0.362N	P=0.536N	P=0.326	P=0.215N
LOGISTIC REGRESSION	P=0.197N	P=0.272	P=0.365	P=0.260N	P=0.065N	P=0.505N	P=0.[illegible]	P=0.071N
COCH-ARM / FISHERS	P=0.037N*	P=0.206	P=0.342	P=0.054N	P=0.033N*	P=0.500N	P=0.[illegible]	P=0.0[illegible]N*

Dose	Males CONTROL	Males 250 PPB	Males 500 PPB	Males 750 PPB	Females CONTROL	Females 250 PPB	Females 500 PPB	Females 750 PPB
All Organs Malignant and Benign Tumors								
TUMOR RATES	#	#	#	#	#	#	#	#
OVERALL (a)	49/50 (98%)	50/50 (100%)	50/50 (100%)	38/50 (76%)	49/50 (98%)	46/50 (92%)	49/50 (98%)	36/50 (72%)
POLY-3 ADJUSTED (b)	100.0%	100.0%	100.0%	97.9%	100.0%	95.8%	98.0%	89.8%
TERMINAL (d)	12/12 (100%)	14/14 (100%)	9/9 (100%)	6/6 (100%)	26/26 (100%)	29/31 (94%)	14/15 (93%)	12/14 (86%)
FIRST INCIDENCE	392	356	365	106	518	437	276	463
STATISTICAL TESTS								
LIFE TABLE	P=0.185	P=0.231N	P=0.350	P=0.354	P=0.024 *	P=0.115N	P=0.013 *	P=0.205
POLY 3	P=0.115N	P=1.000	P=1.000	P=0.603N	P=0.026N*	P=0.230N	P=0.506N	P=0.021N*
POLY 1.5	P=0.008N**	P=1.000	P=1.000	P=0.085N	P=0.006N**	P=0.209N	P=0.530N	P=0.005N**
POLY 6	P=0.986N	P=1.000	P=1.000	P=1.000N	P=0.065N	P=0.233N	P=0.504N	P=0.056N
LOGISTIC REGRESSION	P=0.038N*	(e)	(e)	P=0.163N	P=0.010N*	P=0.224N	P=0.761	P=0.028N*
COCH-ARM / FISHERS	P<0.001N**	P=0.500	P=0.500	P<0.001N**	P<0.001N**	P=0.181N	P=0.753N	P<0.001N**

(a) Number of tumor-bearing animals / number of animals examined at site.
(b) Poly-3 adjusted lifetime tumor incidence.
(d) Observed incidence at terminal kill.
(f) Beneath the control incidence are the P-values associated with the trend test. Beneath the dosed group incidence are the P-values corresponding to pairwise comparisons between the controls and that dosed group. The life table analysis regards tumors in animals dying prior to terminal kill as

A 06

being (directly or indirectly) the cause of death.
Logistic regression is an alternative
method for analyzing the incidence of non-fatal tumors. The Cochran-Armitage
and Fishers exact tests compare directly the overall incidence rates
For all tests a negative trend is indicated by N
(e) Value of Statistic cannot be computed.
(I) Interim sacrifice
(T) Terminal sacrifice
Tumor rates based on number of animals necropsied.
* To the right of any statistical result, indicates significance at ($P<=0.05$).
** To the right of any statistical result, indicates significance at ($P<=0.01$).

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C55425C

PATHOLOGY WORKING GROUP
CHAIRPERSON'S REPORT

2-YEAR CHRONIC INHALATION STUDY OF
GLUTARALDEHYDE (C55425C)
IN B6C3F1 MICE

Prepared by:

Micheal P. Jokinen, DVM
Pathology Working Group Chairperson

Pathology Associates International
4915D Prospectus Drive
Durham, NC 27713

Submitted to:

National Toxicology Program/NIEHS
Research Triangle Park, NC 27709

June 8, 1998

The PWG Chairperson, Dr. Micheal P. Jokinen, has had no involvement with any laboratory or organization concerned with this study other than the NTP, and has not been involved in the origination or any previous review of data from this study.

PATHOLOGY WORKING GROUP CHAIRPERSON'S REPORT

2-Year Chronic Inhalation Study of **Glutaraldehyde (C55425C)** in B6C3F1 Mice

PWG Participants: Drs. M. Jokinen (PAI-Chairperson), S. Botts (EPL-QAP), S. Ching (SVC Assoc.), J. Hailey (NIEHS), R. Herbert (NIEHS). J. Leininger (NIEHS), A. Nyska (NIEHS)

Date: May 19, 1998
Site: NIEHS, Research Triangle Park, NC

The PWG convened to review selected slides from B6C3F1 mice exposed to glutaraldehyde by inhalation for two years. The doses and numbers of animals examined microscopically per group were as follows:

Dose	M	F
0 ppb	50	50
62.5 ppb	50	50
125 ppb	50	50
250 ppb	50	50

The study was conducted at Battelle Northwest Laboratories. The Study Pathologist (SP) was Dr. S. Grumbein and the Quality Assessment Pathologist (QAP) was Dr. S Botts of EPL.

A number of organs were reviewed by the QAP for potential treatment-related effects; the QAP reviewed these organs in all animals for all diagnoses, neoplastic and nonneoplastic. In addition, the QAP reviewed all tumor diagnoses in all animals. Organs reviewed for all diagnoses were as follows:

Male Mice	Female Mice
Larynx	Larynx
Lung	Lung
Nose	Nose

In addition, kidneys of all male mice were reviewed for infarct and nephropathy, and thyroids of all male mice were reviewed for follicular cell hyperplasia. Livers from all males and females were reviewed for hepatocellular adenoma and adenoma multiple, and hepatocellular carcinoma and carcinoma multiple; livers of females were also reviewed for eosinophilic focus. A few organs were reviewed when a specific diagnosis was present. In males these included Lung, Mediastinum – Carcinoma; and Urinary Bladder – Infiltration Cellular, Polymorphonuclear. In females these included Skin – Hyperplasia; Infiltration Cellular, Polymorphonuclear; Skin -- Inflammation, Acute; Urinary Bladder – Inflammation, Suppurative; Uterus – Infiltration Cellular, Polymorphonuclear; and Uterus -- Inflammation, Suppurative.

All neoplasms diagnosed in all organs were also examined in all males and females.

In addition to the above, at the suggestion of the QAP, the NTP directed the PWG Chairperson to review all thyroid glands from the female mice for proliferative lesions (hyperplasia, adenoma, or carcinoma).

SUMMARY OF PWG FINDINGS

Incidences of **Nose – Inflammation**; **Nose, Respiratory Epithelium – Metaplasia, Squamous**; **Nose, Turbinate – Necrosis**; and **Nose, Respiratory Epithelium -- Degeneration, hyaline** were greater in exposed groups of males and females than in controls. Incidences were higher in exposed females than in males. Incidences of **Thyroid Gland, Follicular Cell – Hyperplasia** were somewhat greater in high dose females than in controls.

CONDUCT OF THE PWG

Prior to the PWG, the PWG Chairperson reviewed the pathology tables, the SP's narrative, the Pathology Data Review, the Quality Assessment Report, and microslides of tissues selected for QA review. The PWG Chair then selected slides for review by the PWG, including representative examples of lesions, and lesions for which there was a difference in diagnosis among the SP, QAP, and PWG Chair.

RESULTS OF THE PWG REVIEW

Nose

The SP had diagnosed greater incidences of **Nose – Inflammation, Suppurative**; **Nose, Respiratory Epithelium – Metaplasia, Squamous**; and **Nose, Turbinate -- Necrosis** as compared with controls. These findings were confirmed by the QA/PWG review. The PWG examined representative sections and confirmed the presence of the lesions. The PWG did note that in many instances the inflammatory infiltrate was primarily suppurative, but noted that some lesions consisted of a mixture of neutrophils and mononuclear inflammatory cells, or primarily of mononuclear cells. Consequently, the PWG was of the opinion that the general term **Inflammation** was more appropriate than the term **Inflammation, Suppurative** used by the SP, and suggested that all diagnoses of **Inflammation, Suppurative** in the nose be changed to **Inflammation**.

Four levels of nose were examined; Level I was the most rostral portion of the nasal passage behind the nares and included respiratory and transitional epithelium, while the other three levels were the same levels routinely examined in chronic studies (Level II included respiratory, sometimes with olfactory

epithelium on the dorsal surface of the nasal passage; Level III included olfactory epithelium dorsally and respiratory epithelium ventrally; and Level IV included olfactory epithelium). Lesions were almost exclusively confined to level I, although infrequently small foci of inflammation were seen in Level II or Level III.

Inflammation, squamous metaplasia, and turbinate necrosis were of minimal and, occasionally, mild severity. Lesions were seen on the ventral surfaces of the nasoturbinates, dorsal and medial surfaces of the maxilloturbinates, and sometimes on the septum and lateral walls. Lesions in controls usually were unilateral, while those in exposed animals generally were bilateral. Inflammation consisted of one to few small focal aggregates of neutrophils, sometimes mixed with some mononuclear inflammatory cells, within the epithelium and lamina propria, occasionally accompanied by small amounts of cell debris on the surface. Less commonly the inflammatory infiltrate was present within the nasal lumen adjacent to the epithelium or within the lumens of distended glands within the lamina propria. Squamous metaplasia was a focal to multifocal change, generally affecting the tips of the turbinates and characterized by replacement of the normal cuboidal or columnar epithelium with three or more layers of squamous or cuboidal cells, sometimes with a few exfoliated cells on the surface. Turbinate necrosis was usually a focal change consisting of a small focus of necrosis extending the full thickness of the epithelium into the underlying lamina propria and sometimes affecting the turbinate bone. The necrotic focus generally contained cell debris and inflammatory cell infiltrate. The PWG noted that the lesions were very slight, in contrast to the severe lesions seen in the noses of exposed rats.

The PWG Chair noted the presence of **Olfactory Epithelium – Degeneration, Hyaline** and **Respiratory Epithelium – Degeneration, Hyaline**, of minimal to mild severity, which had not been diagnosed previously, in control and treated males and females. The microscopic appearance was typical of that seen with the spontaneously occurring hyaline degeneration of the olfactory and respiratory epithelium in B6C3F1 mice, and consisted of accumulation of homogeneous eosinophilic material within the cytoplasm of epithelial cells. The incidences of these changes as diagnosed by the PWG Chair showed an increased incidence in exposed groups of females as compared with control females, and a marginal increase in the high dose group of males as compared with control males. The PWG examined representative examples and agreed that change was present in both the olfactory and respiratory epithelium, and recommended that the PWG Chairperson's diagnoses of hyaline degeneration in the olfactory and respiratory epithelium be added to the pathology results.

Kidney

The SP had diagnosed **Infarct** in a few mid and high dose males, but not in controls. In addition, the SP diagnosed nephropathy of minimal severity in several more control males than in treated males and diagnosed mild

nephropathy in several more exposed males than in control males. With a few exceptions, the QAP concurred with the SP's findings.

The PWG Chair noted that the nephropathy diagnosed as minimal severity in a number of animals in each of the groups was of a similar degree of severity as that diagnosed as mild in other animals. The PWG Chair recommended increasing the degree of severity in several males in the control and each of the exposed groups from minimal to mild. The PWG examined some representative examples of the kidneys in which the PWG Chair had recommended increasing the severity to mild; the PWG was given slides from the control, mid-dose, and high dose groups in which the SP had diagnosed minimal or mild severity to use as a reference. The PWG concurred with the PWG Chair in each of the examples and, based upon this, recommended the severity grade of nephropathy be changed from minimal to mild in each of the animals in which this was recommended by the PWG Chair.

The PWG also examined each of the kidneys in which the SP had diagnosed Infarct, as well as a few additional kidneys, one of which was in a control, that contained similar lesions but had not been diagnosed as Infarct by the SP. These lesions appeared basically similar in each of the kidneys and consisted of one or, occasionally, two variably sized foci of interstitial fibrosis containing few to several shrunken tubules. Some of the areas of fibrosis contained small to large numbers of lymphocytes. In two animals (250 ppb males number 647 and number 648) the areas of fibrosis were relatively large and contained dilated glomeruli in addition to shrunken tubules. The PWG noted that these areas of fibrosis occur as a part of nephropathy and, consequently, was of the opinion that these foci should be considered part of the nephropathy instead of being diagnosed as a separate lesion. The PWG recommended the diagnoses of Infarct be deleted and the foci be included under the diagnosis of nephropathy. This required in most animals that the severity grade be increased (e.g., if a kidney had been diagnosed with minimal nephropathy and mild infarct the diagnosis was changed to mild nephropathy to take into account the contribution of the foci).

Thyroid Gland

The SP had diagnosed a somewhat greater incidence of **Thyroid Gland, Follicular Cell – Hyperplasia** in the high dose group of exposed males as compared with control males. There was no increase in follicular cell neoplasms in treated groups of males. The QAP examined all thyroids from the males and added several additional diagnoses of hyperplasia, primarily in the control and high dose groups. The incidences of hyperplasia as diagnosed by the QAP were similar in high dose males and controls. The PWG Chair agreed with all of the QAP's findings and diagnosed hyperplasia in a few additional animals.

.The thyroid gland in females was not selected for QA review. The SP had diagnosed a somewhat higher incidence of hyperplasia in the high dose female group as compared with controls; however, there was no increase in follicular cell neoplasms in treated groups. At the suggestion of the QAP, the NTP directed the PWG Chair to review all thyroids from the females for proliferative follicular cell lesions. The results of the review are listed in Table 1 in this report. Only disagreements with the SP's diagnoses are listed in Table 1; if the PWG Chair agreed with the SP's findings in an animal, no entry was made in Table 1 for that animal. The PWG Chair diagnosed hyperplasia in several additional animals in each of the groups, and also diagnosed a few additional follicular cell neoplasms. The PWG reviewed the thyroids from males in which the PWG Chair added a diagnosis of hyperplasia, as well as representative examples of the hyperplasias diagnosed by the PWG Chair in each of the female groups and all the additional follicular cell neoplasms diagnosed in the females by the PWG Chair. The PWG agreed with the PWG Chair in all cases. In view of this, the PWG recommended adding all of the PWG Chair's additional diagnoses to the pathology findings. The findings of the PWG Chair in the females increased the incidence of hyperplasia in each of the groups, but confirmed the somewhat greater incidence of hyperplasia in the high dose females as compared with the controls. The PWG Chair's findings also confirmed the SP's findings of no increased incidence of follicular cell neoplasia in exposed groups of females as compared with controls. The PWG was of the opinion that, given the lack of any exposure-related effect in the thyroids of males and the absence of any exposure-related increase in follicular cell neoplasia in females, the increase in hyperplasia in exposed females was probably an incidental finding unrelated to exposure.

Lung

The SP had found no exposure-related effects in the lung. This was confirmed by the QA/PWG review. The PWG reviewed a few lung neoplasms for which there was a difference of opinion.

Larynx

The SP had found no exposure-related effects in the larynx. This was confirmed by the QA/PWG review. The QAP diagnosed inflammation of the laryngeal glands was seen in a few males in the control group and each of the exposed groups. The PWG Chair concurred with the QAP's diagnoses. The PWG examined two larynges containing inflammation and confirmed its presence.

Miscellaneous

The SP had diagnosed Uterus – Infiltration Cellular, Polymorphonuclear in some females, and had diagnosed Uterus – inflammation, Suppurative in other females. The affected females were scattered among dose groups and there was no apparent relationship between exposure and the presence of these

changes. The QAP agreed with the SP's diagnoses. The change referred to by these two different diagnoses consisted of an infiltrate of varying numbers of neutrophils within the endometrium and the uterine lumen, as well as within the lumens of some endometrial glands, and was the same morphologically in all animals. No apparent cause for the presence of suppurative inflammation was seen. Infiltrate of inflammatory cells, primarily neutrophils, can be seen normally during certain periods of the estrous cycle and is not truly inflammation. Consequently, the PWG Chair considered the presence of the neutrophils to represent polymorphonuclear cellular infiltrate rather than suppurative inflammation. Accordingly, the PWG Chair recommended the diagnoses of Uterus – Inflammation, Suppurative be changed to Uterus – Infiltration Cellular, Polymorphonuclear in order to make the terminology consistent and to indicate the fact that the infiltrate in the uteri was not inflammation. As this was a minor issue not involving a potential exposure-related effect, it was resolved between the PWG Chair and the responsible NTP pathologist without showing slides to the PWG.

POST-PWG ACTION ITEMS

There were no post-PWG action items.

Micheal P. Jokinen, DVM
PWG Chairperson

6/8/98
Date

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PATHOLOGY WORKING GROUP
CHAIRPERSON'S REPORT

2-YEAR CHRONIC INHALATION STUDY OF
GLUTARALDEHYDE (C55425C)
IN F344 RATS

Prepared by:

Micheal P. Jokinen, DVM
Pathology Working Group Chairperson

Pathology Associates International
4915-D Prospectus Drive
Durham, NC, 27713

Submitted to:

National Toxicology Program/NIEHS
Research Triangle Park, NC

May 12, 1998

The PWG Chairperson, Dr. Micheal P. Jokinen, has had no involvement with any laboratory or organization concerned with this study other than the NTP, and has not been involved in the origination or any previous review of data from this study.

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PATHOLOGY WORKING GROUP CHAIRPERSON'S REPORT

2-Year Chronic Inhalation Study of **Glutaraldehyde (C55425C)** in F344 Rats

PWG Participants: Drs. M. Jokinen (PAI-Chairperson), S. Botts (EPL-QAP), J. Hailey (NIEHS), J. Leininger (NIEHS), K. Morgan (GlaxoWellcome), A. Nyska (NIEHS), A. Radovsky (NIEHS), and A. VanBirgelen (NIEHS-Observer)

Date: April 21, 1998
Site: NIEHS, Research Triangle Park

The PWG convened to review selected slides from F344 rats exposed to glutaraldehyde by inhalation for two years. The doses and numbers of animals examined microscopically in each group were as follows:

Dose	M	F
0 ppm	50	50
250 ppb	50	50
500 ppb	50	50
750 ppb	50	50

The study was conducted at Battelle Northwest Laboratories. The Study Pathologist (SP) was Dr. R. Renne and the Quality Assessment Pathologist (QAP) was Dr. S. Botts of EPL.

A number of organs were reviewed by the QAP for potential treatment-related effects; the QAP reviewed these organs in all animals for all diagnoses, both neoplastic and nonneoplastic. In addition, the QAP reviewed all tumor diagnoses in all animals. Organs reviewed for all diagnoses were as follows:

Male Rats	Female Rats
Larynx	Larynx
Lung	Lung
Nose	Nose

In addition, all males and females from all groups were examined for Tooth - Degeneration, and Brain from males and females were examined when the following specific diagnoses were present: Brain -- Hydrocephalus, and Brain -- Hemorrhage.

All neoplasms diagnosed in all organs (except Testis - Interstitial Cell Adenoma) were examined in all males and females.

SUMMARY OF THE PWG FINDINGS

Nose

Incidences of **Respiratory Epithelium -- Inflammation**; **Respiratory Epithelium -- Hyperplasia**; **Respiratory Epithelium, Goblet Cell -- Hyperplasia**; **Respiratory Epithelium -- Metaplasia, Squamous**; **Squamous Epithelium -- Inflammation**; **Squamous Epithelium -- Hyperplasia**, and **Olfactory Epithelium -- Degeneration, Hyaline** were greater in exposed groups than controls.

CONDUCT OF THE PWG

Prior to the PWG, the PWG chairperson reviewed the pathology tables, the SP's narrative, the Pathology Data Review, the Quality Assessment Report, and microslides of tissues selected for QA review. The PWG chair then selected slides for review by the PWG, including representative examples of lesions, and lesions for which there was a difference in diagnosis among the SP, QAP, and PWG chair.

RESULTS OF THE PWG REVIEW

Nose

The SP had diagnosed greater incidences of several changes in the respiratory and squamous epithelium in the noses of exposed males and females as compared with controls. Changes in the **Squamous Epithelium** included **Inflammation, Suppurative**; and **Hyperplasia**. Changes in the **Respiratory Epithelium** included **Inflammation, Suppurative; Hyperplasia; Goblet Cell -- Hyperplasia**, and **Metaplasia, Squamous**. The PWG examined representative sections and confirmed the presence of the lesions. However, the PWG was of the opinion that the more general term **Inflammation** was more appropriate than the term **Inflammation, Suppurative,** used by the SP, and suggested that all diagnoses of **Inflammation, Suppurative** in the nose be changed to **Inflammation**.

Four levels of nose were examined; the Level I was from the most rostral portion of the nasal passage and included the squamous epithelium behind the external nares, while the other three levels examined were the same levels routinely examined in chronic studies (Level II included respiratory epithelium, Level III included olfactory epithelium on the dorsal aspect of the nasal passage and respiratory epithelium more ventrally, while Level IV, the most caudal level, included the ethmoturbinates). Lesions were most common and severe in the squamous epithelium in Level I, less common and severe in the second section, infrequent in the third section, and present rarely in the fourth section. The PWG members commented that glutaraldehyde is very reactive and probably reacted with the tissues in the rostral portions of the nasal passage and so that little of the compound reached the more distal portion of the nose.

Inflammation was a minimal to marked change consisting of multifocal to locally extensive infiltrates of small to moderate numbers of mixed inflammatory cells, including neutrophils, lymphocytes, plasma cells, and sometimes a few macrophages within the lamina propria beneath the epithelium and, in severe cases, within the epithelium itself. The number of inflammatory cells and extent of infiltrate increased with increasing severity. In more severe cases of inflammation sizable aggregates of neutrophils were present in the nasal cavity, which was presumably the reason the SP chose to use the term Inflammation, Suppurative. The PWG noted that neutrophils were indeed a component of the inflammation in nearly all lesions it examined. In some cases neutrophils were the major component and the diagnosis of suppurative inflammation was justified, while in other cases they were only a minor component and the PWG was of the opinion that a diagnosis of chronic/active inflammation or chronic inflammation was more appropriate. Consequently, the PWG suggested the more general term of inflammation be used since this term would encompass the entire spectrum of lesions.

Squamous Epithelium -- Hyperplasia was a minimal to marked change seen in Level III. It was characterized microscopically by varying degrees of thickening of the epithelium due an increase in the number of cell layers, and, especially in more severe cases, varying degrees of accumulation of keratin on the epithelial surface. In severe cases the keratin formed aggregates which filled part of the lumen of the nasal passage. The SP, in his narrative, had referred to the increase in keratin as hyperkeratosis. One of the PWG participants noted that the change likely occurred as a result of the keratin becoming fixed by the glutaraldehyde and accumulating within the lumen rather than being sloughed and cleared from the nasal passage. It was noted clinically that some animals exhibited dyspnea and mouth breathing, while at necropsy some animals were found to have air filled stomachs and intestines (indicating they had swallowed air) and in some animals it was difficult to flush fixative through the nasal passage. It appears that the accumulated keratin produced significant obstruction of the nasal passage in some animals resulting in the findings, just mentioned, noted clinically and at necropsy.

Respiratory Epithelium -- Hyperplasia was a minimal to moderate change seen primarily in Level II and, in severe cases, in Level III. It was characterized by an increase in the number of epithelial cells resulting in an increased epithelial thickness; increased numbers of goblet cells were sometimes also seen, particularly in more severe lesions. Hyperplasia of the transitional epithelium was also seen, especially in more severely affected noses, but it was not diagnosed separately.

Respiratory Epithelium, Goblet Cell -- Hyperplasia was a minimal to mild change characterized by aggregates and/or glandular structures of goblet cells and occurred primarily along the nasal septum and ventral meatus of Level II. Increased numbers of goblets cells were sometimes seen as a component of the respiratory epithelial hyperplasia, but goblet cell hyperplasia was diagnosed when the goblet cells formed prominent aggregates and/or glandular structures.

Respiratory Epithelium -- Metaplasia, Squamous was a minimal to moderate change affecting the respiratory and, sometimes, the transitional epithelium. It was characterized by replacement of the normal cuboidal to columnar epithelium with three or more layers of squamous to cuboidal cells. In some more severe cases accumulation of keratin was observed on the epithelial surface.

The PWG Chair noted the presence of **Olfactory Epithelium -- Degeneration, Hyaline**, which had not been diagnosed previously, in control and treated males and females. The microscopic appearance was characteristic of that seen with the spontaneously occurring hyaline degeneration of the olfactory epithelium in F344 rats, and consisted of accumulation of homogeneous eosinophilic material within the cytoplasm of epithelial cells. The change was of minimal to mild severity observed in the olfactory epithelium lining the dorsal meatus of Level III. The incidence was somewhat higher in treated groups than in controls. The PWG examined a number of examples and agreed that the change was present, and recommended that the PWG Chair's diagnoses of hyaline degeneration of the olfactory epithelium be added to the pathology results.

Lung

The SP had diagnosed a few alveolar/bronchiolar neoplasms in treated males, with a marginally greater incidence in the high dose group. The PWG examined all of these neoplasms and confirmed a marginal increase in the high dose group. However, the

incidences all fell within the historical control range and so the neoplasms were not considered by the PWG to be related to treatment.

The SP diagnosed **Alveolus -- Infiltration Cellular, Histiocyte** and **Interstitium -- Fibrosis** in a number of animals in each of the control and treated groups of males and females. The QAP added a number of diagnoses of these changes and, with few exceptions, the PWG Chair concurred with the QAP. In general, these changes were of very minimal severity. These changes did not represent a treatment-related effect in males. In females, the incidences of histiocyte infiltrate were similar in control and treated groups, but the incidences of interstitial fibrosis were greater in treated females than in controls. Most of the lesions diagnosed as histiocytic infiltrate and interstitial fibrosis were minute focal lesions consisting of a few alveoli, generally located beneath the pleura, that were filled with vacuolated macrophages with fibrous thickening of the intervening alveolar walls; in a few animals the SP also diagnosed alveolar proteinosis and alveolar epithelial hyperplasia in these lesions. The lesions had the same microscopic appearance in control and treated animals. In some cases, minute aggregates of histiocytes, without accompanying fibrosis, were seen; a number of them occurred in lungs containing severe mononuclear cell leukemia. In addition, the SP had diagnosed interstitial fibrosis in a number of lungs containing severe mononuclear cell leukemia or mineralization (presumably secondary to severe nephropathy). The PWG examined a number of lungs containing the focal lesions and confirmed the presence of the histiocyte infiltrate and interstitial fibrosis; the PWG did not concur with the SP's findings of alveolar proteinosis and alveolar epithelial hyperplasia and recommended these findings be deleted. The PWG members commented that these focal lesions are seen commonly in aging F344 rats and are considered to be minute foci of spontaneously occurring chronic inflammation. The PWG did not consider these to be related to treatment and concluded the increased incidence of interstitial fibrosis in treated females was a chance finding for the following reasons: (1) there was not an accompanying increase in males (2) the lesions had the same microscopic appearance and were of very slight severity in both treated and control animals (3) these lesions are known to occur spontaneously, and (4) since the effects of glutaraldehyde inhalation were confined to the rostral portions of the nose it would not be expected that compound-related lesions would occur in the lung.

Larynx

The SP diagnosed a number of changes in the larynx, but these occurred with similar incidences in control and treated groups, thus there were no compound-related effects in the larynx. The SP's findings were confirmed by the QA/PWG review. The lesions were of slight severity in all animals. The most commonly diagnosed lesion was inflammation of the laryngeal glands. The QAP added several additional diagnoses in each of the treatment groups, but the overall incidences as diagnosed by the QAP were still similar across treatment groups. With few exceptions the PWG Chair concurred with the QAP's additional diagnoses. The PWG examined two examples of inflammation of the laryngeal glands and confirmed its presence.

Tooth

The SP had diagnosed low incidences of **Tooth -- Degeneration**, affecting the molars, in control and treated males and females, and had diagnosed a somewhat greater incidence in high dose males as compared with control males. This finding was

confirmed by the QA/PWG review. The PWG examined a number of examples and confirmed the presence of the lesion. The affected teeth had all been observed grossly. Microscopically the change in some animals consisted of partial fragmentation and loss of the crown of the tooth, which was sometimes accompanied by inflammation, and had the appearance of dental caries. In other animals the entire crown of the tooth was missing and the remainder of the tooth was covered by gingival epithelium; inflammation was sometimes present beneath the gingival epithelium adjacent to the remnants of the tooth. The PWG suggested the latter appearance may have represented a more advanced state of the lesion in which the crown had become totally fragmented and had broken away leaving the root of the tooth which had subsequently become covered with gingival epithelium. The PWG commented that this was an unusual lesion and was of the opinion that the somewhat greater incidence of degeneration in the high dose male group was unlikely to be related to the compound since (1) the change occurred in control animals indicating it can occur spontaneously and does not depend upon the presence of glutaraldehyde (2) there was not an accompanying increased incidence in treated females, and (3) there is not any apparent mechanism by which glutaraldehyde could produce degeneration of teeth.

Miscellaneous

The SP had diagnosed a number of skin lesions as Cyst, Epidermal Inclusion. The QAP considered all of these to be Keratoacanthomas and the PWG Chair concurred with the QAP's diagnoses, with two exceptions (250 ppb males number 226 and number 234). Since so many diagnoses had been changed by the QAP, at the request of NTP, the PWG examined some representative examples as well as one case (number 226) in which the PWG Chair did not agree with the QAP. The PWG considered all the lesions examined, including the one not agreed to by the PWG Chair, to represent Keratoacanthomas. Since the PWG had agreed with the QAP in the case in which the PWG Chair disagreed with the QAP, it was considered advisable to examine the other lesion (from animal number 234) in which the PWG Chair had disagreed with the QAP. This lesion was examined after the PWG by the NTP pathologists who agreed with the SP's diagnosis of Cyst, Epidermal Inclusion for this lesion.

A number of squamous cell neoplasms (Squamous Cell Papilloma and Squamous Cell Carcinoma) arising in the oral cavity epithelium had been diagnosed by the SP. The QAP and PWG Chair agreed with the SP in all cases. Since these are relatively uncommon tumors in the F344 rat and since several occurred in this study, at the request of NTP, the PWG examined all of these diagnosed neoplasms. In all cases the PWG agreed with the SP's diagnosis. The incidence in all groups fell within the historical control range so the PWG was of the opinion that these neoplasms were unrelated to treatment.

POST-PWG ACTION ITEMS

There were no post-PWG action items.

Micheal P. Jokinen, DVM
PWG Chairperson

Date

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POST-PWG ACTION ITEMS

There were no post-PWG action items.

Micheal P. Jokinen, DVM
PWG Chairperson

5/12/98
Date

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