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No. 279

TOXICOLOGY AND CARCINOGENESIS STUDIES OF AMOSITE ASBESTOS

(CAS NO. 12172-73-5)

IN F344/N RATS

(FEED STUDIES)

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Public Health Service
National Institutes of Health

FOREWORD

The National Toxicology Program (NTP), established in 1978, develops and evaluates scientific information about potentially toxic and hazardous chemicals. This knowledge can be used for protecting the health of the American people and for the primary prevention of disease. By bringing together the relevant programs, staff, and resources from the U.S. Public Health Service, DHHS, the National Toxicology Program has centralized and strengthened activities relating to toxicology research, testing and test development/validation efforts, and the dissemination of toxicological information to the public and scientific communities and to the research and regulatory agencies.

The NTP is made up of four charter DHHS agencies: the National Cancer Institute (NCI), National Institutes of Health; the National Institute of Environmental Health Sciences (NIEHS), National Institutes of Health; the National Center for Toxicological Research (NCTR), Food and Drug Administration; and the National Institute for Occupational Safety and Health (NIOSH), Centers for Disease Control. In July 1981, the Carcinogenesis Bioassay Testing Program, NCI, was transferred to the NIEHS.

This study was conducted under contract to the National Institute of Environmental Health Sciences, National Toxicology Program. The studies described in this Technical Report have been conducted in compliance with NTP chemical health and safety requirements and must meet or exceed all applicable Federal, state, and local health and safety regulations. Animal care and use were in accordance with the U.S. Public Health Service Policy on Humane Care and Use of Animals. All NTP toxicology and carcinogenesis studies are subjected to a data audit before being presented for peer review.

These NTP Technical Reports are available for sale from the National Technical Information Service, U.S. Department of Commerce, 5285 Port Royal Road, Springfield, VA 22161 (703-487-4650). Single copies of this Technical Report are available without charge (and while supplies last) from the NTP Public Information Office, National Toxicology Program, P.O. Box 12233, Research Triangle Park, NC 27709.

Special Note: This Technical Report was peer reviewed in public session and approved by the NTP Board of Scientific Counselers' Technical Reports Review Subcommittee on September 22, 1982 [see page 6]. Thereafter, the NTP adopted the policy that the experimental data and laboratory records from all NTP toxicology and carcinogenesis studies not yet printed and distributed would be audited. The audit report was reviewed by NTP staff, who determined that none of the discrepancies influenced the final interpretation of the results of these studies. The audit report is on file at the NIEHS/NTP Quality Assurance Office and is available for review.

Because printing and distribution of this Technical Report have been delayed, the format differs from that of Technical Reports peer reviewed more recently. The categories of evidence of carcinogenicity adopted by the NTP in June 1983 were not used to evaluate these data. This final Technical Report supersedes all previous drafts of this report that have been distributed.

NTP TECHNICAL REPORT

ON THE

TOXICOLOGY AND CARCINOGENESIS STUDIES OF AMOSITE ASBESTOS

(CAS NO. 12172-73-5)

IN F344/N RATS

(FEED STUDIES)

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NATIONAL TOXICOLOGY PROGRAM
P.O. Box 12233
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AMOSITE ASBESTOS

CAS No. 12172-73-5

$(Fe^{2+}Mg)_6 \cdot Si_8O_{22}(OH)_2$

ABSTRACT

Carcinogenesis studies of amosite asbestos alone or in combination with the intestinal carcinogen 1,2-dimethylhydrazine dihydrochloride (DMH) were conducted in male and female F344/N rats. Amosite asbestos was administered at a concentration of 1% in pelleted diet for the entire lifetime of the rats, starting with the dams of the study animals. One group of amosite asbestos-exposed rats (amosite preweaning gavage) also received chrysotile asbestos via gavage during lactation. Group sizes varied from 100 to 250. Litter size was the same, but the offspring from mothers exposed to amosite asbestos were smaller at weaning than those from nonexposed mothers and remained smaller throughout their life. The DMH was administered by gavage at a dose of 7.5 mg/kg for males and 15 mg/kg for females every 14 days, starting at 8 weeks of age, for a total of five doses. The administration of DMH did not affect body weight gain either in amosite-exposed or nonexposed animals.

The amosite-exposed rats showed enhanced survival compared with that of the nonexposed rats. DMH exposure reduced survival by approximately 1 year, although the survival of the amosite plus DMH groups was slightly greater than that of the DMH group alone.

Significant increases in the incidences of C-cell carcinomas of the thyroid gland (untreated control, 11/117; amosite, 50/246, $P<0.05$; amosite preweaning gavage, 14/100) and of leukemia (38/117; 106/249, $P<0.05$; 49/100, $P<0.01$) in male rats were observed in amosite-exposed groups. However, the biologic significance of the C-cell carcinomas in relation to amosite asbestos exposure is discounted because of a lack of significance when C-cell adenomas and carcinomas were combined and because the positive effect was not observed in the amosite preweaning gavage group. The biologic significance of an increased incidence of leukemia is questionable because of a lack of statistical significance in the amosite group when evaluated by life table analysis and because no toxic lesions were observed in the target organs, i.e., gastrointestinal tract and mesothelium.

DMH caused a high incidence (62%-74%) of intestinal neoplasia in amosite-exposed and nonexposed groups. Neither an enchanced carcinogenic nor a protective effect was demonstrated by exposure to amosite asbestos.

Conclusions: Under the conditions of these feed studies, amosite asbestos was not overtly toxic, did not affect survival, and was not carcinogenic when ingested at a concentration of 1% in the diet by male or female F344/N rats. The cocarcinogenic studies using DMH were considered inadequate because of the high incidence of DMH-induced intestinal neoplasia in both the amosite asbestos-exposed and nonexposed groups..

CONTRIBUTORS

The NTP Technical Report on the Toxicology and Carcinogenesis Studies of Amosite Asbestos is based on the lifetime studies that began in March 1978 and ended in February/March 1981 at Hazleton Laboratories America, Inc. (Vienna, VA).

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The members of the Peer Review Panel who evaluated the draft Technical Report on amosite asbestos on September 22, 1982, are listed below. Panel members serve as independent scientists, not as representatives of any institution, company, or governmental agency. In this capacity, Panel members have five major responsibilities: (a) to ascertain that all relevant literature data have been adequately cited and interpreted, (b) to determine if the design and conditions of the NTP studies were appropriate, (c) to ensure that the Technical Report presents the experimental results and conclusions fully and clearly, (d) to judge the significance of the experimental results by scientific criteria, and (e) to assess the evaluation of the evidence of carcinogenicity and other observed toxic responses.

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SUMMARY OF PEER REVIEW COMMENTS ON THE TOXICOLOGY AND CARCINOGENESIS STUDIES OF AMOSITE ASBESTOS

On September 22, 1982, the draft Technical Report on the toxicology and carcinogenesis studies of amosite asbestos received peer review by the National Toxicology Program Board of Scientific Counselors' Technical Reports Review Subcommittee and associated Panel of Experts. The review meeting was held in the Conference Center, Building 101, South Campus, National Institute of Environmental Health Sciences, Research Triangle Park, NC.

Dr. E.E. McConnell, NIEHS, introduced the studies by reviewing the experimental design, results, and proposed conclusions (was not overtly toxic, did not affect survival, and was not carcinogenic when ingested at a concentration of 1% in the diet by male or female rats). The cocarcinogenic studies using DMH were considered inadequate.

Dr. Vesselinovitch, a principal reviewer, inquired if the statistically significant increase in C-cell carcinomas of the thyroid gland in treated male rats might have been related to asbestos. (The combined incidence of thyroid gland adenomas and carcinomas was not statistically significant.)

Dr. Harper, a second principal reviewer, agreed with the conclusions as stated. Dr Whittemore, the third principal reviewer, also agreed with the conclusions but expressed concern about whether an MTD was achieved. Dr. Schwetz also questioned the experimental design, including the use of only one dose and the preweaning gavage regimen.

Dr. J. Moore, NTP, explained that this study and other oral asbestos ingestion studies in rats represented a consensus study design developed by a group of scientists within the Department of Health, Education, and Welfare. One dose was used so as to expose a larger than usual number of animals, and the 1% dose level in the diet represented the highest dose thought reasonable to represent a tolerated dose. The preweaning gavage was added to provide exposure of animals at a time when there might be increased permeability of the gut, which could allow enhanced penetration of fibers.

In other discussion, Dr. Scala objected to ascribing effects of asbestos on neonatal animals via lactational exposure when fibers were not measured in the milk. Dr. Whittemore moved that the report on the bioassay of amosite asbestos be accepted with the revisions as noted. Dr. Harper seconded the motion, which was approved with nine affirmative votes and one abstention (Dr. Swenberg).

I. INTRODUCTION

AMOSITE ASBESTOS

CAS No. 12172-73-5

$(Fe^{2+}Mg)_6 \cdot Si_8O_{22}(OH)_2$

The term "asbestos" has a commercial/industrial derivation limited to naturally occurring fibrous minerals of the serpentine or amphibole series. Chrysotile is the only type of asbestos in the serpentine series, whereas the amphibole series is represented by actinolite, amosite, anthophyllite, crocidolite, and tremolite. The essential characteristic of asbestos minerals is their fibrous nature.

Excellent reviews of the carcinogenic and public health effects associated with asbestos exposure are those by Craighead and Mossman (1982), Peto and Schneiderman (1981), Selikoff (1980), the U.S. Environmental Protection Agency (EPA) (USEPA, 1980), Selikoff and Hammond (1979), and the International Agency for Research on Cancer (IARC, 1977). These studies clearly established an association between occupational inhalation exposure to chrysotile, amosite, crocidolite, and anthophyllite asbestos and an increased risk of lung cancer as well as mesotheliomas.

Large portions of the population ingest asbestos through consumption of food and water. Analyses of water samples from 365 cities found 45% to have detectable levels of various types of asbestos (Millette, 1979). Forty-one cities had asbestos concentrations in water which exceeded 10 million fibers per liter. Asbestos or asbestos-like fibers may gain access to water supplies as a result of mining (Lake Superior), from the presence of natural serpentine or amphibole deposits in watersheds (Seattle, WA, and San Francisco, CA), or, under certain conditions, through the use of asbestos-cement pipe for municipal water supplies (USEPA, 1980). For the latter, erosion of the pipe with release of fibers is associated with the "aggressiveness" of the water, a term representing a mathematical expression of pH, alkalinity, and calcium content. The EPA estimated that 68.5% of water systems in the United States utilize water that is potentially capable of eroding asbestos-cement pipe.

A number of studies have provided evidence that ingestion of asbestos in either food or water can result in the migration of asbestos fibers through the gastrointestinal mucosa and to distant organ sites in humans (Carter and Taylor, 1980), rats (Cunningham et al., 1977; Sebastien et al., 1980), and baboons (Storeygard and Brown, 1977; Patel-Mandlik, 1980). Electron microscopic studies confirmed the presence of amphibole mineral fibers in the urine of individuals who ingested water containing these fibers (Cook and Olson, 1979).

Harrington et al. (1978) failed to detect an association between the use of asbestos-cement pipe for municipal water supplies in Connecticut and the incidence of gastrointestinal cancer. In a study of cancer incidence in the San Francisco Bay area, Kanarek et al. (1980) reported a statistically significant trend for the increased incidence of several cancer types, including stomach, gallbladder, esophageal, and peritoneal cancer, when census tracts were analyzed on a gradient of low to high asbestos content in municipal water. Cooper et al. (1979) confirmed the association between asbestos concentrations in the San Francisco Bay area drinking water and cancer of the digestive tract.

Studies in animals have shown that inhalation of asbestos produces lung carcinomas and mesotheliomas in the pleural cavity (Wagner et al., 1974). Intrapleural, intratracheal, or intraperitoneal injection of asbestos also induces neoplasia in several species of laboratory animals (Stanton et al., 1981). A review of these studies is given by Levine (1981).

Asbestos (chrysotile, amosite, and crocidolite) was also cytogenic in vitro to human embryonic intestine, mouse epithelial-like colon-derived cells, and rat liver epithelial cells (Reiss et al., 1979). However, chrysotile asbestos was far more cytotoxic than were the amphibole fibers, and the effects were more pronounced in the intestine-derived cells than in those from the liver.

Asbestos also was cytotoxic to Syrian hamster peritoneal macrophages (Bey and Harrington, 1971). Using the HGPRT locus/resistance to 6-thioguanine assay system, Reiss et al. (1979) showed that these three forms of asbestos were not mutagenic. In addition, no mutagenic activity was demonstrated when chrysotile, amosite, or crocidolite asbestos was used in *Escherichia coli* or *Salmonella typhimurium* systems (Chamberlain and Tarmy, 1977). Therefore, it can be concluded that asbestos is not genotoxic but is rather an epigenetic carcinogen of the solid-state type (Weisburger and Williams, 1979).

In November 1973, the National Institute of Environmental Health Sciences and the EPA cosponsored a symposium on the possible biologic effects of ingested asbestos (EHP, 1974). The participants at this conference concluded that a paucity of definitive data existed concerning the effects of ingested asbestos and that specific research was needed.

A subcommittee of the U.S. Department of Health, Education, and Welfare (now the U.S. Department of Health and Human Services) Committee to Coordinate Toxicology and Related Programs was established to review existing data and to prepare a draft research protocol that would be responsive to potential public health implications of ingested asbestos. This protocol was distributed widely for comment within and outside the government, and a public meeting of the Subcommittee was held on February 11, 1975. On the basis of comments received, a revised protocol was developed which called for the use of long-term animal toxicology studies to evaluate the ingestion of several minerals for carcinogenic effects. As a result, the National Toxicology Program has investigated the carcinogenic potential of ingested chrysotile asbestos in hamsters (NTP, 1990a) and rats (NTP, 1985a), amosite asbestos in hamsters (NTP, 1985b) and rats (this report), crocidolite asbestos in rats (NTP, 1988), and tremolite in rats (NTP, 1990b). All of the studies were to encompass the lifetime of the animal, including exposure of the dams from which the study animals were derived. A single concentration of 1% asbestos in the diet was chosen because it represented the highest concentration thought to be reasonable from a biologic standpoint and one that could be tolerated in a lifetime study. Certain studies (intermediate-range chrysotile in hamsters and amosite and intermediate-range chrysotile in rats) also incorporated the intestinal carcinogen 1,2-dimethylhydrazine dihydrochloride (DMH) as part of the protocol to study the cocarcinogenic effects of asbestos. DMH is a well-known intestinal carcinogen in animals and produces epithelial neoplasms at sites of intimate exposure to asbestos.

This Technical Report presents the results of those studies undertaken to determine the effects of amosite asbestos fed to male and female F344/N rats in the diet. In addition, the studies were designed to determine if the ingestion of amosite asbestos modified the response to DMH.

II. MATERIALS AND METHODS

Study Material
Study Diets and Dose Formulations
Dose Formulations of 1,2-Dimethylhydrazine Dihydrochloride for Gavage Administration
Study Design
Source and Specifications of Study Animals
Animal Maintenance
Safety Precautions
Clinical Examinations and Pathology
Statistical Methods

II. MATERIALS AND METHODS

Study Material

Asbestos is a general term applied to certain natural silicates when they are present in a fibrous form. Amosite is a fibrous member of the amphibole mineral group; its chemical formula is $(Fe^{2+}Mg)_6 \cdot Si_8O_{22}(OH)_2$.

The amosite sample, identified as S-33, was purchased by the Bureau of Mines from the Atlas Asbestos Co. (Montreal, Canada). This material is from a mine in the area known as Renge, in the Transvaal, Republic of South Africa. Not a proper mineral name, amosite is a term used to describe the material from asbestos mines in South Africa.

To develop homogeneity of the sample, the amosite was processed by a single pass through an air jet mill. The high abrasive action of amosite resulted in erosion of the steel surfaces of the mill, which resulted in turn in increasing the chromium content of the milled product from 90 to 170 ppm.

The 1,200 pounds of milled amosite were packaged as 20-pound lots in virgin fiberboard drums and stored with other forms of asbestos in a special warehouse at Research Triangle Park, NC. Each drum received a color marking unique to the mineral type. Random samples of various drums determined that the amosite was homogeneous.

The homogeneity of the samples and the physical and chemical properties of the materials were characterized by the Bureau of Mines (1980) and by the Fine Particle Laboratories, Illinois Institute of Technology Research Institute (IITRI, Special Report). Copies of these reports are available upon request from the National Toxicology Program.

Selected chemical and physical properties of amosite asbestos are presented in Tables 1 and 2 (Bureau of Mines, 1980). In an analysis of mineralogic composition, grunerite (amosite) asbestos--$(Fe^{2+}Mg)_6 \cdot Si_8O_{22}(OH)_2$-was detected at a volume percent abundance of about 94 and actinolite asbestos at about 5; minor amounts of biotite, siderite, plagicolase, ziosite, glass, quartz, and other opaques were found.

Crystalline 1,2-dimethylhydrazine dihydrochloride (DMH) (greater than 97% pure) was obtained from Aldrich Chemical Co. (Metuchen, NJ) (lot no. 072967JA). Thin-layer chromatographic analysis of a 200-µg sample did not

TABLE 1. FIBER CHARACTERISTICS AND CHEMICAL INSTRUMENTAL ANALYSIS OF AMOSITE ASBESTOS

Fiber characteristics

Surface area (m^2/g)	4.13
Density (g/cm^3)	3.35 ± 0.026
Measurements by transmission electron microscopy	
Fiber count (gram)	0.3466×10^{10}
Mean length (µm)	4.37
Range of length	0.85-995
Median diameter	0.72
Range of diameter	0.864-12.4
Median fiber aspect ratio (l/d)	6.4248

Chemical instrumental analysis (expressed as weight percent)

Al_2O_3	0.42	MnO	2.66
CaO	0.48	Cr_2O_3	0.03
FeO	34.61	NiO	0.01
Fe_2O_3	2.24	CO_2	0.88
MgO	6.22	H_2O^-	0.15
K_2O	0.30	H_2O^+	2.30
SiO_2	50.36	Benzene-extracted organics	0.021
Na_2O	0.03		

TABLE 2. PARTICLE SIZE DISTRIBUTION OF AMOSITE ASBESTOS AND OTHER MINERALS BY PARTICLE NUMBER (a)

	Length Interval (μm)						
	0-1.99	2-3.99	4-5.99	6-7.99	8-9.99	10-19.99	20-39.99
Amosite asbestos mean width (μm)	0.28	0.38	0.45	0.45	0.48	0.52	0.51
Amosite asbestos particles per interval	57	126	88	78	52	181	184
Percent of total amosite asbestos particles	5.6	12.3	8.6	7.6	5.1	17.7	18.0
Cumulative percent amosite asbestos	5.6	17.9	26.5	34.1	39.2	56.9	74.9
Volume percent amosite asbestos (b)	--	0.1	0.3	0.4	0.4	2.4	5.0
Cumulative volume percent amosite asbestos	--	0.1	0.4	0.8	1.2	3.6	8.6
Number of other particles	11	8	1	0	1	1	0
Amosite asbestos particles per length interval, percent, by aspect ratio							
1:1-2.9:1	12	0	0	0	0	0	0
3:1-4.9:1	34	10	6	5	2	0	0
5:1-9.9:1	43	52	28	14	4	1	1
10:1-19.9:1	11	34	52	38	40	21	1
20:1-49.9:1	0	4	18	41	54	64	30
50:1-99.9:1	0	0	1	2	0	12	55
100:1-199:1	0	0	0	0	0	2	12
200:1-499:1	0	4	0	0	0	0	1
>500:1	0	0	0	0	0	0	0

(a) From Bureau of Mines (1980).
(b) Calculated from particle number data, assuming rectangular cross-section with third dimension equal to one-half measured width

detect any hydrazine or 1,1-dimethylhydrazine. Faint traces of methylazoxymethane and azoxymethane were detected by high-performance liquid chromatography (Fiala et al., 1976). Three percent of the impurities in DMH were not accounted for. The DMH was stored at 4° C.

Study Diets and Dose Formulations

The feed used was NIH 31 Rat and Mouse Ration. Amosite asbestos was incorporated to a concentration of 1% by weight into the study diet. Pilot studies determined that homogeneous mixing of amosite asbestos and feed would occur in a blender loaded by alternate layering of feed and amosite asbestos. Each batch of blended feed was analyzed for amosite asbestos concentration, pesticide contamination, and nutrient content. Results of analyses for amosite asbestos in feed are given in Table 3. Further details are given in Table 4.

Animals were to have received 1% amosite asbestos but were inadvertently given 1% chrysotile asbestos (medium range) by gavage. That formulation was prepared by weighing out the required amount of chrysotile asbestos (medium range), a gray powder with lumps, on a Mettler balance and placing it in a beaker. Sterile water (for injection) was added to obtain the desired concentration, and then the suspension was mixed in a magnetic stirrer for a short time. The suspension was administered by gavage at a dose of 0.47 mg/g body weight to groups of 100 males and females designated as the amosite preweaning (PW) gavage groups from birth to weaning (21 days).

TABLE 3. RESULTS OF ANALYSIS OF FORMULATED DIETS IN THE LIFETIME FEED STUDIES OF AMOSITE ASBESTOS AS DETERMINED BY IRON CONTENT

Date Mixed	Determined Concentration in Feed for Target Concentration of 10,000 ppm (1%) (a)
11/21/77	10,900 ± 1,500
12/07/77	11,200 ± 1,200
02/01/78	9,500 ± 1,600
03/22/78	11,300 ± 700
05/22/78	11,400 ± 1,000
05/22/78	11,200 ± 600
07/11/78	10,400 ± 400
07/11/78	9,900 ± 500
09/14/78	10,800 ± 800
09/14/78	11,500 ± 700
10/30/78	10,000 ± 1,300
10/30/78	12,000 ± 500
12/15/78	9,500 ± 1,600
12/15/78	11,000 ± 300
02/15/79	9,100 ± 700
02/15/79	10,200 ± 900
04/02/79	9,500 ± 400
04/02/79	13,400 ± 5,900
05/09/79	9,700 ± 400
05/09/79	9,500 ± 1,000
05/09/79	10,100 ± 100
06/26/79	11,100 ± 300
06/26/79	10,600 ± 500
08/28/79	9,900 ± 100
08/28/79	9,700 ± 500
10/16/79	11,800 ± 2,100
10/16/79	11,400 ± 900
12/03/79	9,900 ± 3,500
12/03/79	8,600 ± 1,300
01/10/80	9,100 ± 600
01/10/80	9,200 ± 600
02/27/80	6,700 ± 1,700
02/27/80	6,100 ± 2,100
04/18/80	9,800 ± 2,000
05/29/80	11,000 ± 1,900
05/29/80	13,400 ± 2,600
07/18/80	11,200 ± 600
08/26/80	10,700 ± 1,000
10/13/80	11,100 ± 700
	Mean = 10,300 ± 2,700

(a) Average of five samples

TABLE 4. EXPERIMENTAL DESIGN AND MATERIALS AND METHODS IN THE LIFETIME FEED STUDIES OF AMOSITE ASBESTOS (a)

EXPERIMENTAL DESIGN	
Size of Study Groups	F_0--control:male,54; female,108;exposed: male, 200; female, 400; F_1--untreated control: 88; amosite asbestos: 250 rats of each sex; DMH--125 rats of each sex; amosite asbestos + DMH--250 rats of each sex; amosite asbestos + PW--100
Doses	Amosite asbestos 0% or 1% (10,000 ppm) in feed; DMH--7.5 mg/kg (male); 15 mg/kg (female); PW--0.47 mg/kg chrysotile asbestos
Date of First Dose	F_0--obtained 12/7/77, bred starting 2/22/78
Duration of Dosing	Lifetime until only 10% of the group remained
Type and Frequency of Observation	Observed 2 × d; examined clinically 1 × wk; weighed 1 × wk
Necropsy and Histologic Examinations	Necropsy performed on all animals. Tissues examined histologically: adrenal glands; bone marrow (sternum); brain; bronchial, celiac, cervical, iliac, iliocolonic, mandibular, mesenteric, pancreatic, and renal lymph nodes; cecum; colon (carpet rolled); duodenum; esophagus; heart; ileum; jejunum; kidneys; liver; lungs and bronchi; mammary gland; pancreas; parathyroids; pituitary gland; prostate/testes or ovaries/uterus; salivary glands; small intestine; spleen; stomach; thyroid gland; tissue masses; trachea; and urinary bladder. Epididymis, eyes, nasal cavity with turbinates, seminal vesicles, and spinal cord were examined microscopically if gross lesions were observed
ANIMALS AND ANIMAL MAINTENANCE	
Strain and Species	F344/N rats
Animal Source	Charles River Breeding Laboratories (Wilmington, MA)
Study Laboratory	Hazleton Laboratories of America
Age When Placed on Study	F_0--15-16 wk prior to delivery of F_1
Age When Killed	untreated controls, amosite, amosite + PW--male 141 wk, female 145 wk; DMH, amosite + DMH--male 117 wk, female 103 wk
Necropsy Dates	Lifetime study
Method of Animal Distribution	According to tables of computer-generated random numbers
Feed	NIH 31 Rat and Mouse Ration (Zeigler Bros., Inc., Gardners, PA); available ad libitum
Bedding	Sani Chips® (J.P. Murphy, Rochelle Park, NJ, and Shurfire, Baltimore, MD)
Water	Tap water ad libitum
Cages	Polycarbonate (Hazleton Systems, Aberdeen, MD); stored on Enviro-racks®
Cage Filters	Remay nonwoven polyester sheets (Nationwide Papers, Washington, DC)
Animals per Cage	F_0--1 for males, 2 for females during breeding; 2 for males, 1 for females after breeding; F_1--3
Other Chemicals on Study in the Same Room	None
Animal Room Environment	Temp--23° ± 2° C; hum--50% ± 10%; fluorescent light 12 h/d; 10-15 room air changes/h
CHEMISTRY	
Supplier	Atlas Asbestos Co., Montreal, Quebec, Canada; obtained from a mine in South Africa in an area known as Renge in the Transvaal

TABLE 4. EXPERIMENTAL DESIGN AND MATERIALS AND METHODS IN THE LIFETIME FEED STUDIES OF AMOSITE ASBESTOS (Continued)

FORMULATED DIETS	
Preparation	Amosite asbestos and feed mixed in a 55-ft^3 Patterson-Kelly® V-blender with intensifier bar; oval, 3/8-in × 3/4-in pellets prepared with Sprout-Waldron pellet mill. Pelleted feed packaged in 25-lb aliquots in standard paper feed bags

(a) DMH--1,2-dimethylhydrazine dihydrochloride; PW--preweaning gavage

Dose Formulations of 1,2-Dimethylhydrazine Dihydrochloride for Gavage Administration

Immediately before use, DMH was mixed with ice-cooled 0.2 M acetate buffer (pH 5.0) in 15-ml screw-cap, Teflon®-lined centrifuge tubes in an ice bath. Results of colorimetric analysis of the dose mixtures indicated that the concentration of DMH was usually less than 80% of the target concentration of 3.9 and 7.8 mg/ml.

Study Design

Groups of 100-250 rats of each sex were fed pelleted diets containing 0% or 1% amosite asbestos in lifetime studies (Table 5). The mothers of those in the groups that were administered amosite asbestos started receiving amosite asbestos 7-12 days before mating. Subgroups of 100 male and 100 female rats inadvertently received 0.47 mg/g chrysotile asbestos in water by gavage, 7 days per week for 3 weeks, starting at 1 day of age. These two groups were referred to as the PW gavage groups. At 9 weeks of age, subgroups of 125-175 rats (one positive control group and one amosite asbestos-exposed group) received 7.5 mg/kg (male) or 15 mg/kg (female) DMH in acetate buffer (pH 5.0) by gavage, every other week for a total of five doses. These doses were based on a pilot study (McConnell et al., 1980) which showed that DMH at these doses produced an incidence of approximately 15% intestinal neoplasia. When the survival of either of the paired groups reached 10%, both groups were killed.

Source and Specifications of Study Animals

Parental Generation (F_0): Weanling F344/N (cesarean-derived) rats, which were barrier sustained and specific pathogen free, were purchased from Charles River Breeding Laboratories. These animals constituted the F_0 generation and were received December 7, 1977 (Figure 1).

On arrival, animals were taken directly to the quarantine area and acclimated to laboratory conditions for approximately 2 weeks. Twenty-four hours after arrival, eight rats of each sex were selected and killed, and pathogen burden was determined for each animal. Pathogens examined for included ectoparasites (mites, fleas, and lice), intestinal parasites (fecal flotation), and bacteria (Mycoplasma sp., Salmonella sp., *Diplococcus pneumoniae*, *Corynebacterium kutscheri*, and *Streptobacillus moniliformis*). Serologic tests were conducted for viruses (Tables C1-C3).

After approximately 2 months in quarantine (the regular 3- to 4-week quarantine period was extended because of a shortage of cages), male and female rats (15-16 weeks old) were separated on February 15, 1978, into two groups (control and exposed) according to tables of random numbers and placed on the appropriate designated diets.

After at least 7 days' exposure to the designated diets, the rats (16-17 weeks old) were placed in

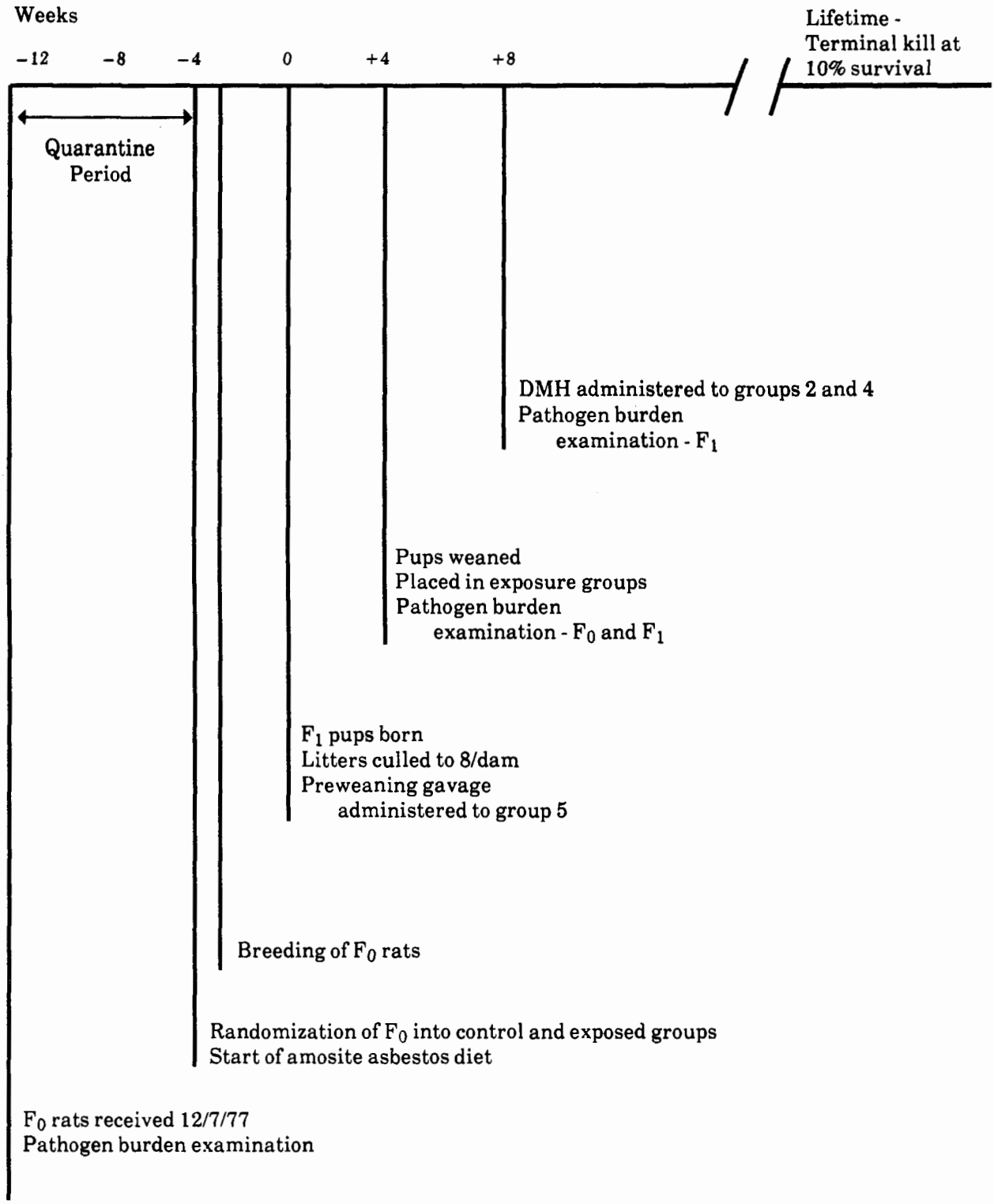

FIGURE 1. SCHEDULE OF MAJOR EVENTS IN THE LIFETIME FEED STUDIES OF AMOSITE ASBESTOS IN RATS

TABLE 5. SUMMARY OF DISTRIBUTION OF RATS IN THE LIFETIME FEED STUDIES OF AMOSITE ASBESTOS

Generation	Study Group	No. of Animals		Amosite		DMH (mg/kg) (a)	
		Male	Female	Percent	mg/g	Male	Female
F_0 (b)	1 (untreated control)	250	120	0	--	--	--
	2 (amosite asbestos)	200	400	1	--	--	--
F_1 (c)	1 (control)	117	117	0	--	--	--
	2 (DMH)	125	125	0	--	7.5	15.0
	3 (amosite asbestos)	250	250	1	--	--	--
	4 (amosite asbestos + DMH)	175	175	1	--	7.5	15.0
	5 (amosite asbestos + preweaning gavage)	100	100	1	(d) 0.47	--	--

Generation	Study Group	Birth Date (e)	Dose Date	Start of the Recording of Body Weights
F_1	1 (untreated control)	3/28/78	--	5/18/78
	2 (DMH)	3/28/78	(f) 5/26/78	5/18/78
	3 (amosite asbestos)	3/28/78	--	5/18/78
	4 (amosite asbestos + DMH)	3/28/78	(f) 5/26/78	5/18/78
	5 (amosite asbestos + preweaning gavage)	3/28/78	(d) 5/26/78	5/18/78

(a) Administered five doses of 1,2-dimethylhydrazine dihydrochloride (DMH) by gavage
(b) Randomization date: 2/15/78
(c) Randomization date: 5/2/78-5/10/78
(d) Inadvertently given intermediate (medium)-range chrysotile asbestos instead of amosite asbestos by gavage
(e) Based on the average of all the birth dates of the F_1 animals
(f) Given DMH by gavage

breeding cages (one male to two females) on February 22, 1978. During the breeding period, the rats continued to be fed the same diets. Twenty days later (on the average), females were separated and housed individually in polycarbonate cages. Males were removed from the breeding cages and rehoused two per cage. After the pups were born and placed on the lifetime feeding phase of the study, nine rats (five males and four females) were selected from the F_0 generation for additional pathogen burden determinations (Tables C4-C6) to assure that the animals remained in acceptable health according to the infectious disease criteria.

Filial Generation: Litters were culled to no more than eight pups. Litters of the control and exposed groups were assigned to the corresponding control or dosed groups such that birth dates were equally distributed. Litters in which only one sex was present were excluded. After weaning at 21 days, pups from exposed or control dams were randomly assigned to various exposed (except the amosite asbestos + PW gavage group) or control groups according to a table of random numbers. Pups assigned to the amosite asbestos + PW gavage group were administered 0.47 mg/g chrysotile asbestos in sterile water by gavage during lactation as described previously.

Animal Maintenance

The control and amosite asbestos-exposed rats were placed in separate rooms with monitored temperature and humidity and a controlled light cycle. Attempts were made to maintain the temperature at 74° ± 4° F and humidity at 50% ± 10%. Racks and filters were changed approximately once every 2 weeks. The rats were housed three per cage. Cages and bedding were replaced twice per week Bedding samples were collected periodically for analysis (Appendix D). Control and formulated diets and tap water via automatic waterers were available ad libitum. Two water samples were collected and submitted for analysis (Appendix E). Stainless steel feed containers were changed once every 2 weeks. Sources and description of the materials used for animal maintenance are presented in Table 4.

Safety Precautions

The incoming air to the animal rooms was filtered to remove particulate matter. Ten to 15 changes of room air per hour were provided. Before initiation of the study, air samples were collected and analyzed for baseline amosite asbestos concentrations (Appendix F). Additional samples were collected approximately every 6 months for analysis to assure personnel safety.

Other measures used for personnel protection included the wearing of fully protective disposable suits, gloves, boots, and bouffant caps and the use of a dust/mist respirator mask approved by the Occupational Safety and Health Administration. Personnel leaving the animal rooms were required to dispose of their protective clothing and to take showers. In addition, physical examinations, including pulmonary function tests and chest radiographs, were conducted at the initiation of the study, once per year thereafter, and at the end of the studies.

Clinical Examinations and Pathology

Rats were observed two times per day. Body weights by cage were recorded once per week for the duration of the studies. Mean body weights were calculated for each group. Moribund animals were killed, as were animals that survived to the end of the study. A necropsy was performed on all animals, including those found dead, unless the tissues were excessively autolyzed or cannibalized. Thus, the number of animals from which particular organs or tissues were examined microscopically varies and is not necessarily equal to the number of animals that were placed on study in each group. Animals were killed when exhibiting any one of these conditions:

1. Palpable masses within the abdominal cavity (excluding retained testes).
2. Masses protruding from the rectum.
3. Rectal discharge of bright red fluid (an indication of the presence of a bleeding colonic or rectal neoplasm).
4. Large ulcerated masses in the area of the ears or on the side of the face (Zymbal gland tumors).
5. Large subcutaneous masses that were ulcerated or infected.
6. Masses that interfered with breathing and eating or that severely hampered locomotion.
7. Huge tissue masses.
8. Central nervous system signs accompanied by weight loss (head tilt, circling, incoordination, ataxia, paralysis).
9. Severe weight loss or emaciation.
10. Coma or extreme weakness.

When the remaining animals of the amosite asbestos-exposed group of either sex reached 10% of those starting the studies, that group and the corresponding control group for that sex were killed. Animals were killed by exsanguination under sodium pentobarbital anesthesia (Nembutal®, Abbott Laboratories, Inc., North Chicago, IL, or Diabutal®, Diamond Laboratories, Inc., Des Moines, IA). Final body weights were recorded, and necropsies included blood smears taken from animals killed in extremis or those killed at the end of the study and touch preparations made from any enlarged spleen or lymphoid organ.

The gastrointestinal tract, chosen as one of the target organs before these studies began, was handled in a slightly different manner than in standard long-term rodent carcinogenesis studies. Before being placed in fixative, the entire esophagus was opened and pinned with the exterior surface adjacent to cardboard. The stomach and cecum were prepared similarly. Two-centimeter lengths of duodenum and ileum and two portions of jejunum were placed unopened in fixative. The remaining small intestine was opened, washed gently with saline, and carefully examined by transillumination on a radiograph viewing box. Suspected lesions were processed separately and identified individually as to location. Likewise, the entire colon with anus was opened, examined, and pinned to cardboard (serosal surface down) before fixation. The size and location of masses were recorded. Masses greater than 1 mm in diameter were removed as separate specimens for processing. After fixation and before embedding, the colon was "carpet-rolled" starting at the posterior end, with the mucosal surface inward.

Examinations for grossly visible lesions were performed on major tissues or organs. Tissues were preserved in 10% neutral buffered formalin, embedded in paraffin, sectioned, and stained with hematoxylin and eosin. Tissues examined microscopically are listed in Table 4.

When the pathology examination was completed, the slides, individual animal data records, and summary tables were sent to an independent quality assurance laboratory. Individual animal records and tables were compared for accuracy, slides and tissue counts were verified, and histotechnique was evaluated. All tumor diagnoses, all target tissues, and all tissues from a randomly selected 10% of the animals were evaluated by a quality assurance pathologist. Slides of all target tissues and those about which the original and quality assurance pathologists disagreed were submitted to the Chairperson of the Pathology Working Group (PWG) for evaluation. Representative coded slides selected by the Chairperson were reviewed by PWG pathologists, who reached a consensus and compared their findings with the original and quality assurance diagnoses. When diagnostic differences were found, the PWG sent the appropriate slides and comments to the original pathologist for review. This procedure has been described, in part, by Maronpot and Boorman (1982) and Boorman et al. (1985). The final diagnoses represent a consensus of contractor pathologists and the NTP Pathology Working Group.

Statistical Methods

Data Recording: Data on this experiment were recorded in the Carcinogenesis Bioassay Data System (Linhart et al., 1974). The data elements include descriptive information on the chemicals, animals, experimental design, survival, body weight, and individual pathology results, as recommended by the International Union Against Cancer (Berenblum, 1969).

Survival Analyses: The probability of survival was estimated by the product-limit procedure of Kaplan and Meier (1958) and is presented in the form of graphs. Animals were censored from the survival analyses at the time they were found to be missing or dead from other than natural causes; animals dying from natural causes were not censored. Statistical analyses for a possible dose-related effect on survival used the method of Cox (1972) for testing two groups for equality. All reported P values for the survival analysis are two-sided.

Calculation of Incidence: The incidence of neoplastic or nonneoplastic lesions has been given as the ratio of the number of animals bearing such lesions at a specific anatomic site to the number of animals in which that site was examined. In most instances, the denominators include only those animals for which the site was examined histologically. However, when macroscopic examination was required to detect lesions (e.g., skin or mammary tumors) prior to histologic sampling, or when lesions could have appeared at multiple sites (e.g., lymphomas), the denominators consist of the number of animals on which a necropsy was performed.

Analysis of Tumor Incidence: Three statistical methods are used to analyze tumor incidence data: life table tests, incidental tumor analysis, and Fisher exact analysis. Tests of significance include pairwise comparisons of exposed groups with controls. For studies in which administration of the study compound has little effect on survival, the results of the three alternative analyses will generally be similar. When differing results are obtained by the three methods, the final interpretation of the data will depend on the extent to which the tumor under consideration is regarded as being the cause of death. Continuity-corrected tests are used in the analysis of tumor incidence, and reported P values are one-sided. The procedures described below also were used to evaluate selected nonneoplastic lesions.

Life Table Analyses--The first method of analysis assumed that all tumors of a given type observed in animals dying before the end of the study were "fatal"; i.e., they either directly or indirectly caused the death of the animal. According to this approach, the proportions of tumor-bearing animals in the dosed and control groups were compared at each point in time at which an animal died with a tumor of interest. The denominators of these proportions were the total number of animals at risk in each group. These

results, including the data from animals killed at the end of the study, were then combined by the Mantel-Haenszel method (1959) to obtain an overall P value. This method of adjusting for intercurrent mortality is the life table method of Cox (1972). The underlying variable considered by this analysis is time to death due to tumor. If the tumor is rapidly lethal, then time to death due to tumor closely approximates time to tumor onset. In this case, the life table test also provides a comparison of the time-specific tumor incidences.

Incidental Tumor Analyses--The second method of analysis assumed that all tumors of a given type observed in animals that died before the end of the study were "incidental"; i.e., they were merely observed at necropsy in animals dying of an unrelated cause. According to this approach, the proportions of tumor-bearing animals in dosed and control groups were compared in each of five time intervals: weeks 0-60, weeks 61-86, weeks 87-112, weeks 113-126, and beyond week 126. The denominators of these proportions were the number of animals actually examined for tumors during the time interval. The individual time interval comparisons were then combined by the previously described method to obtain a single overall result. (See Haseman, 1984, for the computational details of both methods.)

Fisher Exact Analysis--In addition to survival-adjusted methods, the results of the Fisher exact test for pairwise comparisons (Gart et al., 1979) are given in the appendix containing the analyses of tumor incidence. This test is based on the overall proportion of tumor-bearing animals and does not adjust for survival differences.

Historical Control Data: Although the concurrent control group is always the first and most appropriate control group used for evaluation, there are certain instances in which historical control data can be helpful in the overall assessment of tumor incidence. Consequently, control tumor incidences from the NTP historical control data base (Haseman et al., 1984, 1985) are included for those tumors appearing to show compound-related effects.

III. RESULTS

Establishment of Study Groups
Pathogen Burden
Clinical Signs
Body Weights and Feed Consumption
Survival
Pathology and Statistical Analyses of Results

Establishment of Study Groups

These studies were designed to evaluate the effects of ingested amosite asbestos during the entire life of the animal. When the first litters were born, therefore, the mated female rats had been on study diets for approximately 12 weeks. To minimize the chance that the mothers would reject or cannibalize their young, the litters were not handled during lactation, except for weighing and culling at birth and the administration of intermediate-range chrysotile asbestos by gavage. Litter size and survival of offspring were unaffected by the presence of amosite asbestos in the mothers' diet. The average number of live fetuses born to amosite-exposed dams was 8.5 vs. 7.7 for the control groups. Significant numbers of pups that received the preweaning (PW) asbestos gavage died. The average size of the litters in this group was 3.4 at weaning compared with 7.5 in the non-PW amosite group. The average weight at birth of the amosite-exposed pups was 4.7 g compared with 4.8 g for the controls. Fetal weights were determined by dividing the weight of each litter by the number live pups. The amosite-exposed offspring were slightly smaller at weaning than were the controls (control, 27.4 g vs. exposed, 23.2 g).

A summary of groups, number of animals, and diets for the parental (F_0) and the filial (F_1) animals is presented in Table 5.

Pathogen Burden

Microscopic examination of parental tissues for pathogen burden indicated that the parents were initially free of spontaneous disease, with the exception of mild peribronchial accumulation of lymphocytes. Examination of parental tissues subsequent to weaning of the F_1 generation gave evidence of early respiratory disease consisting of moderate peribronchial lymphoid hyperplasia and minimal perivascular lymphoid hyperplasia.

Moderate peribronchial lymphoid hyperplasia and focal hyperplasia of the bronchiolar epithelium were noted in initial samples of F_1 generation rats. The bronchiolitis with a hyperplastic response in affected bronchiolar epithelium is characteristic of Sendai virus infection, and this conclusion was supported serologically. The disease is usually mild and self-limiting in rats as was demonstrated by the milder condition in samples obtained later in the studies and the lower Sendai serologic titer of the repeated tests (Appendix C).

Clinical Signs

A summary of clinical signs from weeks 71 to 111 is presented in Appendix G. This time period was chosen for illustration because few signs were noted before week 71 and age-related signs complicated the observations after week 111.

The incidence of clinical signs occurred at essentially similar frequencies throughout the studies in the study groups, except in those that received DMH. No distinct signs of compound-related effects were noted in any of the amosite-exposed animals during the first 52 weeks of the studies. The following representative findings were observed at generally similar frequencies in all groups: soft feces; urine stains; pale, thin, and/or hunched appearance; depression; localized alopecia or sores on head or body; rough hair coats; abnormal eyes (pale, cloudy, bloody crust, red, lacrimation, squinting, enlarged, sores, swollen, red discharge, protruding, small and/or necrotic); head tilt; salivation; localized swellings; stains on fur; bloated appearance; necrotic or abscessed tail; discharge from anus or vagina; protruding penis or vagina; small or enlarged testis; wheezing; wasting feed or decreased feed consumption; and labored respiration and/or abnormal central nervous system responses (circling, hyperactivity, loss of equilibrium, tremors, isolated occurrences of paralysis and/or ataxia).

As the study proceeded, the incidence of clinical signs increased in all groups. At intervals during which a large number of moribund animals were killed in any one particular group, the clinical signs most frequently observed were supportive of the conditions for moribund kills as outlined in the Materials and Methods section. A comparison of clinical signs observed during the same selected intervals for all groups revealed a larger number of palpable abdominal masses, tissue masses, and central nervous system signs, as well as red discharge and protruding masses from the rectum in Group 2

(DMH) and Group 4 (amosite + DMH). In addition, throughout the studies the incidences of tissue masses, nodules, and wart-like lesions of the head and ear region were greater in Groups 2 and 4. These findings were presumably due to the administration of DMH, since they were not frequently observed clinically in any of the groups not exposed to DMH.

Body Weights and Feed Consumption

Mean body weight and feed consumption values for the lifetime feeding phase of the studies are presented in Tables 6 through 8 and Figures 2 and 3. Cumulative mean body weight change relative to controls is presented in Table 9. Mean body weights were analyzed by the method of Rao (1958) at selected intervals: at birth and weeks 3, 8, 11, 15, 24, 33, and 60 for males and at birth and weeks 3, 8, 11, 16, 27, 48, and 60 for females.

The data revealed a 15% depressed mean body weight gain at weaning in rats of each sex in the amosite-exposed groups compared with that in the untreated controls. The depressed weight gain for the amosite-exposed rats was more apparent at 8 weeks of age (37% for males and 25% for females) and then paralleled that of the controls (except for DMH-exposed rats) for the remainder of the studies. Both male and female DMH-exposed groups gained less than the untreated controls. Additionally, the mean body weights of Group 5 (amosite + PW) males were higher at all of the selected intervals when compared with those of Group 3 (amosite) males. The mean body weights of the females in Group 5 were higher than those of Group 3 females at all the intervals chosen. The mean body weight change relative to the untreated controls revealed a noticeably lower weight gain throughout the first year in Group 2 rats of each sex.

A summary of the feed consumption per rat and ratios of exposed to controls for representative weeks is presented in Appendix H. For males in Groups 2 (DMH), 3 (amosite), 4 (amosite + DMH), and 5 (amosite + PW), the mean weekly feed consumption was 101%, 102%, 104%, and 105% that by the untreated control group; for females, the weekly mean feed consumption was 100%, 102%, 107%, and 108% that by the controls. For Group 4 (amosite + DMH), the weekly mean feed consumption was 101% that by Group 2 (DMH) for males and 108% that by Group 2 for females.

Comparisons of mean total feed consumption values of the control and amosite-exposed groups from the beginning of the studies through week 52 (60 weeks of age) revealed generally higher total mean feed consumption values in the amosite-exposed groups. There was no apparent correlation between the decreased body weight gains observed in the amosite-exposed groups and feed consumption. Feed consumption by the exposed groups was generally higher than that by untreated controls.

TABLE 6. MEAN BODY WEIGHTS AND SURVIVAL OF RATS IN THE LIFETIME FEED STUDIES OF AMOSITE ASBESTOS

Weeks on Study (from birth)	Control		Amosite			Amosite + PW		
	Av. Wt. (grams)	No. of Survivors	Av. Wt. (grams)	Wt. (percent of controls)	No. of Survivors	Av. Wt. (grams)	Wt. (percent of controls)	No. of Survivors
MALE								
7	173	117	101	58	250	128	74	100
17	303	117	259	85	250	279	92	100
27	369	117	318	86	250	338	92	100
37	403	117	356	88	250	376	93	100
48	425	117	375	88	250	390	92	100
57	450	117	393	87	250	416	92	100
67	471	117	411	87	248	438	93	100
77	477	115	429	90	245	443	93	99
87	475	112	424	89	238	439	92	90
97	471	104	417	89	230	440	93	83
107	459	93	410	89	218	420	92	69
117	423	76	390	92	183	391	92	53
127	393	44	358	91	130	370	94	26
137	340	16	334	98	61	327	96	9
FEMALE								
7	123	117	91	74	250	106	86	100
17	185	117	168	91	250	176	95	100
27	212	117	192	91	247	198	93	99
37	222	117	204	92	247	211	95	99
48	241	117	221	92	247	224	93	99
57	260	117	241	93	247	247	95	98
67	295	116	271	92	246	275	93	96
77	321	112	294	92	239	294	92	94
87	334	110	298	89	230	296	89	94
97	336	100	300	89	222	303	90	91
107	340	88	306	90	199	305	90	77
117	331	65	293	89	165	287	87	59
127	326	47	282	87	109	278	85	42
137	294	27	250	85	65	269	91	18

TABLE 7. MEAN BODY WEIGHTS AND SURVIVAL OF RATS IN THE LIFETIME FEED STUDIES OF AMOSITE ASBESTOS AND 1,2-DIMETHYLHYDRAZINE DIHYDROCHLORIDE (DMH)

Weeks on Study (from birth)	Untreated Control		DMH			Amosite + DMH		
	Av. Wt. (grams)	No. of Survivors	Av. Wt. (grams)	Wt. (percent of controls)	No. of Survivors	Av. Wt. (grams)	Wt. (percent of controls)	No. of Survivors
MALE								
7	173	117	226	131	125	107	62	175
17	303	117	306	101	125	254	84	175
27	369	117	372	101	125	322	87	175
37	403	117	394	98	124	354	88	175
48	425	117	417	98	117	370	87	174
57	450	117	444	99	110	396	88	170
67	471	117	459	97	91	417	89	155
77	477	115	464	97	63	425	89	113
87	475	112	457	96	51	424	89	79
97	471	104	432	92	37	402	85	61
107	459	93	419	91	23	397	86	40
FEMALE								
7	123	117	154	125	125	92	75	175
17	185	117	181	98	125	162	88	175
27	212	117	209	99	125	195	92	175
37	222	117	217	98	120	200	90	175
48	241	117	239	99	115	217	90	173
57	260	117	260	100	108	236	91	166
67	295	116	281	95	88	260	88	150
77	321	112	300	93	63	281	88	109
87	334	110	294	88	43	281	84	78
97	336	100	293	87	20	284	85	46

TABLE 8. MEAN BODY WEIGHTS AND SURVIVAL OF RATS IN THE LIFETIME FEED STUDIES OF AMOSITE ASBESTOS AND 1,2-DIMETHYLHYDRAZINE DIHYDROCHLORIDE (DMH) COMPARED WITH THE POSITIVE CONTROLS

Weeks on Study (from birth)	DMH		Amosite + DMH		
	Av. Wt. (grams)	No. of Survivors	Av. Wt. (grams)	Wt. (percent of DMH)	No. of Survivors
MALE					
7	226	125	107	47	175
17	306	125	254	83	175
27	372	125	322	87	175
37	394	124	354	90	175
48	417	117	370	89	174
57	444	110	396	89	170
67	459	91	417	91	155
77	464	63	425	92	113
87	457	51	424	93	79
97	432	37	402	93	61
107	419	23	397	95	40
FEMALE					
7	154	125	92	60	175
17	181	125	162	90	175
27	209	125	195	93	175
37	217	120	200	92	175
48	239	115	217	91	173
57	260	108	236	91	166
67	281	88	260	93	150
77	300	63	281	94	109
87	294	43	281	96	78
97	293	20	284	97	46

TABLE 9. CUMULATIVE MEAN BODY WEIGHT CHANGE FOR RATS IN THE LIFETIME FEED STUDIES OF AMOSITE ASBESTOS AND 1,2-DIMETHYLHYDRAZINE DIHYDROCHLORIDE (DMH)

Weeks on Study (from birth)	Cumulative Mean Body Weight Change (grams)					Weight Change Relative to Controls			
	Untreated Control	DMH	Amosite	Amosite + DMH	Amosite + PW	DMH	Amosite	Amosite + DMH	Amosite + PW
MALE									
3	59	55	67	62	65	−6.8	13.6	5.1	10.2
7	106	102	127	124	120	−3.8	19.8	17.0	13.2
16	168	157	192	185	183	−6.5	14.3	10.1	8.9
25	218	208	237	233	232	−4.6	8.7	6.9	6.4
52	283	269	302	299	299	−4.9	6.7	5.7	5.7
FEMALE									
3	31	27	36	35	32	−12.9	16.1	12.9	3.2
8	57	45	67	61	61	−21.1	17.5	7.0	7.0
19	85	72	94	92	87	−15.3	10.6	8.2	2.4
39	112	103	129	125	119	−8.0	15.2	11.6	6.3
52	146	128	158	153	146	−12.3	8.2	4.8	0.0

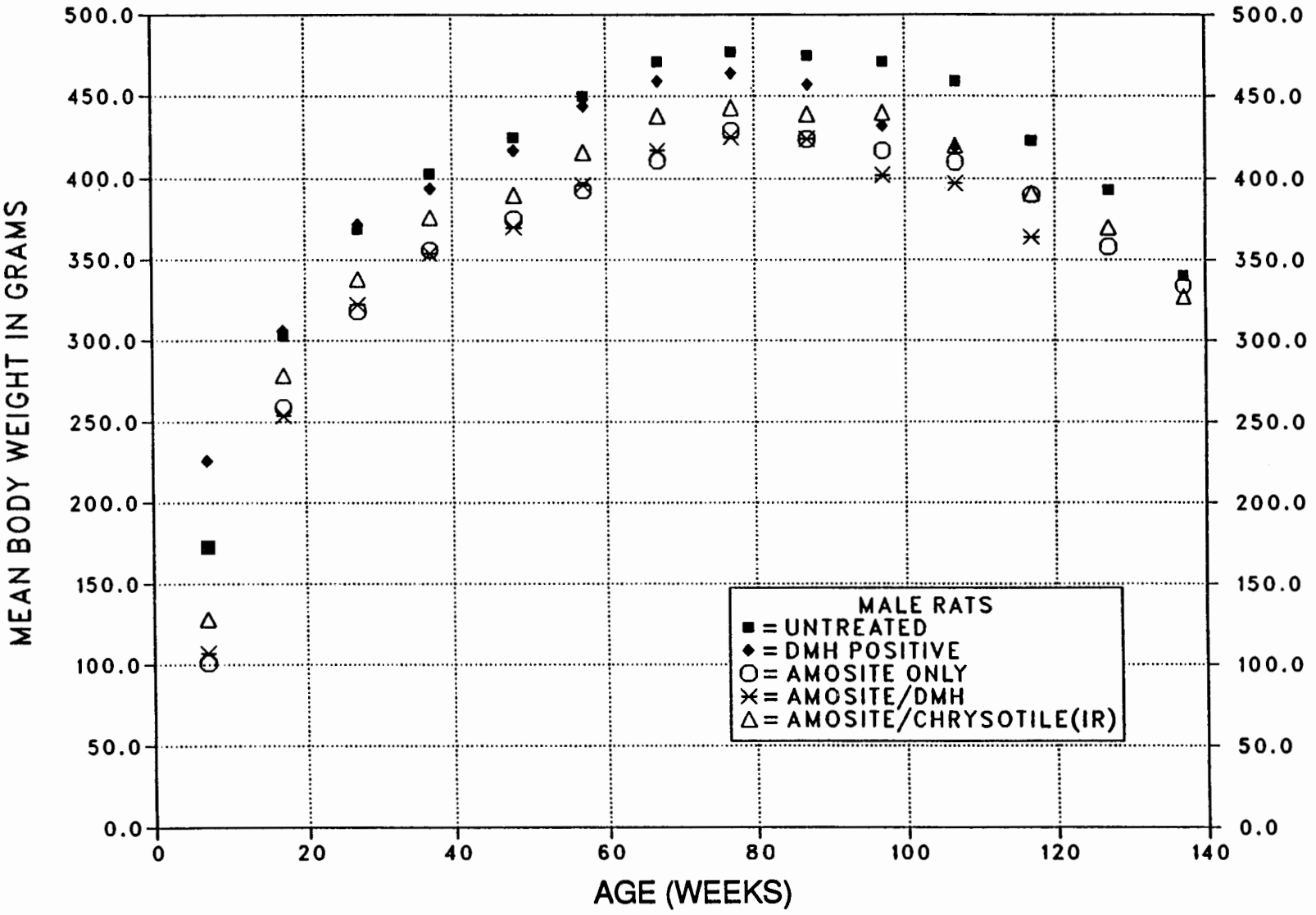

FIGURE 2. GROWTH CURVES FOR MALE RATS FED DIETS CONTAINING AMOSITE ASBESTOS IN LIFETIME STUDIES

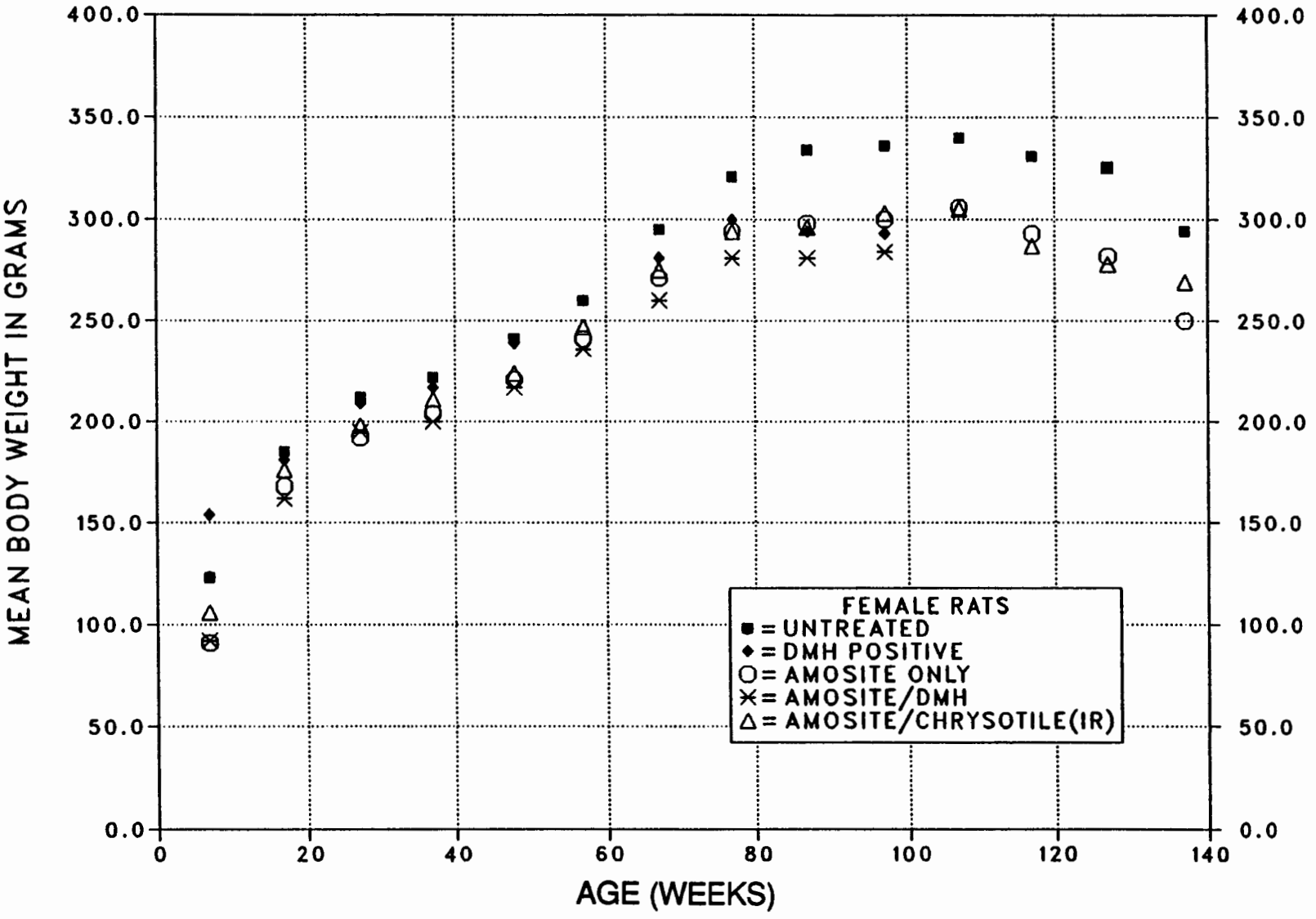

FIGURE 3. GROWTH CURVES FOR FEMALE RATS FED DIETS CONTAINING AMOSITE ASBESTOS IN LIFETIME STUDIES

Survival

Survival data are illustrated by the Kaplan and Meier curves in Figures 4 and 5. Survival relative to untreated controls at week 112 was somewhat greater for males in Group 3 (amosite) and somewhat lower in Group 5 (amosite + PW). In female rats, survival was greater than that of the untreated controls for both Groups 3 and 5. The survival of both groups of DMH-exposed rats (Groups 2 and 4) was considerably lower than that of the untreated controls. However, the survival of the amosite + DMH group was similar to that of the DMH-alone group.

Survival data at selected intervals before the final kill of all groups are summarized in Table 10.

TABLE 10. SURVIVAL OF RATS IN THE LIFETIME FEED STUDIES OF AMOSITE ASBESTOS AT VARIOUS TIME POINTS

Group	Age (weeks)	Male		Female	
		No. Alive/ Total No.	Survival (percent)	No. Alive/ Total No.	Survival (percent)
1 (control)	112	87/117	74	71/117	61
	126	45/117	38	50/117	43
	141	8/117	7	18/117	15
	145	--	--	13/117	11
2 (DMH)					
	112	16/125	13	0/125	0
	126	--	--	--	--
	141	--	--	--	--
	145	--	--	--	--
3 (amosite)	112	199/250	80	180/250	72
	126	134/250	54	115/250	46
	141	41/250	16	42/250	17
	145	--	--	30/250	12
4 (amosite + DMH)	112	32/175	18	0/175	0
	126	--	--	--	--
	141	--	--	--	--
	145	--	--	--	--
5 (amosite + PW)	112	62/100	62	69/100	69
	126	29/100	29	42/100	42
	141	8/100	8	14/100	14
	145	--	--	9/100	9

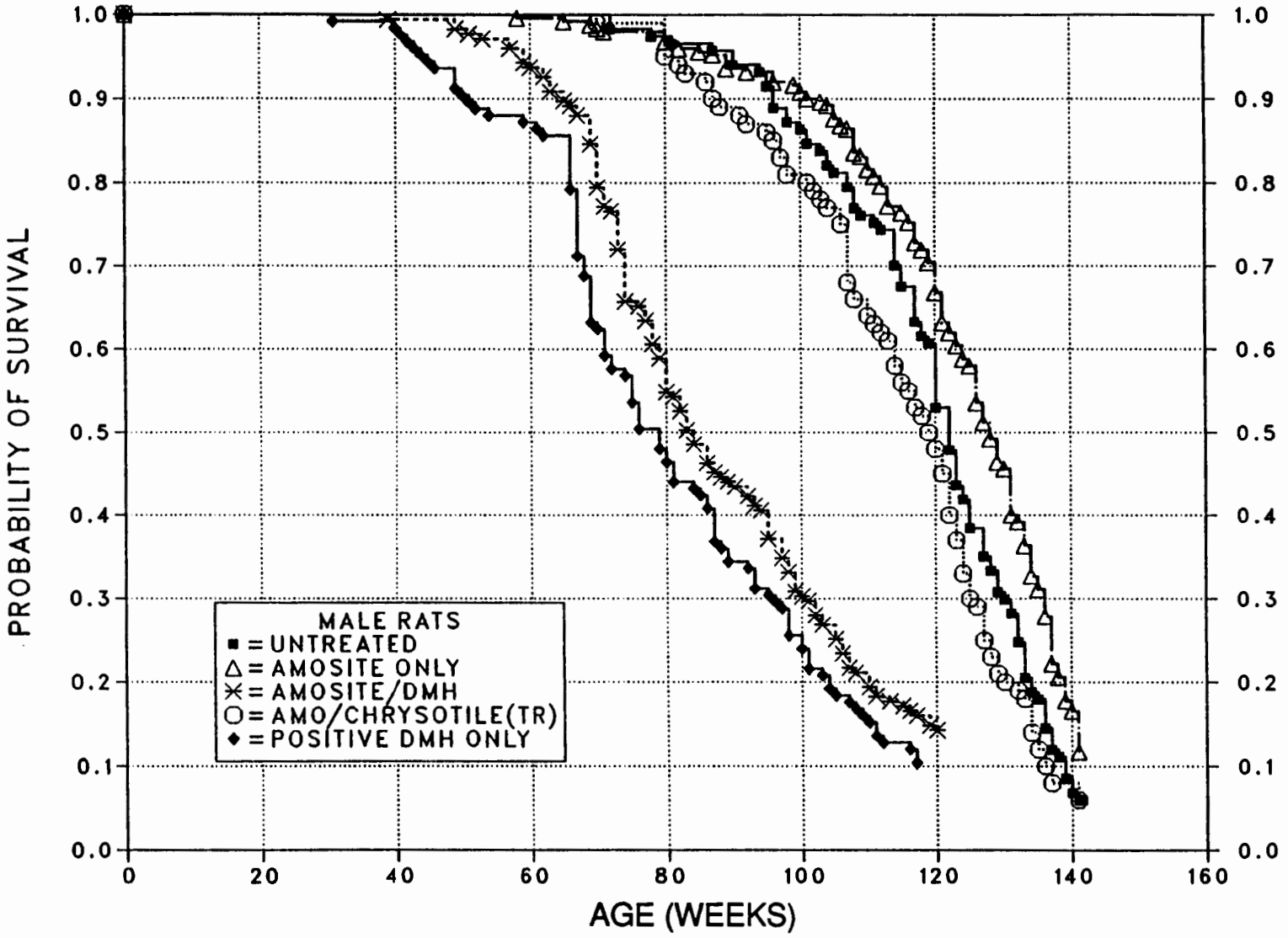

FIGURE 4. KAPLAN-MEIER SURVIVAL CURVES FOR MALE RATS FED DIETS CONTAINING AMOSITE ASBESTOS IN LIFETIME STUDIES

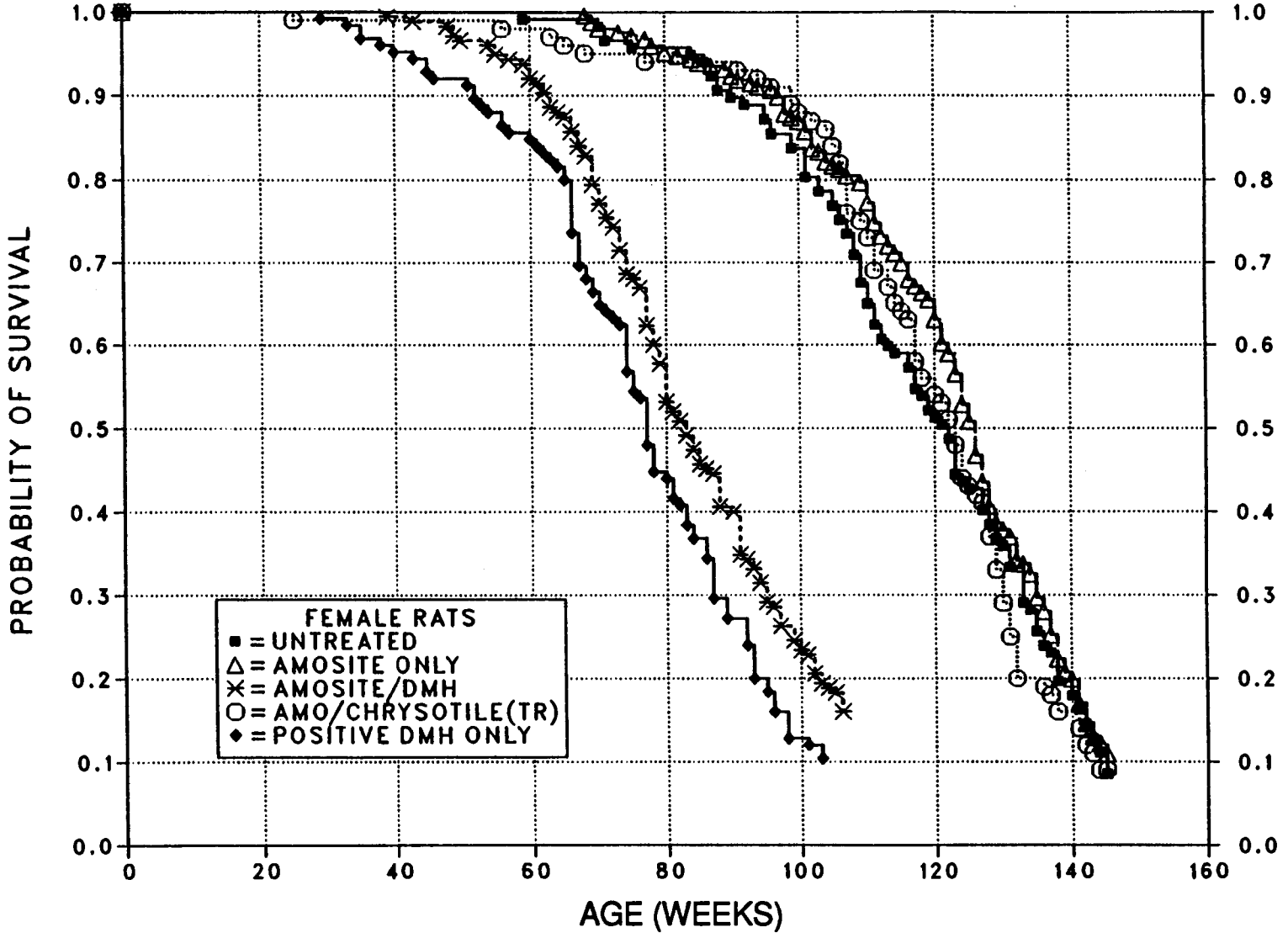

FIGURE 5. KAPLAN-MEIER SURVIVAL CURVES FOR FEMALE RATS FED DIETS CONTAINING AMOSITE ASBESTOS IN LIFETIME STUDIES

Pathology and Statistical Analyses of Results

This section describes the statistically significant or biologically noteworthy changes in the incidences of rats with neoplastic or nonneoplastic lesions. Only positive histopathologic findings based on hematoxylin- and eosin-stained sections are tabulated in the text. A few tissues were missing from occasional animals. Also, no diagnoses are given for several tissues in one male rat in Group 3 (amosite), two males in Group 4 (amosite + DMH), and one female in Group 2 (DMH) because of autolysis or cannibalization. Thus, the denominator for any particular organ, tissue, or lesion varies and does not necessarily represent the number of animals that were placed on study in each group. The severity of the lesions was graded but does not appear in the appendix tables.

Lesions in male and female rats are summarized in Appendixes A and B. Histopathologic findings on neoplasms are summarized in Tables A1 and B1. Tables A2 and B2 give the survival and tumor status for individual male rats. Tables A3 and B3 contain the statistical analyses of those primary tumors that occurred with an incidence of at least 2% in one of the groups. The statistical analyses used are discussed in Section II (Statistical Methods) and Tables A3 and B3 (footnotes). Historical incidences of tumors in control male rats are listed in Tables A4 and B4. Findings on nonneoplastic lesions are summarized in Tables A5 and B5.

A variety of neoplasms was found in the control and various study groups, including monocytic (mononuclear cell) leukemia, endocrine tumors, testicular interstitial cell tumors, mammary gland neoplasms, and several types of skin neoplasms. Table 11 summarizes the total number of neoplasms in the amosite and amosite + PW groups compared with the number in the untreated controls. There were no obvious differences in the total incidence of benign or malignant neoplasms. Also, the average number of neoplasms per animal appears to be without relationship to exposure.

TABLE 11. INCIDENCE OF PRIMARY NEOPLASMS IN RATS IN THE LIFETIME FEED STUDIES OF AMOSITE ASBESTOS

	Untreated Control	Amosite	Amosite + PW
MALE			
No. of animals examined	117	250	100
Total animals with primary tumors	116 (99%)	249 (>99%)	99 (99%)
Total primary tumors	(a) 402 (3.5)	(a) 841 (3.4)	(a) 310 (3.1)
Total animals with benign tumors	115 (98%)	244 (98%)	95 (95%)
Total benign tumors	(a) 277 (2.4)	(a) 547 (2.2)	(a) 192 (2.0)
Total animals with malignant tumors	82 (70%)	201 (80%)	84 (84%)
Total malignant tumors	(a) 116 (1.4)	(a) 284 (1.4)	(a) 113 (1.3)
FEMALE			
No. of animals examined	117	250	100
Total animals with primary tumors	113 (97%)	240 (96%)	98 (98%)
Total primary tumors	(a) 316 (2.8)	(a) 663 (2.8)	(a) 247 (2.5)
Total animals with benign tumors	99 (85%)	213 (85%)	79 (79%)
Total benign tumors	(a) 204 (2.1)	(a) 419 (2.0)	(a) 152 (1.9)
Total animals with malignant tumors	74 (63%)	166 (66%)	68 (68%)
Total malignant tumors	(a) 106 (1.4)	(a) 230 (1.4)	(a) 89 (1.3)

(a) Average number of tumors per tumor-bearing animal is in parentheses.

Gastrointestinal Tract Neoplasms

The gastrointestinal tract was examined in detail as described in the Materials and Methods section. Neoplasms were classed as to morphologic type according to the following criteria (Pozharisski, 1975).

Stomach: Squamous cell papillomas occurred in the forestomach (nonglandular) as exophytic growths of epithelium resting on a proliferative connective tissue stalk. Squamous cell carcinomas were characterized by proliferating small basophilic squamous cells that were invading the lamina propria and occasionally formed keratin pearls.

Intestinal tract neoplasms: The induced primary epithelial neoplasms were separated into three major types, based on morphology and biologic behavior: adenomatous polyps, adenocarcinoma arising in an adenomatous polyp, and carcinomas.

Adenomatous polyps--The adenomatous polyps were exophytic lesions of the mucosa supported on a pedicle of fibrous tissue and/or elevated submucosa which appeared to extend up into the growth. The epithelial cells were usually deeply basophilic and hypertrophic and formed glands of varying sizes. Surface necrosis of these lesions was common and often was accompanied by an inflammatory response. Invasion of the pedicle was not observed. These polyps often occurred as multiple neoplasms in the large intestine.

Adenocarcinoma arising in an adenomatous polyp--These neoplasms were exophytic lesions of the mucosa composed of proliferating, deeply basophilic hypertrophic epithelial cells similar to those previously mentioned. In addition, they often showed disorganization, loss of relationship to the basement membrane, and abnormal mitoses. Local invasion of the pedicle was a consistent finding; however, metastases were rarely observed.

Carcinomas--This classification includes signet ring cell carcinoma, adenocarcinoma, mucinous cystadenocarcinoma, and carcinoma. Biologically, all were similar and were usually characterized by transmural growth that penetrated the muscular tunics and serosa and spread throughout the coelomic cavity inducing a severe desmoplastic response. Metastasis to regional lymph nodes was common; metastasis to the lung and mediastinum occurred to a lesser extent. Grossly, in advanced cases, the loops of intestines were fused into an inseparable mass of tumor and desmoplastic tissue. Classification was based on the most prominent feature at the primary site. Signet ring cell carcinomas were composed of masses of signet ring cells. Mucinous cystadenocarcinomas were characterized by the formation of multiple large ectatic glands or spaces that were filled with mucus and cellular debris. Adenocarcinomas consisted of clusters of cells and/or glands in pools of mucus or sequestered in desmoplastic tissue. The carcinomas were anaplastic neoplasms lacking acinar formations. In some cases, there was an overlap of cell types in the same tumor, suggesting that the above morphologic types probably have the same histogenesis.

Amosite was given to two groups of male and female rats. One group (amosite group) was exposed from weaning throughout life. The second group received chrysotile asbestos (by mistake) beginning at birth by preweaning gavage and then amosite in feed from weaning throughout the lifespan (amosite + PW group).

There were no apparent exposure-related neoplasms in the digestive tract of either the amosite or amosite + PW groups (Table 12). Neoplasms of the same morphologic types (adenomatous polyp, signet ring carcinoma, and adenocarcinoma) as described in the DMH groups were observed at a low incidence in the gastrointestinal tract of both control and amosite-exposed rats. However, no specific type was increased, either at a particular location (e.g., cecum) or in the stomach or small or large intestine as a whole.

In addition, the incidences of nonneoplastic diseases of the gastrointestinal tract such as enteritis, diverticulitis, ulceration, or inflammation in general were comparable in the control and amosite-exposed rats (Table 13).

Tissues that showed an increase in neoplasms in one or both amosite groups compared with untreated controls were the thyroid gland, mammary gland, and hematopoietic system.

TABLE 12. PRIMARY EPITHELIAL NEOPLASMS OF GASTROINTESTINAL TRACT IN RATS IN THE LIFETIME FEED STUDIES OF AMOSITE ASBESTOS

Site/Lesion	Male			Female		
	Untreated Control	Amosite	Amosite + PW	Untreated Control	Amosite	Amosite + PW
Animals examined	117	250	100	117	250	100
Total gastrointestinal	4 (4%)	7 (3%)	3 (3%)	2 (2%)	4 (2%)	3 (3%)
Total stomach	1 (1%)	2 (1%)	0 (0%)	1 (1%)	1 (<1%)	0 (0%)
Total small intestine	3 (3%)	1 (1%)	1 (1%)	0 (0%)	3 (1%)	1 (1%)
Duodenum						
Carcinoma			1 (1%)		1 (<1%)	
Jejunum						
Carcinoma	2 (2%)					1 (1%)
Adenocarcinoma arising in adenomatous polyp		1 (<1%)				
Adenomatous polyp					2 (1%)	
Ileum						
Adenomatous polyp	1 (1%)					
Total large intestine	0 (0%)	4 (2%)	2 (2%)	1 (1%)	0 (0%)	2 (2%)
Cecum						
Carcinoma						
Adenocarcinoma arising in adenomatous polyp						
Adenomatous polyp			1 (1%)			
Total colon	0 (0%)	4 (2%)	1 (1%)	1 (1%)	0 (0%)	2 (2%)
Ascending colon						
Carcinoma		1 (<1%)				
Transverse colon						
Carcinoma						1 (1%)
Descending colon						
Carcinoma						
Adenocarcinoma arising in adenomatous polyp			1 (1%)			
Adenomatous polyp		2 (1%)		1 (1%)		1 (1%)
Colon (specific portion not identified)						
Adenomatous polyp		1(<1%)				

TABLE 13. NUMBERS OF RATS WITH NONNEOPLASTIC LESIONS OF ALIMENTARY TRACT IN THE LIFETIME FEED STUDIES OF AMOSITE ASBESTOS (a)

Site/Lesion	Male			Female		
	Untreated Control	Amosite	Amosite + PW	Untreated Control	Amosite	Amosite + PW
Tongue (no. examined)	117	249	100	117	250	100
Esophagus (no. examined)	115	248	100	117	246	100
Hyperkeratosis	12 (10%)	4 (2%)	12 (12%)	7 (6%)	7 (3%)	6 (6%)
Nonglandular stomach (no. examined)	117	250	100	117	250	100
Mineralization	9 (8%)	2 (1%)	1 (1%)	3 (3%)	2 (1%)	0 (0%)
Chronic inflammation	20 (17%)	57 (22%)	17 (17%)	22 (19%)	59 (24%)	18 (18%)
Ulceration	13 (11%)	25 (10%)	7 (7%)	4 (3%)	30 (12%)	10 (10%)
Necrosis	23 (20%)	41 (16%)	15 (15%)	14 (12%)	40 (16%)	12 (12%)
Hyperkeratosis	22 (19%)	41 (16%)	16 (16%)	24 (21%)	56 (22%)	17 (17%)
Acanthosis	31 (26%)	62 (25%)	21 (21%)	26 (22%)	72 (29%)	23 (23%)
Muscle degeneration	8 (7%)	3 (1%)	0 (0%)	2 (2%)	3 (1%)	0 (0%)
Glandular stomach (no. examined)	117	250	100	117	250	100
Hyperplasia	6 (5%)	0 (0%)	0 (0%)	2 (2%)	1 (<1%)	0 (0%)
Duodenum (no. examined)	117	250	100	117	249	100
Jejunum (no. examined)	117	250	100	117	249	100
Ileum (no. examined)	117	250	100	117	249	100
Colon (no. examined)	117	250	100	117	250	100
Parasitism	4 (3%)	17 (7%)	4 (4%)	2 (2%)	6 (2%)	8 (8%)
Cecum (no. examined)	117	250	100	117	250	100
Rectum (no. examined)	117	250	100	117	250	100
Anus (no. examined)	117	250	100	117	250	100

(a) Incidence of nonneoplastic lesions that occurred with a frequency of 2% or more in at least one group

Thyroid Gland: Table 14 summarizes the incidences of C-cell proliferative lesions. A significantly increased incidence of C-cell carcinomas was found in amosite-exposed male rats. This effect was not observed in amosite + PW male rats. Furthermore, the overall incidence of C-cell neoplasms (adenomas and/or carcinomas) were similar in control and exposed groups. C-Cell hyperplasia was minimally increased in amosite and amosite + PW female groups.

Hematopoietic System: A significantly increased incidence of monocytic (synonym--mononuclear cell, Fischer rat) leukemia occurred in amosite ($P<0.05$) and amosite + PW ($P<0.01$) male rats (Table 15). Statistical significance was lost for the amosite groups when evaluated using life table analysis; however, the incidence for amosite + PW was still significant using this method. This increased incidence was not observed in exposed female rats.

Miscellaneous Neoplasms: Occasionally, a somewhat higher rate of commonly occurring neoplasms were observed in exposed groups (Tables 16 and 17). A statistically significant ($P<0.05$) decrease in the rate of neoplasms was observed in the pancreas (islet cell adenoma), adrenal medulla (pheochromocytoma), thyroid gland (follicular cell carcinoma), mammary gland, parathyroid gland, and preputial gland in at least one group of amosite-exposed rats compared with the controls.

TABLE 14. NUMBERS OF RATS WITH THYROID GLAND C-CELL PROLIFERATIVE LESIONS IN THE LIFETIME FEED STUDIES OF AMOSITE ASBESTOS

	Untreated Control	Amosite	Amosite + PW
MALE			
Hyperplasia	21/117 (18%)	58/246 (24%)	23/100 (23%)
Adenoma	16/117 (14%)	26/246 (11%)	11/100 (11%)
Carcinoma	11/117 (9%)	50/246 (20%)	14/100 (14%)
FEMALE			
Hyperplasia	22/116 (19%)	71/247 (29%)	26/100 (26%)
Adenoma	14/116 (12%)	37/247 (15%)	15/100 (15%)
Carcinoma	10/116 (9%)	29/247 (12%)	14/100 (14%)

*P<0.05 vs. controls (incidental tumor and Fisher exact tests)

TABLE 15. NUMBERS OF RATS WITH MONOCYTIC LEUKEMIA IN THE LIFETIME FEED STUDIES OF AMOSITE ASBESTOS

Site/Lesion	Male			Female		
	Untreated Control	Amosite	Amosite + PW	Untreated Control	Amosite	Amosite + PW
Number of animals examined	117	249	100	117	250	100
Monocytic leukemia	36 (31%)	103(41%)*	47(47%)**	39(33%)	78(31%)	33(33%)

*P<0.05 vs. controls (incidental tumor and Fisher exact tests)
**P<0.01 vs. controls (incidental tumor and Fisher exact tests)

TABLE 16. INCIDENCE OF PRIMARY NEOPLASMS IN MALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS (a)

	Untreated Control	Amosite	Amosite + PW
Integumentary system			
Squamous cell papilloma	1/117 (1%)	6/250 (2%)	5/100 (5%)
Squamous cell carcinoma	1/117 (1%)	4/250 (2%)	1/100 (1%)
Basal cell carcinoma	3/117 (3%)	7/250 (3%)	4/100 (4%)
Keratoacanthoma	4/117 (3%)	17/250 (7%)	2/100 (2%)
Sarcoma, NOS	4/117 (3%)	2/250 (1%)	5/100 (5%)
Fibroma	18/117 (15%)	33/250 (13%)	11/100 (11%)
Fibrosarcoma	7/117 (6%)	9/250 (4%)	1/100 (1%)
Lipoma	2/117 (2%)	2/250 (1%)	1/100 (1%)
Neurofibroma	3/117 (3%)	5/250 (2%)	0/100 (0%)
Lung			
Alveolar/bronchiolar carcinoma	1/117 (1%)	6/249 (2%)	4/100 (4%)
Circulatory system			
Hemangiosarcoma	1/117 (1%)	2/50 (1%)	2/100 (2%)
Liver			
Neoplastic nodule	9/117 (8%)	9/250 (4%)	5/100 (5%)
Hepatocellular carcinoma	1/117 (1%)	3/250 (1%)	3/100 (3%)
Pancreas			
Acinar cell adenoma	9/116 (8%)	19/247 (8%)	2/100 (2%)
Kidney			
Tubular cell tumor	0/117 (0%)	3/248 (1%)	2/100 (2%)
Mixed tumor	0/117 (0%)	1/249 (<1%)	2/100 (2%)
Pituitary gland			
Adenoma	24/117 (21%)	41/248 (17%)	19/99 (19%)
Carcinoma	2/117 (2%)	4/248 (2%)	2/99 (2%)
Adrenal gland			
Cortical adenoma	0/117 (0%)	5/250 (2%)	2/100 (2%)
Pheochromocytoma, benign	39/117 (33%)	† 65/250 (26%)	† 21/100 (21%)
Pheochromocytoma, malignant	3/117 (3%)	5/250 (2%)	0/100 (0%)
Thyroid gland			
Follicular cell adenoma	4/117 (3%)	13/246 (5%)	8/100 (8%)
Folicular cell carcinoma	7/117 (6%)	10/246 (4%)	4/100 (4%)
Parathyroid gland			
Adenoma	4/110 (4%)	† 1/234 (<1%)	1/99 (1%)
Pancreatic islet			
Islet cell adenoma	14/116 (12%)	17/247 (7%)	† 4/100 (4%)
Islet cell carcinoma	3/116 (3%)	5/247 (2%)	4/100 (4%)
Preputial gland			
Squamous cell carcinoma	0/117 (0%)	1/250 (0%)	† 0/100 (0%)
Testis			
Interstitial cell tumor	111/117 (95%)	240/249 (96%)	92/100 (92%)
Cerebrum			
Astrocytoma	2/117 (2%)	2/250 (1%)	2/100 (2%)
Zymbal gland			
Carcinoma	1/117 (1%)	7/250 (3%)	3/100 (3%)
All sites			
Malignant mesothelioma	2/117 (2%)	9/250 (4%)	3/100 (3%)
Mammary gland			
Adenoma	3/117 (3%)	4/250 (2%)	0/100 (0%)
Fibroadenoma	17/117 (15%)	27/250 (11%)	† 1/100 (1%)
Adenocarcinoma	1/117 (1%)	1/250 (<1%)	0/100 (0%)

(a) Incidence of neoplasms (other than those already noted) that occurred with an incidence of at least 2% in at least one group.
† $P<0.05$ (decrease) relative to controls (incidental tumor and Fisher exact test)

TABLE 17. SUMMARY OF PRIMARY NEOPLASM INCIDENCE IN FEMALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS (a)

	Untreated Control	Amosite	Amosite + PW
Integumentary system			
Squamous cell papilloma	2/117 (2%)	3/250 (1%)	0/100 (0%)
Sarcoma, NOS	0/117 (0%)	6/250 (2%)	1/100 (1%)
Fibroma	7/117 (6%)	8/250 (3%)	3/100 (3%)
Fibrosarcoma	3/117 (3%)	5/250 (2%)	1/100 (1%)
Lipoma	3/117 (3%)	2/250 (1%)	0/100 (0%)
Liver			
Neoplastic nodule	4/117 (3%)	10/250 (4%)	4/100 (4%)
Pancreas			
Acinar cell adenoma	2/116 (2%)	0/249 (0%)	0/100 (0%)
Pituitary gland			
Adenoma	50/117 (43%)	107/249 (43%)	39/100 (39%)
Carcinoma	2/117 (2%)	11/249 (4%)	3/100 (3%)
Adrenal gland			
Cortical adenoma	3/117 (3%)	13/249 (5%)	4/100 (4%)
Pheochromocytoma	17/117 (15%)	27/249 (11%)	† 6/100 (6%)
Thyroid gland			
Follicular cell adenoma	2/116 (2%)	10/247 (4%)	3/100 (3%)
Follicular cell carcinoma	7/116 (6%)	† 3/247 (1%)	2/100 (2%)
Pancreatic Islets			
Islet cell adenoma	2/116 (2%)	7/249 (3%)	1/100 (1%)
Islet cell carcinoma	3/116 (3%)	7/249 (3%)	0/100 (0%)
Clitoral gland			
Squamous cell carcinoma	6/117 (5%)	14/250 (6%)	7/100 (7%)
Uterus			
Endometrial stromal polyp	13/117 (11%)	31/250 (12%)	14/100 (14%)
Endometrial stromal sarcoma	5/117 (4%)	4/250 (2%)	0/100 (0%)
Ovary			
Granulosa cell tumor	1/117 (1%)	3/250 (1%)	2/100 (2%)
Brain			
Astrocytoma	4/117 (3%)	4/250 (2%)	2/100 (2%)
Zymbal gland			
Squamous cell carcinoma	3/117 (3%)	4/250 (2%)	3/100 (3%)
Mammary gland			
Adenoma	8/117 (7%)	14/250 (6%)	5/100 (5%)
Fibroadenoma	72/117 (62%)	† 135/250 (54%)	† 52/100 (52%)
Adenocarcinoma	6/117 (5%)	25/250 (10%)	7/100 (7%)

(a) Incidence of neoplasms (other than those already noted) that occurred with an incidence of at least 2% in at least one group.
† $P<0.05$ (decrease) relative to controls (incidental tumor and Fisher exact test)

Nonneoplastic Findings

A plethora of incidental lesions of aging F344 rats was found in all groups. Statistical analyses showed no obvious correlation between the incidence of specific lesion types and the type of exposure. Histopathologic findings are summarized in Appendixes A and B. Nonneoplastic lesions that were observed in more than 2% of the rats in any of the study groups are as follows (alimentary tract nonneoplastic lesions are noted in Table 13):

1. Skin--epidermal inclusion cyst
2. Lung--chronic inflammation
3. Spleen--fibrosis, hemosiderosis, extramedullary hematopoeisis, lymphoid atrophy
4. Lymph nodes (various)--lymphoid or reticulum cell hyperplasia, lymphangiectasis, hemorrhage, pigmentation, chronic inflammation
5. Heart--chronic inflammation
6. Liver--degeneration, necrosis, fatty metamorphosis, toxic hepatitis, granuloma, angiectasis, pigmentation, focal cellular change
7. Bile duct (extrahepatic)--chronic inflammation, mucosal hyperplasia, cysts, fibrosis
8. Pancreas (exocrine)--atrophy, hyperplasia, ectopia; (endocrine)--hyperplasia
9. Kidney--chronic progressive nephropathy, cysts, pigmentation
10. Pituitary gland--cysts, angiectasis, hyperplasia
11. Adrenal gland--fatty metamorphosis, hyperplasia
12. Adrenal medulla--hyperplasia
13. Thyroid gland--follicular cysts, C-cell hyperplasia
14. Parathyroid gland--hyperplasia
15. Testes--seminiferous degeneration, interstitial cell hyperplasia
16. Prostate--abscess, chronic inflammation, glandular hyperplasia
17. Seminal vesicles--cysts
18. Ovary--follicular and parovarian cysts
19. Uterus--hydrometra, endometrial cyst
20. Mammary gland--cystic ducts, glandular hyperplasia, galactocele
21. Mesentery--chronic inflammation
22. Eye--cataract, hemorrhage, inflammation, retinal degeneration
23. Zymbal gland--cystic ducts
24. Bone--osteopetrosis, exostoses, marrow hyperplasia

1,2-Dimethylhydrazine Dihydrochloride Dosed Groups

Two groups of male and female rats were exposed to DMH by gavage at doses of 7.5 mg/kg for males and 15 mg/kg for females, two times per week for a total of five doses. One group served as a positive carcinogen control, and the other received amosite asbestos in feed from weaning throughout life.

Exposure of rats to DMH or amosite + DMH was associated with a dramatically increased incidence of neoplasms of the intestinal tract, Zymbal gland, and liver in male and female rats and kidney in female rats.

Table 18 summarizes the incidence of primary neoplasms in rats exposed to DMH and amosite + DMH . There were no obvious differences in the total number of animals with primary neoplasms. However, there were more animals with malignant neoplasms and fewer with benign tumors in the DMH and amosite + DMH groups than in the untreated controls. It is also noteworthy that survival in the DMH groups was shortened due to the presence of lethal gastrointestinal neoplasms.

Table 19 summarizes the numbers of rats with primary epithelial neoplasms in the gastrointestinal tract by specific site and classification. Intestinal neoplasms, particularly the adenomatous polyps, were often multiple within a given animal.

The incidence of gastrointestinal neoplasia was dramatically increased with DMH exposure. However, the incidence appeared to be essentially similar in groups receiving DMH alone and those receiving amosite + DMH. Furthermore, the number of animals with tumors in either the small intestine or large intestine was

TABLE 18. INCIDENCE OF PRIMARY NEOPLASMS IN RATS IN THE LIFETIME FEED STUDIES OF AMOSITE ASBESTOS AND 1,2-DIMETHYLHYDRAZINE DIHYDROCHLORIDE (DMH)

	Untreated Control	DMH	Amosite + DMH
MALES			
Number of animals examined	117	125	175
Animals with primary tumors	116 (99%)	125 (100%)	173 (99%)
Total primary tumors (a)	402 (3.5)	357 (2.9)	554 (3.2)
Animals with benign tumors	115 (98%)	93 (74%)	150 (86%)
Total benign tumors (a)	277 (2.4)	174 (1.9)	295 (2.0)
Animals with malignant tumors	82 (70%)	110 (88%)	149 (85%)
Total malignant tumors (a)	116 (1.4)	165 (1.5)	231 (1.6)
FEMALES			
Number of animals examined	117	125	175
Animals with primary tumors	113 (97%)	121 (97%)	175 (100%)
Total primary tumors (a)	316 (2.8)	326 (2.7)	477 (2.7)
Animals with benign tumors	99 (85%)	74 (59%)	102 (58%)
Total benign tumors (a)	204 (2.1)	105 (1.4)	172 (1.7)
Animals with malignant tumors	74 (63%)	111 (89%)	164 (94%)
Total malignant tumors (a)	106 (1.4)	192 (1.7)	272 (1.7)

(a) Average number of tumors per animal is in parentheses

also essentially similar in groups receiving DMH alone and those receiving amosite + DMH. There was no difference between groups in time to tumor.

Evaluation of the incidence of the three categories of intestinal neoplasia (carcinoma, adenocarcinoma arising in an adenomatous polyp, and adenomatous polyp) by site reveals an increased incidence of duodenal carcinomas ($P<0.01$) in the amosite + DMH exposed females compared with that in female rats receiving DMH alone. In the jejunum, however, this incidence is reversed, with more carcinomas ($P<0.01$) occurring in the female group receiving DMH alone.

In the large intestine, the frequency of adenomatous polyps and carcinomas arising in an adenomatous polyp was greatest in the descending colon. In the cecum of male rats, the incidence of carcinomas was lower in the amosite + DMH-exposed group than in those exposed to DMH alone. This effect was not observed in the female group. The appearance of carcinomas in the ascending colon was somewhat greater in amosite + DMH-exposed males than in males receiving DMH alone. Adenocarcinomas arising in an adenomatous polyp occurred more frequently in the transverse colon of male and female rats receiving amosite + DMH compared with rats receiving DMH alone.

TABLE 19. NUMBER OF PRIMARY EPITHELIAL NEOPLASMS OF THE GASTROINTESTINAL TRACT IN RATS IN THE LIFETIME FEED STUDIES OF AMOSITE ASBESTOS AND 1,2-DIMETHYLHYDRAZINEDIHYDROCHLORIDE (DMH)

Site/Lesion	Untreated Control		DMH		Amosite + DMH	
	Male	Female	Male	Female	Male	Female
Animals examined	117	117	125	125	175	175
Total gastrointestinal (a)	4 (4%)	2 (2%)	91 (73%)	77 (62%)	117 (67%)	114 (65%)
Total stomach	1 (1%)	1 (1%)	0 (0%)	3 (3%)	2 (1%)	1 (1%)
Total small intestine	3 (3%)	0 (0%)	16 (13%)	14 (11%)	18 (10%)	23 (13%)
Duodenum						
Adenomatous polyp					1 (1%)	
Carcinoma			11 (9%)	3 (2%)	14 (8%)	19 (11%)
Jejunum						
Adenomatous polyp			1 (1%)			
Carcinoma	2 (2%)		2 (2%)	11 (9%)	3 (2%)	2 (1%)
Adenocarcinoma in adenomatous polyp						1 (1%)
Ileum						
Adenomatous polyp	1 (1%)					
Carcinoma			2 (1%)			
Adenocarcinoma in adenomatous polyp						1 (1%)
Total large intestine (a)	0 (0%)	1 (1%)	81 (65%)	70 (56%)	109 (62%)	101 (58%)
Cecum						
Adenomatous polyp					2 (1%)	
Carcinoma			16 (13%)	7 (6%)	6 (3%)	6 (3%)
Ascending colon						
Adenomatous polyp			5 (4%)	7 (6%)	5 (3%)	8 (5%)
Carcinoma			10 (8%)	10 (8%)	20 (12%)	14 (8%)
Adenocarcinoma in adenomatous polyp			2 (2%)	4 (3%)	3 (2%)	7 (4%)
Transverse colon						
Adenomatous polyp			9 (7%)	6 (5%)	21 (12%)	22 (13%)
Carcinoma			1 (1%)		2 (1%)	2 (1%)
Adenocarcinoma in adenomatous polyp			8 (6%)	9 (7%)	20 (11%)	20 (11%)
Descending colon						
Adenomatous polyp		1 (1%)	32 (26%)	27 (22%)	41 (23%)	31 (18%)
Carcinoma				1 (1%)	3 (2%)	2 (1%)
Adenocarcinoma in adenomatous polyp			21 (17%)	15 (12%)	26 (15%)	22 (13%)
Colon (specific portion not identified)						
Adenomatous polyp			1 (1%)	1 (1%)		
Carcinoma				4 (3%)	2 (1%)	3 (2%)
Adenocarcinoma in adenomatous polyp			1 (1%)			
Rectum						
Adenomatous polyp						1 (1%)

(a) Number of animals with tumors

Kidney Neoplasms: Almost without exception, the renal masses associated with DMH exposure were malignant mesenchymal or mixed malignant tumors. Purely mesenchymal growths were classified according to their morphology (e.g., fibrosarcoma, undifferentiated sarcoma). Those having epithelial elements or epithelial-like elements were classified as mixed malignant tumors. In early stages, these neoplasms appeared as interstitial sclerosing growths near the inner cortex. Collagen formation was accompanied by proliferating, basophilic, primitive-appearing cells. Epithelial elements consisted of glands, ductlike structures, or poorly differentiated solid tubules. The growths were often massive but rarely metastasized.

Table 20 summarizes the incidence of kidney tumors in control and DMH groups. The high incidence of renal neoplasms was confined almost exclusively to exposed female rats receiving either DMH alone or amosite + DMH ($P<0.01$). The incidence for the two exposed female groups was the same. Renal neoplasms occurred infrequently in male rats.

Zymbal Gland Neoplasms: Squamous cell carcinoma was the most commonly observed neoplasm in Zymbal glands. These neoplasms were composed of proliferating eosinophilic to basophilic squamous epithelial cells which formed thick fingers of tissue, masses of keratin, and nests of sequestered cells. Some had sebaceous features with formation of sebum but nevertheless were classified as squamous cell carcinomas. Infiltration of adjacent tissues was occasionally observed; however, metastases were rare. Other types of tumors present in the Zymbal gland included squamous cell papillomas and keratoacanthoma. These types of neoplasms are a contiuum in their progression from benign to malignant, and for this reason, the total number of tumors of this organ is probably the most valid way of comparing exposure effects. Table 21 summarizes the number of control and DMH-exposed rats with Zymbal gland neoplasms.

Approximately one-fourth of all rats receiving DMH alone or amosite + DMH developed Zymbal gland neoplasms ($P<0.01$), whereas in untreated control animals, the occurrence was low (1%-3%). The incidence appeared essentially similar in the two DMH-exposed groups.

Liver Neoplasms: The classification of hepatocellular proliferative lesions was based on the ILAR Monograph (1980). Table 22 summarizes the number of control and DMH-exposed rats with neoplastic nodules or hepatocellular carcinomas.

A significantly increased incidence of neoplastic nodules and/or hepatocellular carcinomas occurred in groups receiving DMH alone and in groups receiving amosite + DMH. Generally, females had a greater incidence ($P<0.01$) than males ($P<0.05$). These neoplasms were first observed in male rats at weeks 101 (DMH) and 69 (amosite + DMH) and in female rats at weeks 60 (DMH) and 59 (amosite + DMH).

Miscellaneous Neoplasms: In several instances, DMH exposure with or without amosite led to statistically significant decreased incidences of certain spontaneous neoplasms when compared with the untreated controls, particularly of the endocrine system (Tables A3b and B3b). These included a reduced number of subcutaneous fibromas and mammary gland tumors; pituitary gland adenomas in females; and adrenal pheochromocytomas, pancreatic acinar cell adenomas, islet cell tumors, and testis interstitial cell tumors in males. No significant differences were observed between the DMH and amosite + DMH groups at any anatomic site other than the kidney (Table 23). Many animals in these two groups died at an early date compared with the controls.

TABLE 20. KIDNEY NEOPLASMS IN RATS IN THE TWO-YEAR FEED STUDIES OF AMOSITE ASBESTOS AND 1,2-DIMETHYLHYDRAZINE DIHYDROCHLORIDE (DMH)

	Untreated Control	DMH	Amosite + DMH
MALE			
	0/117 (0%)	3/125 (2%)	4/173 (2%)
FEMALE			
	1/117 (1%)	** 40/124 (32%)	** 56/175 (32%)

** P<0.01 vs controls (life table and incidental tumor test)

TABLE 21. ZYMBAL GLAND NEOPLASMS IN RATS IN THE TWO-YEAR FEED STUDIES OF AMOSITE ASBESTOS AND 1,2-DIMETHYLHYDRAZINE DIHYDROCHLORIDE (DMH)

	Untreated Control	DMH	Amosite + DMH
Number examined	117	125	175
MALE			
Squamous cell papilloma	0 (0%)	** 7 (6%)	** 17 (10%)
Carcinoma, NOS	1 (1%)	** 23 (18%)	** 35 (20%)
FEMALE			
Squamous cell papilloma	0 (0%)	** 12 (10%)	** 14 (8%)
Carcinoma, NOS	3 (3%)	** 20 (16%)	* 23 (13%)

* P<0.05 vs controls (life table and incidental tumor test)
** P<0.01 vs controls (life table and incidental tumor test)

TABLE 22. LIVER NEOPLASMS IN RATS IN THE TWO-YEAR FEED STUDIES OF AMOSITE ASBESTOS AND 1,2-DIMETHYLHYDRAZINE DIHYDROCHLORIDE (DMH)

	Untreated Control	DMH	Amosite + DMH
Number examined	117	125	175
MALE			
Neoplastic nodule	9 (8%)	** 18 (14%)	** 27 (15%)
Hepatocellular carcinoma	1 (1%)	** 9 (7%)	* 7 (4%)
FEMALE			
Neoplastic nodule	4 (3%)	** 29 (23%)	** 32 (18%)
Hepatocellular carcinoma	1 (1%)	** 10 (8%)	* 8 (5%)

* P<0.05 vs controls (life table and incidental tumor test)
** P<0.01 vs controls (life table and incidental tumor test)

TABLE 23. PRIMARY NEOPLASM INCIDENCE FOR RATS IN THE LIFETIME FEED STUDIES OF AMOSITE ASBESTOS AND 1,2-DIMETHYLHYDRAZINE DIHYDROCHLORIDE (DMH) (a)

Site/Lesion	Male		Female	
	DMH	Amosite + DMH	DMH	Amosite + DMH
Skin				
Keratoacanthoma	0/125 (0%)	5/175 (3%)	0/125 (0%)	0/175 (0%)
Subcutaneous tissue				
Fibroma	3/125 (2%)	6/175 (3%)	0/125 (0%)	0/175 (0%)
Hematopoietic system				
Leukemia	20/125 (16%)	40/175 (23%)	39/125 (31%)	61/175 (35%)
Circulatory system				
Hemangiosarcoma	0/125 (0%)	4/175 (2%)	0/125 (0%)	0/175 (0%)
Kidney				
Tubular cell tumors	1/125 (1%)	0/173(0%)	3/124(2%)	3/175 (2%)
Sarcoma	0/125 (0%)	3/173(2%)	23/124(19%)	19/175 (11%)
Fibrosarcoma	0/125 (0%)	0/173(0%)	4/124(3%)	† 0/175 (0%)
Mixed tumor malignant	0/125 (0%)	1/173(1%)	9/124(7%)	* 35/175 (20%)
Pituitary gland				
Adenoma	6/122 (5%)	12/169 (7%)	16/124 (13%)	19/175 (11%)
Adrenal gland				
Cortical adenoma	0/125 (0%)	0/173(0%)	2/124(2%)	4/175 (2%)
Pheochromocytoma	16/125 (13%)	16/173(9%)	0/124(0%)	3/175 (2%)
Thyroid gland				
Follicular cell adenoma	4/124 (3%)	10/172(6%)	4/123(3%)	6/174 (3%)
Follicular cell carcinoma	3/124 (2%)	3/172(2%)	2/123(2%)	1/174 (1%)
C-cell adenoma	2/124 (2%)	9/172(5%)	4/123(3%)	8/174 (5%)
C-cell carcinoma	7/124 (6%)	10/172(6%)	1/123(1%)	6/174 (3%)
Pancreatic Islets				
Islet cell adenoma	0/125 (0%)	3/173(2%)	0/124(0%)	2/175 (1%)
Islet cell carcinoma	0/125 (0%)	3/173(2%)	0/124(0%)	0/175 (0%)
Mammary gland				
Adenocarcinoma	0/125 (0%)	0/175 (0%)	3/125 (2%)	(b) 1/175 (1%)
Fibroadenoma	1/125 (1%)	5/175 (3%)	13/125 (10%)	18/175 (10%)
Preputial/clitoral gland				
Squamous cell carcinoma	5/125 (4%)	4/175 (2%)	1/125 (1%)	3/175 (2%)
Testis				
Interstitial cell tumor	79/123 (64%)	125/174 (72%)	--	--
Uterus				
Endometrial stromal polyp	--	--	10/124(8%)	19/175 (11%)
Endometrial stromal sarcoma	--	--	4/124(3%)	2/175 (1%)
All sites				
Mesothelioma	4/125 (3%)	6/175 (3%)	0/125 (0%)	0/175 (0%)

(a) Incidence of neoplasms (other than those already noted) that occurred with an incidence of at least 2% in at least one group
(b) Papillary adenocarcinoma
* $P<0.05$ (increase) relative to DMH
† $P<0.05$ (decrease) relative to DMH

IV. DISCUSSION AND CONCLUSIONS

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Amosite asbestos was administered at a concentration of 1% in the diet to male and female F344/N rats for their lifetime, including exposure of the dams to the study material. Starting at birth, one of three groups of neonate rats from amosite-exposed mothers were given chrysotile asbestos (instead of amosite) by gavage until weaning, at which time they were given the 1% amosite diet. For all intents and purposes, this group of rats should be regarded as being exposed to amosite asbestos for their lifetime. Two groups (control and amosite exposed) of weanling rats were exposed to five biweekly doses of 1,2-dimethylhydrazine dihydrochloride (DMH), a known intestinal carcinogen, to test the promotor or cocarcinogenic effects of DMH and amosite asbestos.

The clinicopathologic results in these studies showed that the ingestion of amosite asbestos did not adversely affect the fertility of the mothers or the litter size of the F_1 animals. However, the average weight at birth of the offspring from mothers exposed to amosite asbestos before and during gestation was slightly less (9%) than that of the offspring of nonexposed mothers. The difference in body weights was more apparent at weaning (15%). The effect on body weight gain became more apparent between weaning and 8 weeks of age (males, 37% less than controls; females, 25%). The amosite asbestos-exposed rats remained smaller throughout their life, although their weight gain paralleled that of the nonexposed rats. The mean body weight of the preweaning (PW) male rats exposed to chrysotile asbestos by gavage and subsequently to amosite asbestos was slightly higher than that of rats exposed to amosite alone. This may be related to the high incidence (approximately 50%) of mortality induced in the neonates by the PW technique, which would allow the remaining pups more milk during lactation. Exposure to DMH caused a small reduction in body weight gain in both male and female rats.

No clinical signs were observed which could be attributed to the ingestion of amosite asbestos. Starting at 9 months of age, the DMH-exposed rats showed signs attributable to DMH-related neoplasia, but no difference was noted between the DMH and amosite + DMH groups.

The ingestion of 1% amosite in the diet for the life of the rats did not adversely affect their survival. In fact, survival of female rats exposed to amosite or of the PW group exposed to chrysotile and amosite asbestos was slightly greater up to week 112 than that of controls. Similarly, the survival of male rats exposed to amosite was slightly greater than that of controls, although the survival of the amosite + PW group was slightly lower.

The most plausible explanation for the increased survival of the amosite-exposed rats is their lower weight throughout the studies. Yu et al. (1982) showed that F344 rats with lower body weight caused by restricted caloric intake lived longer than rats that were allowed to eat an unlimited amount of food.

The survival of rats exposed to DMH was significantly lower than that of untreated controls. It is noteworthy that more male and female rats that received amosite + DMH survived throughout the studies than those that received DMH alone. The reason for this is not known.

The survival of the rats (untreated control and amosite exposed) in these studies compares favorably with that in other NTP studies (Haseman, 1983). At 112 weeks of age (age at end of a typical 2-year study), the percent of male rats alive in this study was: control, 74%; amosite, 80%; amosite + PW, 62%. The percent of female rats alive at this time was: control, 61%; amosite, 72%; amosite + PW, 69%. Haseman (1983), in reviewing 25 NTP feed studies, found an average 66% of control males and 73% of control females alive at 112 weeks of age.

The survival of control male rats was greater than that of females at 112 weeks of age. In 2-year studies involving rats, generally more females survive to the end of the study than do males. However, the longer survival of female rats (both untreated control and amosite exposed) was clearly demonstrated after 142 weeks.

The ingestion of amosite asbestos over the lifetime of these rats did not cause a biologically significant increase of neoplasms at any anatomic

site when compared with the concurrent controls. The gastrointestinal tract was considered a potential target organ based on epidemologic studies in humans (Cooper et al, 1979) and because the study material was administered in the diet. The overall incidences of intestinal neoplasms in the controls (male 4%, female 2%) and two amosite-exposed groups (male 3% and 3%, female 2% and 3%) were low, and there were no significant differences between exposed and untreated control groups. Based on these observations, it is clear that the maximum tolerated concentration was not exceeded. Possibly, the rats in these studies could have tolerated exposure at a higher concentration, although a dietary concentration of 1% for the entire life of the animal is considered substantial. In addition, nonneoplastic lesions of the gastrointestinal tract were not increased. In summary, amosite asbestos did not cause any adverse effects in the gastrointestinal tract in either male or female F344/N rats.

Rats exposed to DMH showed a high incidence (60%-70%) of neoplasia of the gastrointestinal tract, primarily in the large intestine. This high incidence of intestinal neoplasia was unexpected because an incidence of 15% ± 5% would have been predicted in these studies, based on a pilot study using the same dosing regimen of DMH (McConnell et al., 1980). In another NTP study (NTP, 1990a), hamsters exposed to chrysotile asbestos + DMH also failed to develop the predicted incidence of intestinal neoplasms, based on a similar pilot study. Apparently, the neoplastic dose response to DMH is relatively steep, and duplication of low incidences of intestinal neoplasia are difficult to reproduce.

Because of the high background incidence of DMH-induced neoplasia, it is not possible to determine if amosite had a cocarcinogenic or additive effect in these studies. Female rats exposed to amosite + DMH had a higher incidence (11% vs. 2%) of neoplasia of the duodenum than the DMH controls. Conversely, they had a lower incidence (9% vs. 2%) of neoplasms of the jejunum; thus, the total number of animals with neoplasms of the small intestine was similar. The same situation was observed in the large intestine of male rats. The rats exposed to DMH alone had a higher incidence (13% vs. 3%) of carcinoma of the cecum but a lower incidence (14% vs. 25%) of neoplasms of the transverse colon. Overall, the data suggest that amosite asbestos had neither a cocarcinogenic nor protective effect on the carcinogenic potential of DMH.

The morphologic appearances of the neoplasms induced by DMH were similar to those described previously in rats exposed to hydrazine compounds (Pozharisski, 1975). In addition, the few intestinal neoplasms that occurred in the control and amosite (no DMH) rats were of the same morphologic types as those induced by DMH. The neoplasms observed in the kidney, liver, and Zymbal gland in DMH-exposed rats were consistent with those reported for these types of intestinal carcinogens (Ward, 1975).

A significantly ($P<0.05$) increased incidence of C-cell carcinomas of the thyroid gland occurred in amosite-exposed male rats. This effect was not observed in the amosite + PW male rats, and the overall incidence of total benign and malignant C-cell neoplasms was similar in control and exposed groups. Therefore, this effect is not considered to be related to amosite exposure.

The incidences of monocytic leukemia (synonyms: mononuclear cell leukemia, Fischer rat leukemia) were increased in amosite (43%) ($P<0.05$) and amosite + PW (49%) ($P<0.01$) male rats compared with that in controls (32%). The incidences of monocytic leukemia in male control groups in other studies of the asbestos initiative were 36% in tremolite, 36% in crocidolite, and 42% in short-range chrysotile asbestos. This increased incidence was not observed in exposed female rats. Coleman et al. (1977) reported an incidence of nearly 30% in male F344 rats within the age group of 24-40 months. In 2-year-old F344 rats, Goodman et al. (1979) reported 12% of males and nearly 10% of females had lymphoma or leukemia, a much lower incidence than in the current studies. It is apparent from the current studies and the above-cited studies that the incidence of leukemia increases rapidly after 2 years of age. In view of considerable variation in the leukemia incidence and the fact that the amosite-exposed male rats survived longer, thereby losing statistical significance with life table analysis, it is doubtful that the increase in the incidence of

leukemia is compound related. More importantly, an increased incidence of neoplasia was not observed in target organs (gastrointestinal tract and mesothelium). Even though it is known that certain types of asbestos are absorbed through the gastrointestinal tract (Cook and Olson, 1979; Sebastien et al., 1980), it is difficult to envision how asbestos given orally could cause an increase in leukemia without causing an increase in neoplasms in the target tissues.

In summary, these effects represent only a modulation of neoplasms that occur in concurrent control groups and are known to occur in historical control rats of this strain. No uncommon or unique neoplasms were observed in any of the amosite-exposed groups. In addition, the biologic importance of the neoplasms in the absence of target organ neoplasia is questionable.

A large variety of nonneoplastic lesions, primarily lesions of aging, were observed in all groups. There was no obvious correlation between exposure and specific lesions. Therefore, amosite at the concentration of 1% in the diet did not appear to cause any overt toxicity. The decrease in initial body weight and body weight gain may or may not be considered a toxic effect, depending on one's viewpoint, particularly since the amosite-exposed rats lived longer.

Studies involving the long-term ingestion of other types of asbestos are few. Donham et al. (1980) reported equivocal tumor results in the intestine of F344 rats that were fed a diet containing 10% chrysotile for their lifetime. Although a significant ($P<0.05$) increase in the number of neoplasms in exposed animals was not observed, the authors believed that there was a trend toward increased colon lesions in general. They cited evidence of penetration of asbestos into the colonic mucosa and possible cytotoxicity to colonic tissues and suggested a relationship to peritoneal mesothelioma. Another equivocal study is that reported by Gibel et al. (1976), who described increases in malignant neoplasms in the lung, kidney, liver, and reticuloendothelial system but not in intestinal neoplasia in Wistar rats fed asbestos filter material (20 mg/day) for 8-14 months. Cunningham et al. (1977) reported two studies (24 months or 30 months) in which Wistar male rats were administered 1% chrysotile asbestos in the diet. These authors concluded that trace amounts of ingested asbestos can penetrate the walls of the gastrointestinal tract, but evidence of carcinogenicity was inconclusive. No evidence of carcinogenicity was found by Gross et al. (1974), who fed rats a diet containing 5% chrysotile asbestos for 21 months. Bolton et al. (1982) exposed groups of 22-24 male HAN SPF Wistar-derived rats to amosite, crocidolite, or UICC standard reference chrysotile (similar to intermediate-range chrysotile) asbestos in the diet at a rate of approximately 250 mg/rat per week for 25 months and monitored the rats for the remainder of their lifespan. They concluded that no significant adverse effects occurred as a result of ingestion of any of these forms of asbestos. Previous NTP asbestos studies in rats in which chrysotile (NTP 1985a) or crocidolite (NTP, 1988) was administered orally with and without DMH did not show any indication of a carcinogenic response.

A corollary study to this investigation was conducted in Syrian golden hamsters (NTP, 1985b). The exposure regimen was similar, in that 252 male and 254 female hamsters were exposed to 1% amosite asbestos (same source as in the current studies) in their diet for their natural lifespan. There was no adverse effect on body weight gain or survival, and no amosite-related neoplasms were observed.

In another study, groups of 30 male and 30 female hamsters were exposed via drinking water for their lifetime to amosite asbestos, mine tailings, beach rock, or Lake Superior drinking water (Smith et al.,1980). No adverse effects on body weight or survival were observed for any of the groups. One peritoneal mesothelioma, one pulmonary carcinoma, and two early squamous cell carcinomas of the nonglandular stomach were found in the hamsters exposed to amosite. The authors concluded that the study was "essentially negative." A subsequent study in rats in which similar materials were used also failed to elicit a carcinogenic response (Hilding et al., 1981).

Except for the studies of Donham et al. (1980), Smith et al. (1980), Bolton et al. (1982), and the NTP studies, the other studies were conducted

with relatively small numbers of animals. Also, some were conducted for an insufficient period of time to study adequately the carcinogenic potential of ingested asbestos.

A long-term study of amosite asbestos was designed to determine the promotor potential of asbestos (Ward et al., 1980). Six-week-old male F344 rats were exposed three times per week for 10 weeks to 1 mg amosite asbestos in saline via gavage. Once per week during this same period, half of the rats received subcutaneous injections of 7.4 mg/kg azoxymethane (AOM), a known intestinal carcinogen in animals which produces effects similar to DMH. The rats were allowed to live out their lifespan or until 94-95 weeks of age, at which time they were killed. The authors reported an intestinal tumor incidence of 66.7% in AOM alone, 77.1% for amosite + AOM, and 32.6% for amosite alone. They concluded that although amosite did not significantly add to the incidence of AOM-induced intestinal neoplasia, amosite alone caused a relatively high incidence of intestinal neoplasia. There was no untreated control group to compare with the exposed groups, however; in addition, these results should be viewed with some suspicion because the authors also reported a 14% incidence of Zymbal gland tumors in the rats exposed to amosite alone. The historical incidence of Zymbal gland tumors in the NTP Program is about 1% for 2-year studies and 3% for lifetime studies, indicating that this is a relatively rare neoplasm. AOM, however, is known to induce Zymbal gland tumors with a single dose of 5.1 mg/kg in male F344 rats, producing a 14% incidence of tumors in this organ (Ward, 1975); in this study, 5.1 mg/kg AOM also caused a 24% incidence of intestinal neoplasia. A possible explanation for the incidence of Zymbal gland tumors in the amosite groups is that they were inadvertently exposed to AOM. If this occurred, these rats would also be expected to show a high incidence of intestinal neoplasms.

Under the conditions of these feed studies, amosite asbestos was not overtly toxic, did not affect survival, and was not carcinogenic when ingested at a concentration of 1% in the diet by male or female F344/N rats The cocarcinogenic studies using DMH were considered inadequate because of the high incidence of DMH-induced intestinal neoplasia in both the amosite asbestos-exposed and nonexposed groups.

V. REFERENCES

V. REFERENCES

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APPENDIX A

SUMMARY OF LESIONS IN MALE RATS IN

THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS

TABLE A1a. SUMMARY OF THE INCIDENCE OF NEOPLASMS IN MALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS AND DMH: UNTREATED CONTROL, DMH, 1% AMOSITE (a)

	Untreated Control	DMH	1% Amosite
Animals initially in study	117	125	250
Animals necropsied	117	125	250
Animals examined histopathologically	117	125	249
INTEGUMENTARY SYSTEM			
*Skin	(117)	(125)	(250)
Carcinoma in-situ, NOS			1 (0%)
Squamous cell papilloma	1 (1%)		6 (2%)
Squamous cell carcinoma	1 (1%)		4 (2%)
Basal cell tumor	1 (1%)		1 (0%)
Basal cell carcinoma	3 (3%)		7 (3%)
Trichoepithelioma	1 (1%)		
Keratoacanthoma	4 (3%)		17 (7%)
Fibroma			2 (1%)
Fibrosarcoma	3 (3%)	1 (1%)	4 (2%)
Myxoma			1 (0%)
Osteosarcoma			1 (0%)
Neurofibrosarcoma	1 (1%)		
*Subcut tissue	(117)	(125)	(250)
Sarcoma, NOS	4 (3%)	1 (1%)	2 (1%)
Sarcoma, NOS, invasive			1 (0%)
Fibroma	18 (15%)	3 (2%)	†31 (12%)
Fibrosarcoma	4 (3%)		5 (2%)
Lipoma	2 (2%)		2 (1%)
Liposarcoma	1 (1%)		1 (0%)
Neurofibroma	3 (3%)	1 (1%)	5 (2%)
Neurofibrosarcoma	1 (1%)		
RESPIRATORY SYSTEM			
*Nasal cavity	(117)	(125)	(250)
Fibrosarcoma	1 (1%)		
#Trachea	(117)	(125)	(248)
C-cell carcinoma, invasive			1 (0%)
#Lung/bronchiole	(117)	(125)	(249)
Papillary adenocarcinoma			1 (0%)
#Lung	(117)	(125)	(249)
Carcinoma, NOS, metastatic	1 (1%)		1 (0%)
Squamous cell carcinoma, metasta			1 (0%)
Adenoca in adenomatous polyp, met		1 (1%)	
Alveolar/bronchiolar adenoma	1 (1%)		2 (1%)
Alveolar/bronchiolar carcinoma	1 (1%)	1 (1%)	6 (2%)
C-cell carcinoma, metastatic		1 (1%)	2 (1%)
Mucinous cystadenoca, metastatic		1 (1%)	
Pheochromocytoma, metastatic	2 (2%)		4 (2%)
Sarcoma, NOS, metastatic	3 (3%)		1 (0%)
Liposarcoma, metastatic	1 (1%)		3 (1%)
Osteosarcoma, metastatic	1 (1%)		
Neurofibrosarcoma, metastatic	1 (1%)		
HEMATOPOIETIC SYSTEM			
*Multiple organs	(117)	(125)	(250)
Malig. lymphoma, lymphocytic type			2 (1%)
Malig. lymphoma, histiocytic type	2 (2%)	2 (2%)	1 (0%)
Myelomonocytic leukemia			1 (0%)
Monocytic leukemia	36 (31%)	18 (14%)	103 (41%)
#Bone marrow	(117)	(110)	(248)
Liposarcoma, invasive	2 (2%)		

TABLE A1a. SUMMARY OF THE INCIDENCE OF NEOPLASMS IN MALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS AND DMH: UNTREATED CONTROL, DMH, 1% AMOSITE (Continued)

	Untreated Control	DMH	1% Amosite
HEMATOPOIETIC SYSTEM (Continued)			
#Spleen	(117)	(124)	(249)
Fibrosarcoma			1 (0%)
Mesothelioma, metastatic			1 (0%)
#Mandibular l. node	(117)	(125)	(249)
C-cell carcinoma, metastatic			1 (0%)
Sarcoma, NOS, invasive			1 (0%)
Fibrosarcoma, invasive			1 (0%)
#Cervical lymph node	(117)	(125)	(250)
C-cell carcinoma, metastatic		1 (1%)	
#Mediastinal l. node	(117)	(125)	(249)
Alveolar/bronchiolar carcinoma, invasive	1 (1%)		
#Celiac lymph node	(117)	(125)	(250)
Mucinous cystadenoca, metastatic		2 (2%)	
#Pancreatic lymph node	(117)	(125)	(250)
Mucinous cystadenoca, metastatic		1 (1%)	
#Mesenteric lymph node	(117)	(125)	(250)
Mucinous cystadenoca, metastatic		1 (1%)	
#Liver	(117)	(125)	(249)
Monocytic leukemia	2 (2%)	2 (2%)	3 (1%)
#Ileum	(117)	(125)	(249)
Malig. lymphoma, histiocytic type			1 (0%)
#Thymus	(80)	(83)	(171)
Carcinoma, NOS			1 (1%)
Squamous cell carcinoma	1 (1%)		
CIRCULATORY SYSTEM			
*Subcut tissue	(117)	(125)	(250)
Hemangiosarcoma			1 (0%)
#Spleen	(117)	(124)	(249)
Hemangiosarcoma	1 (1%)		2 (1%)
DIGESTIVE SYSTEM			
*Mouth	(117)	(125)	(250)
Keratoacanthoma		1 (1%)	
*Oral mucous membrane	(117)	(125)	(250)
Squamous cell carcinoma			2 (1%)
Basal cell carcinoma			1 (0%)
*Hard palate	(117)	(125)	(250)
Squamous cell papilloma			1 (0%)
Squamous cell carcinoma			1 (0%)
*Lip	(117)	(125)	(250)
Squamous cell papilloma		1 (1%)	
Basal cell tumor	1 (1%)		
#Salivary gland	(117)	(124)	(245)
Carcinoma, NOS			1 (0%)
Sarcoma, NOS		1 (1%)	2 (1%)
Sarcoma, NOS, invasive	1 (1%)		
Fibrosarcoma	1 (1%)		2 (1%)
Fibrosarcoma, invasive			1 (0%)
#Liver	(117)	(125)	(249)
Neoplastic nodule	9 (8%)	18 (14%)	9 (4%)
Hepatocellular carcinoma	1 (1%)	9 (7%)	3 (1%)
Osteosarcoma	1 (1%)		

TABLE A1a. SUMMARY OF THE INCIDENCE OF NEOPLASMS IN MALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS AND DMH: UNTREATED CONTROL, DMH, 1% AMOSITE (Continued)

	Untreated Control	DMH	1% Amosite
DIGESTIVE SYSTEM (Continued)			
#Pancreas	(116)	(125)	(247)
Adenocarcinoma, NOS, metastatic		1 (1%)	
Acinar cell adenoma	9 (8%)		19 (8%)
Acinar cell carcinoma	2 (2%)		2 (1%)
Mixed tumor, benign			2 (1%)
Mesothelioma, metastatic			1 (0%)
Neurofibrosarcoma, metastatic		1 (1%)	
#Pancreatic duct	(116)	(125)	(247)
Carcinoma, NOS	1 (1%)		1 (0%)
#Stomach	(117)	(125)	(249)
Adenocarcinoma, NOS	1 (1%)		
Adenomatous polyp, NOS			1 (0%)
Leiomyosarcoma			1 (0%)
#Gastric mucosa	(117)	(125)	(249)
Carcinoma in-situ, NOS			1 (0%)
#Duodenum	(117)	(125)	(249)
Adenocarcinoma, NOS		2 (2%)	
Mucinous cystadenocarcinoma		6 (5%)	
Signet ring carcinoma		3 (2%)	
Leiomyoma			1 (0%)
Leiomyosarcoma		1 (1%)	
#Jejunum	(117)	(125)	(249)
Adenomatous polyp, NOS		1 (1%)	
Adenoca in adenomatous polyp			1 (0%)
Mucinous cystadenocarcinoma	2 (2%)	2 (2%)	
Leiomyosarcoma		1 (1%)	1 (0%)
#Ileum	(117)	(125)	(249)
Carcinoma, NOS		1 (1%)	
Adenocarcinoma, NOS		1 (1%)	
Adenomatous polyp, NOS	1 (1%)		
#Colon	(117)	(125)	(249)
Adenomatous polyp, NOS		1 (1%)	1 (0%)
Adenoca in adenomatous polyp		1 (1%)	
#Cecum	(117)	(125)	(249)
Adenocarcinoma, NOS		4 (3%)	
Mucinous cystadenocarcinoma		7 (6%)	
Signet ring carcinoma		5 (4%)	
Leiomyoma			1 (0%)
Leiomyosarcoma	1 (1%)		
#Ascending colon	(117)	(125)	(249)
Carcinoma in-situ, NOS		2 (2%)	1 (0%)
Adenocarcinoma, NOS		5 (4%)	
Adenomatous polyp, NOS		5 (4%)	
Adenoca in adenomatous polyp		2 (2%)	
Mucinous cystadenocarcinoma		2 (2%)	
Signet ring carcinoma		1 (1%)	
#Transverse colon	(117)	(125)	(249)
Adenomatous polyp, NOS		9 (7%)	
Adenoca in adenomatous polyp		8 (6%)	
Mucinous cystadenocarcinoma		1 (1%)	
#Descending colon	(117)	(125)	(249)
Adenomatous polyp, NOS		32 (26%)	2 (1%)
Adenoca in adenomatous polyp		21 (17%)	

TABLE A1a. SUMMARY OF THE INCIDENCE OF NEOPLASMS IN MALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS AND DMH: UNTREATED CONTROL, DMH, 1% AMOSITE (Continued)

	Untreated Control	DMH	1% Amosite
URINARY SYSTEM			
#Kidney	(117)	(125)	(248)
Transitional cell carcinoma		1 (1%)	
Tubular cell adenoma			2 (1%)
Tubular cell adenocarcinoma		1 (1%)	1 (0%)
Sarcoma, NOS			1 (0%)
Lipoma			1 (0%)
Mixed tumor, malignant			1 (0%)
Neurofibrosarcoma		1 (1%)	
#Kidney/tubule	(117)	(125)	(248)
Carcinoma, NOS			1 (0%)
ENDOCRINE SYSTEM			
#Pituitary	(117)	(122)	(248)
Carcinoma, NOS	2 (2%)		4 (2%)
Adenoma, NOS	24 (21%)	6 (5%)	41 (16%)
#Adrenal	(117)	(125)	(249)
Cortical adenoma			5 (2%)
Pheochromocytoma	39 (33%)	16 (13%)	65 (26%)
Pheochromocytoma, malignant	3 (3%)		5 (2%)
Ganglioneuroma			1 (0%)
#Periadrenal tissue	(117)	(125)	(249)
Tubular cell adenocarcinoma, inv			1 (0%)
#Thyroid	(117)	(124)	(246)
Follicular cell adenoma	4 (3%)	4 (3%)	13 (5%)
Follicular cell carcinoma	7 (6%)	3 (2%)	10 (4%)
C-cell adenoma	16 (14%)	2 (2%)	26 (11%)
C-cell carcinoma	11 (9%)	7 (6%)	50 (20%)
#Parathyroid	(110)	(119)	(234)
Adenoma, NOS	4 (4%)	1 (1%)	1 (0%)
C-cell carcinoma, invasive	1 (1%)		1 (0%)
#Pancreatic islets	(116)	(125)	(247)
Islet cell adenoma	14 (12%)		17 (7%)
Islet cell carcinoma	3 (3%)		5 (2%)
REPRODUCTIVE SYSTEM			
*Mammary gland	(117)	(125)	(250)
Adenoma, NOS	3 (3%)		4 (2%)
Adenocarcinoma, NOS	1 (1%)		1 (0%)
Papillary adenocarcinoma			1 (0%)
Sarcoma, NOS, invasive			1 (0%)
Fibrosarcoma			1 (0%)
Fibroadenoma	17 (15%)	1 (1%)	27 (11%)
*Preputial gland	(117)	(125)	(250)
Carcinoma, NOS	6 (5%)	5 (4%)	9 (4%)
Squamous cell carcinoma			1 (0%)
#Prostate	(117)	(123)	(249)
Squamous cell carcinoma			1 (0%)
Lipoma	1 (1%)		
Liposarcoma, metastatic	1 (1%)		
*Seminal vesicle	(117)	(125)	(250)
Mucinous cystadenocarcinoma	1 (1%)		
#Testis	(117)	(123)	(249)
Interstitial cell tumor	111 (95%)	79 (64%)	240 (96%)

TABLE A1a. SUMMARY OF THE INCIDENCE OF NEOPLASMS IN MALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS AND DMH: UNTREATED CONTROL, DMH, 1% AMOSITE (Continued)

	Untreated Control	DMH	1% Amosite
REPRODUCTIVE SYSTEM (Continued)			
*Epididymis	(117)	(125)	(250)
Lipoma			1 (0%)
Mesothelioma, invasive		1 (1%)	
*Scrotum	(117)	(125)	(250)
Keratoacanthoma	1 (1%)		
Mesothelioma, invasive		1 (1%)	1 (0%)
NERVOUS SYSTEM			
#Brain/meninges	(117)	(125)	(250)
Meningioma		1 (1%)	
#Cerebrum	(117)	(125)	(249)
Carcinoma, NOS, invasive	1 (1%)		2 (1%)
Astrocytoma	2 (2%)	1 (1%)	2 (1%)
#Cerebellum	(117)	(125)	(249)
Astrocytoma, invasive	1 (1%)		1 (0%)
*Cauda equina	(117)	(125)	(250)
Liposarcoma, invasive	1 (1%)		
SPECIAL SENSE ORGANS			
*Eye/lacrimal gland	(117)	(125)	(250)
Carcinoma, NOS		1 (1%)	
*Ear	(117)	(125)	(250)
Squamous cell carcinoma		1 (1%)	
*Ear canal	(117)	(125)	(250)
Squamous cell papilloma		1 (1%)	1 (0%)
Squamous cell carcinoma		1 (1%)	
*Zymbal gland	(117)	(125)	(250)
Carcinoma, NOS	1 (1%)	23 (18%)	7 (3%)
Squamous cell papilloma		7 (6%)	2 (1%)
Adenoma, NOS			1 (0%)
Keratoacanthoma		3 (2%)	
MUSCULOSKELETAL SYSTEM			
*Skull	(117)	(125)	(250)
Osteoma	1 (1%)		1 (0%)
*Vertebra	(117)	(125)	(250)
Liposarcoma			1 (0%)
Liposarcoma, invasive	1 (1%)		
*Vertebral column	(117)	(125)	(250)
Liposarcoma	1 (1%)		
*Thoracic vertebra	(117)	(125)	(250)
Osteosarcoma			1 (0%)
*Tibia	(117)	(125)	(250)
Neurofibrosarcoma	1 (1%)		
*Muscle of leg	(117)	(125)	(250)
Rhabdomyosarcoma		1 (1%)	
BODY CAVITIES			
*Mediastinum	(117)	(125)	(250)
Squamous cell carcinoma, metasta	1 (1%)		
Alveolar/bronchiolar carcinoma, invasive	1 (1%)		

TABLE A1a. SUMMARY OF THE INCIDENCE OF NEOPLASMS IN MALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS AND DMH: UNTREATED CONTROL, DMH, 1% AMOSITE (Continued)

	Untreated Control	DMH	1% Amosite
BODY CAVITIES (Continued)			
*Abdominal cavity	(117)	(125)	(250)
Mucinous cystadenocarcinoma, metastatic		2 (2%)	
Sarcoma, NOS		1 (1%)	
Sarcoma, NOS, invasive			1 (0%)
*Abdominal wall	(117)	(125)	(250)
Osteosarcoma, metastatic	1 (1%)		
*Peritoneum	(117)	(125)	(250)
Sarcoma, NOS			1 (0%)
Mesothelioma, invasive			1 (0%)
*Mesentery	(117)	(125)	(250)
Sarcoma, NOS		1 (1%)	
Fibrosarcoma, metastatic	1 (1%)		
Mesothelioma, malignant			2 (1%)
*Tunica vaginalis	(117)	(125)	(250)
Mesothelioma, NOS			1 (0%)
Mesothelioma, malignant	2 (2%)	4 (3%)	7 (3%)
ALL OTHER SYSTEMS			
*Multiple organs	(117)	(125)	(250)
Carcinoma, NOS, invasive	1 (1%)		
Carcinoma, NOS, metastatic		1 (1%)	
Squamous cell carcinoma, invasiv			1 (0%)
Adenocarcinoma, NOS, metastatic		5 (4%)	
Tubular cell adenocarcinoma, met			1 (0%)
C-cell carcinoma, metastatic			1 (0%)
Mucinous cystadenocarcinoma, metastatic		9 (7%)	
Signet ring carcinoma, metastati		7 (6%)	
Sarcoma, NOS, invasive	1 (1%)	1 (1%)	1 (0%)
Fibrosarcoma, invasive			1 (0%)
Mesothelioma, invasive	1 (1%)	3 (2%)	7 (3%)
Mesothelioma, metastatic	1 (1%)	1 (1%)	1 (0%)
Osteosarcoma, metastatic			1 (0%)
Orbital region			
Sarcoma, NOS		1	
Back			
Basal cell carcinoma			1
Shoulder			
Osteosarcoma	1		
Flank			
Rhabdomyosarcoma			1
Sacral region			
Neurofibroma			1
Hip			
Osteosarcoma	1		
Axill			
Fibroma			1
Fibrosarcoma			1
Leg			
Osteosarcoma	1		

TABLE A1a. SUMMARY OF THE INCIDENCE OF NEOPLASMS IN MALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS AND DMH: UNTREATED CONTROL, DMH, 1% AMOSITE (Continued)

	Untreated Control	DMH	1% Amosite
ANIMAL DISPOSITION SUMMARY			
Animals initially in study	117	125	250
Natural death	15	20	30
Moribund sacrifice	95	92	190
Terminal sacrifice	7	13	29
Accidentally killed, NOS			1
TUMOR SUMMARY			
Total animals with primary tumors**	116	125	249
Total primary tumors	402	357	841
Total animals with benign tumors	115	93	244
Total benign tumors	277	174	547
Total animals with malignant tumors	82	110	201
Total malignant tumors	116	165	284
Total animals with secondary tumors##	20	36	33
Total secondary tumors	27	41	43
Total animals with tumors-- uncertain benign or malignant	9	18	10
Total uncertain tumors	9	18	10

(a) DMH indicates a group receiving five doses of 7.5 mg/kg 1,2-dimethylhydrazine dihydrochloride by gavage in pH 5 acetate buffer.
† Multiple occurrence of morphology in the same tissue; the tissue is counted once only
* Number of animals receiving complete necropsy examinations; all gross lesions including masses examined microscopically
** Primary tumors: all tumors except secondary tumors
# Number of animals examined microscopically at this site
Secondary tumors: metastatic tumors or tumors invasive into an adjacent organ

TABLE A1b. SUMMARY OF THE INCIDENCE OF NEOPLASMS IN MALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS AND DMH: 1% AMOSITE + PW, 1% AMOSITE + DMH (a)

	1% Amosite + PW	1% Amosite + DMH
Animals initially in study	100	175
Animals necropsied	100	175
Animals examined histologically	100	(174)
INTEGUMENTARY SYSTEM		
*Skin	(100)	(175)
Squamous cell papilloma	5 (5%)	1 (1%)
Squamous cell carcinoma	1 (1%)	
Basal cell carcinoma	4 (4%)	1 (1%)
Trichoepithelioma	2 (2%)	
Keratoacanthoma	2 (2%)	5 (3%)
Fibrosarcoma		2 (1%)
*Subcut tissue	(100)	(175)
Squamous cell carcinoma		1 (1%)
Sarcoma, NOS	5 (5%)	1 (1%)
Fibroma	11 (11%)	6 (3%)
Fibrosarcoma	1 (1%)	1 (1%)
Lipoma	1 (1%)	
Osteosarcoma	1 (1%)	
Neurofibroma		1 (1%)
Neurofibrosarcoma	2 (2%)	
RESPIRATORY SYSTEM		
#Lung	(100)	(173)
Carcinoma, NOS, metastatic		1 (1%)
Hepatocellular carcinoma, metast		1 (1%)
Alveolar/bronchiolar adenoma		1 (1%)
Alveolar/bronchiolar carcinoma	4 (4%)	2 (1%)
Interstitial cell tumor, metasta	1 (1%)	
Pheochromocytoma, metastatic		1 (1%)
Fibrosarcoma, metastatic		1 (1%)
Osteosarcoma, metastatic	1 (1%)	
HEMATOPOIETIC SYSTEM		
*Multiple organs	(100)	(175)
Malig. lymphoma, histiocytic type		1 (1%)
Monocytic leukemia	47 (47%)	37 (21%)
#Spleen	(100)	(172)
Adenocarcinoma, NOS, metastatic		1 (1%)
Fibrosarcoma	1 (1%)	
Mesothelioma, metastatic		1 (1%)
#Mandibular l. node	(100)	(173)
Neurofibrosarcoma, metastatic	1 (1%)	
#Cervical lymph node	(100)	(173)
Carcinoma, NOS, metastatic		1 (1%)
#Mediastinal l. node	(100)	(173)
Mesothelioma, metastatic		1 (1%)
#Celiac lymph node	(100)	(173)
Adenocarcinoma, NOS, metastatic		1 (1%)
Mucinous cystadenocarcinoma, metastatic		2 (1%)
#Lumbar lymph node	(100)	(173)
Pheochromocytoma, metastatic		1 (1%)
#Mesenteric lymph node	(100)	(173)
Mucinous cystadenocarcinoma, metastatic		2 (1%)
Signet ring carcinoma, metastati		2 (1%)
#Ileocolic lymph node	(100)	(173)
Mucinous cystadenocarcinoma metastatic		1 (1%)
#Liver	(100)	(173)
Monocytic leukemia	2	3 (2%0

TABLE A1b. SUMMARY OF THE INCIDENCE OF NEOPLASMS IN MALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS AND DMH: 1% AMOSITE + PW, 1% AMOSITE + DMH (Continued)

	1% Amosite + PW	1% Amosite + DMH
CIRCULATORY SYSTEM		
*Mediastinum	(100)	(175)
Hemangiosarcoma		1 (1%)
*Subcut tissue	(100)	(175)
Hemangiosarcoma		2 (1%)
#Spleen	(100)	(172)
Hemangiosarcoma	2 (2%)	
Hemangiopericytoma, malignant		1 (1%)
#Liver	(100)	(173)
Hemangioma		1 (1%)
Hemangiosarcoma		1 (1%)
DIGESTIVE SYSTEM		
*Hard palate	(100)	(175)
Squamous cell papilloma	1 (1%)	
#Salivary gland	(100)	(171)
Sarcoma, NOS, invasive	1 (1%)	
Fibrosarcoma, invasive	1 (1%)	
#Liver	(100)	(173)
Neoplastic nodule	5 (5%)	27 (16%)
Hepatocellular carcinoma	3 (3%)	7 (4%)
Alveolar/bronchiolar carcinoma, metasta	1 (1%)	
Sarcoma, NOS		2 (1%)
Lipoma		1 (1%)
#Pancreas	(100)	(173)
Acinar cell adenoma	2 (2%)	5 (3%)
Acinar cell carcinoma	1 (1%)	
*Pharynx	(100)	(175)
Squamous cell papilloma	1 (1%)	
#Esophagus	(100)	(173)
Squamous cell papilloma	1 (1%)	
#Stomach	(100)	(173)
Adenocarcinoma, NOS		1 (1%)
Adenocarcinoma in adenomatous polyp, met		1 (1%)
Mucinous cystadenocarcinoma		1 (1%)
#Duodenum	(100)	(173)
Carcinoma, NOS		1 (1%)
Adenocarcinoma, NOS		9 (5%)
Adenomatous polyp, NOS		1 (1%)
Mucinous cystadenocarcinoma	1 (1%)	4 (2%)
#Jejunum	(100)	(173)
Mucinous cystadenocarcinoma		3 (2%)
Mucinous cystadenocarcinoma, metastatic		1 (1%)
Leiomyosarcoma	2 (2%)	
#Colon	(100)	(173)
Carcinoma in-situ, NOS		1 (1%)
Mucinous cystadenocarcinoma		1 (1%)
#Cecum	(100)	(173)
Adenocarcinoma, NOS		2 (1%)
Adenomatous polyp, NOS	1 (1%)	2 (1%)
Mucinous cystadenocarcinoma		1 (1%)
Signet ring carcinoma		3 (2%)
Leiomyoma	1 (1%)	
#Ascending colon	(100)	(173)
Carcinoma in-situ, NOS		1 (1%)
Adenocarcinoma, NOS		3 (2%)
Adenomatous polyp, NOS		5 (3%)
Adenoca in adenomatous polyp		3 (2%)
Mucinous cystadenocarcinoma		14 (8%)
Signet ring carcinoma		2 (1%)

TABLE A1b. SUMMARY OF THE INCIDENCE OF NEOPLASMS IN MALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS AND DMH: 1% AMOSITE + PW, 1% AMOSITE + DMH (Continued)

	1% Amosite + PW	1% Amosite + DMH
DIGESTIVE SYSTEM (Continued)		
#Transverse colon	(100)	(173)
Adenocarcinoma, NOS		1 (1%)
Adenomatous polyp, NOS		21 (12%)
Adenocarcinoma in adenomatous polyp		20 (12%)
Mucinous cystadenocarcinoma		1 (1%)
#Descending colon	(100)	(173)
Adenomatous polyp, NOS		41 (24%)
Adenocarcinoma in adenomatous polyp	1 (1%)	26 (15%)
Mucinous cystadenocarcinoma		3 (2%)
URINARY SYSTEM		
#Kidney	(100)	(173)
Alveolar/bronchiolar carcinoma, metasta	1 (1%)	
Tubular cell adenoma	1 (1%)	
Tubular cell adenocarcinoma	1 (1%)	
Sarcoma, NOS		3 (2%)
Mixed tumor, benign	2 (2%)	
Mixed tumor, malignant		1 (1%)
#Urinary bladder	(100)	(172)
Adenomatous polyp, NOS		1 (1%)
ENDOCRINE SYSTEM		
#Pituitary	(99)	(169)
Carcinoma, NOS	2 (2%)	
Adenoma, NOS	19 (19%)	12 (7%)
#Adrenal	(100)	(173)
Cortical adenoma	2 (2%)	
Pheochromocytoma	21 (21%)	16 (9%)
Pheochromocytoma, malignant		2 (1%)
#Thyroid	(100)	(172)
Follicular cell adenoma	8 (8%)	10 (6%)
Follicular cell carcinoma	4 (4%)	3 (2%)
C-cell adenoma	11 (11%)	9 (5%)
C-cell carcinoma	14 (14%)	10 (6%)
#Parathyroid	(99)	(168)
Adenoma, NOS	1 (1%)	1 (1%)
#Pancreatic islets	(100)	(173)
Islet cell adenoma	4 (4%)	3 (2%)
Islet cell carcinoma	4 (4%)	3 (2%)
REPRODUCTIVE SYSTEM		
*Mammary gland	(100)	(175)
Papillary adenoma	1 (1%)	
Fibroadenoma	1 (1%)	5 (3%)
*Preputial gland	(100)	(175)
Carcinoma, NOS		4 (2%)
#Prostate	(100)	(172)
Adenocarcinoma, NOS	1 (1%)	
*Coagulating gland	(100)	(175)
Adenoma, NOS		1 (1%)
#Testis	(100)	(172)
Interstitial cell tumor	92 (92%)	125 (72%)
Interstitial cell tumor, maligna	1 (1%)	
*Epididymis	(100)	(175)
Mesothelioma, invasive		1 (1%)
*Scrotum	(100)	(175)
Mesothelioma, invasive		1 (1%)

TABLE A1b. SUMMARY OF THE INCIDENCE OF NEOPLASMS IN MALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS AND DMH: 1% AMOSITE + PW, 1% AMOSITE + DMH (Continued)

	1% Amosite + PW	1% Amosite + DMH
NERVOUS SYSTEM		
#Cerebrum	(100)	(171)
Astrocytoma	2 (2%)	
SPECIAL SENSE ORGANS		
*Harderian gland	(100)	(175)
Carcinoma, NOS		1 (1%)
*Ear canal	(100)	(175)
Squamous cell papilloma		1 (1%)
*Zymbal gland	(100)	(175)
Carcinoma, NOS	3 (3%)	35 (20%)
Squamous cell papilloma		17 (10%)
Keratoacanthoma		3 (2%)
MUSCULOSKELETAL SYSTEM		
None		
BODY CAVITIES		
*Abdominal cavity	(100)	(175)
Lipoma	1 (1%)	
*Pleura	(100)	(175)
Alveolar/bronchiolar ca, metasta	1 (1%)	
*Mesentery	(100)	(175)
Adenocarcinoma, NOS, invasive		1 (1%)
Adenocarcinoma in adenomatous polyp, met		2 (1%)
Mesothelioma, metastatic		1 (1%)
*Tunica vaginalis	(100)	(175)
Mesothelioma, NOS		1 (1%)
Mesothelioma, malignant	3 (3%)	5 (3%)
ALL OTHER SYSTEMS		
*Multiple organs	(100)	(175)
Adenocarcinoma, NOS, metastatic		7 (4%)
Alveolar/bronchiolar carcinoma, invasive	1 (1%)	
Alveolar/bronchiolar carcinoma, metasta	1 (1%)	
Mucinous cystadenocarcinoma, metastatic		10 (6%)
Signet ring carcinoma, invasive		1 (1%)
Sarcoma, NOS, invasive	1 (1%)	1 (1%)
Mesothelioma, invasive	3 (3%)	3 (2%)
Mesothelioma, metastatic		1 (1%)
Mesentery of colon		
Mucinous cystadenocarcinoma, metastatic		1

TABLE A1b. SUMMARY OF THE INCIDENCE OF NEOPLASMS IN MALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS AND DMH: 1% AMOSITE + PW, 1% AMOSITE + DMH (Continued)

	1% Amosite + PW	1% Amosite + DMH
ANIMAL DISPOSITION SUMMARY		
Animals initially in study	100	175
Natural death	11	22
Moribund sacrifice	83	128
Terminal sacrifice	6	25
TUMOR SUMMARY		
Total animals with primary tumors**	99	173
Total primary tumors	310	554
Total animals with benign tumors	95	150
Total benign tumors	192	295
Total animals with malignant tumors	84	149
Total malignant tumors	113	231
Total animals with secondary tumors##	12	40
Total secondary tumors	14	49
Total animals with tumors-- uncertain benign or malignant	5	28
Total uncertain tumors	5	28

(a) DMH indicates a group receiving five doses of 7.5 mg/kg 1,2-dimethylhydrazine dihydrochloride by gavage in pH 5 acetate buffer; PW indicates a group administered 0.47 mg/g chrysotile asbestos daily by gavage for 3 weeks beginning at birth.
• Number of animals receiving complete necropsy examinations; all gross lesions including masses examined microscopically
** Primary tumors: all tumors except secondary tumors
# Number of animals examined microscopically at this site
Secondary tumors: metastatic tumors or tumors invasive into an adjacent organ

TABLE A2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF MALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS: CONTROL

ANIMAL NUMBER	19201	19301	19401	19501	19601	19701	19801	19901	20001	20101	20201	20301	20401	20501	20601	20701	20801	20901	21001	21101	21201	21301	21401	21501	21601
WEEKS ON STUDY	072	114	123	134	120	107	127	127	137	133	122	133	098	133	120	125	090	087	095	141	101	123	127	141	128
INTEGUMENTARY SYSTEM																									
Skin	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Squamous cell papilloma																									
Squamous cell carcinoma																									
Basal cell tumor																									
Basal cell carcinoma																									
Trichoepithelioma																									
Keratoacanthoma				X																					
Fibrosarcoma																									
Neurofibrosarcoma																									
Subcutaneous tissue	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Sarcoma, NOS																	X						X		
Fibroma										X											X				
Fibrosarcoma	X																								
Lipoma				X																					
Liposarcoma																									
Neurofibroma																				X			X		
Neurofibrosarcoma																									
RESPIRATORY SYSTEM																									
Lungs and bronchi	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS, metastatic																									
Alveolar/bronchiolar adenoma																									
Alveolar/bronchiolar carcinoma																							X		
Pheochromocytoma, metastatic																									
Sarcoma, NOS, metastatic																	X						X		
Liposarcoma, metastatic																									
Osteosarcoma, metastatic					X																				
Neurofibrosarcoma, metastatic							X																		
Trachea	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Nasal cavity	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Fibrosarcoma																									
HEMATOPOIETIC SYSTEM																									
Bone marrow	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Liposarcoma, invasive																									
Spleen	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Hemangiosarcoma																									
Lymph nodes	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Alveolar/bronchiolar carcinoma, invasive																							X		
Thymus	+	+	+	−	−	+	+	+	+	+	+	+	+	+	+	−	−	+	+	−	+	−	+	−	−
Squamous cell carcinoma																									
CIRCULATORY SYSTEM																									
Heart	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
DIGESTIVE SYSTEM																									
Oral cavity	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Basal cell tumor		X																							
Salivary gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Sarcoma, NOS, invasive																									
Fibrosarcoma																									
Liver	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Neoplastic nodule								X							X										X
Hepatocellular carcinoma																									
Osteosarcoma					X																				
Monocytic leukemia															X	X									
Bile duct	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Gallbladder & common bile duct	N	N	N	N	N	N	N	+	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Pancreas	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS																									
Acinar cell adenoma															X										
Acinar cell carcinoma										X															
Esophagus	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Stomach	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenocarcinoma, NOS																									
Small intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenomatous polyp, NOS																									
Mucinous cystadenocarcinoma																									
Large intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Leiomyosarcoma												X													
URINARY SYSTEM																									
Kidney	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Urinary bladder	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+

+: Tissue examined microscopically
−: Required tissue not examined microscopically
X: Tumor incidence
N: Necropsy, no autolysis, no microscopic examination
S: Animal missexed
: No tissue information submitted
C: Necropsy, no histology due to protocol
A: Autolysis
M: Animal missing
B: No necropsy performed

TABLE A2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF MALE RATS: CONTROL (Continued)

ANIMAL NUMBER	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241
WEEKS ON STUDY	140	101	108	114	139	125	122	108	104	098	108	114	105	139	125	118	100	134	141	103	118	129	130	124	141
INTEGUMENTARY SYSTEM																									
Skin	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Squamous cell papilloma																								X	
Squamous cell carcinoma					X																				
Basal cell tumor																									
Basal cell carcinoma					X																				X
Trichoepithelioma																									
Keratoacanthoma															X										
Fibrosarcoma																			X						
Neurofibrosarcoma																									
Subcutaneous tissue	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Sarcoma, NOS																									
Fibroma				X				X												X					
Fibrosarcoma		X																				X			
Lipoma												X													
Liposarcoma																									
Neurofibroma																									
Neurofibrosarcoma																									
RESPIRATORY SYSTEM																									
Lungs and bronchi	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS, metastatic																									
Alveolar/bronchiolar adenoma							X																		
Alveolar/bronchiolar carcinoma																									
Pheochromocytoma, metastatic																								X	
Sarcoma, NOS, metastatic																									
Liposarcoma, metastatic																									
Osteosarcoma, metastatic																									
Neurofibrosarcoma, metastatic																									
Trachea	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Nasal cavity	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Fibrosarcoma																									
HEMATOPOIETIC SYSTEM																									
Bone marrow	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Liposarcoma, invasive												X													
Spleen	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Hemangiosarcoma																									
Lymph nodes	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Alveolar/bronchiolar carcinoma, invasive																									
Thymus	−	−	+	+	+	+	+	+	+	+	+	−	+	−	+	+	−	+	−	−	+	+	+	−	+
Squamous cell carcinoma																									
CIRCULATORY SYSTEM																									
Heart	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
DIGESTIVE SYSTEM																									
Oral cavity	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Basal cell tumor																									
Salivary gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Sarcoma, NOS, invasive																									
Fibrosarcoma																									
Liver	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Neoplastic nodule			X																						
Hepatocellular carcinoma																									
Osteosarcoma																									
Monocytic leukemia																									
Bile duct	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Gallbladder & common bile duct	N	N	N	N	N	+	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	+	N
Pancreas	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS																									
Acinar cell adenoma																			X						
Acinar cell carcinoma																									
Esophagus	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Stomach	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenocarcinoma, NOS																									
Small intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenomatous polyp, NOS																									
Mucinous cystadenocarcinoma																	X								
Large intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Leiomyosarcoma																									
URINARY SYSTEM																									
Kidney	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Urinary bladder	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+

TABLE A2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF MALE RATS: CONTROL (Continued)

ANIMAL NUMBER	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266
WEEKS ON STUDY	117	140	114	120	096	114	117	081	138	132	125	141	141	072	132	120	133	115	137	115	117	124	132	090	136
INTEGUMENTARY SYSTEM																									
Skin	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Squamous cell papilloma																									
Squamous cell carcinoma																									
Basal cell tumor							X																		
Basal cell carcinoma																									
Trichoepithelioma																									
Keratoacanthoma																	X								X
Fibrosarcoma												X													
Neurofibrosarcoma																									
Subcutaneous tissue	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Sarcoma, NOS										X															
Fibroma			X															X	X			X			
Fibrosarcoma																									
Lipoma																									
Liposarcoma																									
Neurofibroma																									
Neurofibrosarcoma																									
RESPIRATORY SYSTEM																									
Lungs and bronchi	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS, metastatic																									
Alveolar/bronchiolar adenoma																									
Alveolar/bronchiolar carcinoma																									
Pheochromocytoma, metastatic																					X				
Sarcoma, NOS, metastatic																									
Liposarcoma, metastatic																									
Osteosarcoma, metastatic																									
Neurofibrosarcoma, metastatic																									
Trachea	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Nasal cavity	N	N	N	N	N	N	N	+	N	N	N	N	N	N	N	N	N	N	N	N	+	N	N	N	N
Fibrosarcoma								X																	
HEMATOPOIETIC SYSTEM																									
Bone marrow	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Liposarcoma, invasive																									
Spleen	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Hemangiosarcoma														X											
Lymph nodes	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Alveolar/bronchiolar carcinoma, invasive																									
Thymus	+	+	+	+	−	+	−	+	−	−	+	−	+	−	+	+	+	+	−	+	+	+	+	+	+
Squamous cell carcinoma																									
CIRCULATORY SYSTEM																									
Heart	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
DIGESTIVE SYSTEM																									
Oral cavity	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Basal cell tumor																									
Salivary gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Sarcoma, NOS, invasive										X															
Fibrosarcoma											X														
Liver	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Neoplastic nodule																			X				X		
Hepatocellular carcinoma																									
Osteosarcoma																									
Monocytic leukemia																									
Bile duct	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Gallbladder & common bile duct	N	N	N	N	N	N	N	N	N	N	N	N	N	N	+	N	N	N	N	N	N	N	N	N	N
Pancreas	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS											X														
Acinar cell adenoma																				X		X			
Acinar cell carcinoma																									
Esophagus	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Stomach	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenocarcinoma, NOS																									
Small intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenomatous polyp, NOS																									X
Mucinous cystadenocarcinoma																									
Large intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Leiomyosarcoma																									
URINARY SYSTEM																									
Kidney	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Urinary bladder	+	+	+	−	−	+	+	−	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+

TABLE A2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF MALE RATS: CONTROL (Continued)

ANIMAL NUMBER	26 7	26 8	26 9	27 0	27 1	27 2	27 3	27 4	27 5	27 6	27 7	27 8	27 9	28 0	28 1	28 2	28 3	28 4	28 5	28 6	28 7	28 8	28 9	29 0	29 1
WEEKS ON STUDY	12 3	12 0	11 7	11 2	12 0	07 8	12 2	12 2	13 9	13 1	13 2	10 9	13 6	10 7	09 4	13 6	12 3	13 3	11 7	12 2	12 8	12 7	12 0	12 0	09 6
INTEGUMENTARY SYSTEM																									
Skin	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Squamous cell papilloma																									
Squamous cell carcinoma																									
Basal cell tumor																									
Basal cell carcinoma	X																								
Trichoepithelioma																									
Keratoacanthoma																									
Fibrosarcoma																									
Neurofibrosarcoma						X																			
Subcutaneous tissue	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Sarcoma, NOS																									
Fibroma	X	X			X														X						
Fibrosarcoma														X											
Lipoma																									
Liposarcoma																									
Neurofibroma										X															
Neurofibrosarcoma					X																				
RESPIRATORY SYSTEM																									
Lungs and bronchi	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS, metastatic															X										
Alveolar/bronchiolar adenoma																									
Alveolar/bronchiolar carcinoma																									
Pheochromocytoma, metastatic																									
Sarcoma, NOS, metastatic																									
Liposarcoma, metastatic																									
Osteosarcoma, metastatic																									
Neurofibrosarcoma, metastatic																									
Trachea	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Nasal cavity	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Fibrosarcoma																									
HEMATOPOIETIC SYSTEM																									
Bone marrow	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Liposarcoma, invasive																									
Spleen	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Hemangiosarcoma																									
Lymph nodes	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Alveolar/bronchiolar carcinoma, invasive																									
Thymus	+	+	+	+	+	–	–	+	–	–	+	–	+	+	+	–	+	–	+	+	–	+	+	–	+
Squamous cell carcinoma																									
CIRCULATORY SYSTEM																									
Heart	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
DIGESTIVE SYSTEM																									
Oral cavity	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Basal cell tumor																									
Salivary gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Sarcoma, NOS, invasive																									
Fibrosarcoma																									
Liver	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Neoplastic nodule																	X								
Hepatocellular carcinoma																	X								
Osteosarcoma																									
Monocytic leukemia																									
Bile duct	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Gallbladder & common bile duct	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Pancreas	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	–
Carcinoma, NOS																									
Acinar cell adenoma	X									X														X	
Acinar cell carcinoma																									
Esophagus	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Stomach	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenocarcinoma, NOS	X																								
Small intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenomatous polyp, NOS																									
Mucinous cystadenocarcinoma									X																
Large intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Leiomyosarcoma																									
URINARY SYSTEM																									
Kidney	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Urinary bladder	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+

TABLE A2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF MALE RATS: CONTROL (Continued)

ANIMAL NUMBER	29 92	29 93	29 94	29 95	29 96	29 97	29 98	29 99	30 00	30 01	30 02	30 03	30 04	30 05	30 06	30 07	30 08	TOTAL TISSUES TUMORS
WEEKS ON STUDY	11 15	09 5	13 7	13 5	09 6	12 0	13 1	12 3	14 1	14 1	11 1	11 9	12 9	12 9	10 4	13 6	12 2	
INTEGUMENTARY SYSTEM																		
Skin	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	*117
Squamous cell papilloma																		1
Squamous cell carcinoma																		1
Basal cell tumor																		1
Basal cell carcinoma																		3
Trichoepithelioma								X										1
Keratoacanthoma																		4
Fibrosarcoma										X								3
Neurofibrosarcoma																		1
Subcutaneous tissue	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	*117
Sarcoma, NOS																	X	4
Fibroma		X		X	X									X				18
Fibrosarcoma																		4
Lipoma																		2
Liposarcoma	X																	1
Neurofibroma																		3
Neurofibrosarcoma																		1
RESPIRATORY SYSTEM																		
Lungs and bronchi	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	117
Carcinoma, NOS, metastatic																		1
Alveolar/bronchiolar adenoma																		1
Alveolar/bronchiolar carcinoma																		1
Pheochromocytoma, metastatic																		2
Sarcoma, NOS, metastatic																	X	3
Liposarcoma, metastatic	X																	1
Osteosarcoma, metastatic																		1
Neurofibrosarcoma, metastatic																		1
Trachea	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	117
Nasal cavity	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	*117
Fibrosarcoma																		1
HEMATOPOIETIC SYSTEM																		
Bone marrow	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	117
Liposarcoma, invasive	X																	2
Spleen	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	117
Hemangiosarcoma																		1
Lymph nodes	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	117
Alveolar/bronchiolar carcinoma, invasive																		1
Thymus	+	+	+	−	+	+	+	+	−	−	−	−	+	+	+	+	+	80
Squamous cell carcinoma					X													1
CIRCULATORY SYSTEM																		
Heart	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	117
DIGESTIVE SYSTEM																		
Oral cavity	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	*117
Basal cell tumor																		1
Salivary gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	117
Sarcoma, NOS, invasive																		1
Fibrosarcoma																		1
Liver	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	117
Neoplastic nodule										X			X					9
Hepatocellular carcinoma																		1
Osteosarcoma																		1
Monocytic leukemia																		2
Bile duct	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	117
Gallbladder & common bile duct	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	*117
Pancreas	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	116
Carcinoma, NOS																		1
Acinar cell adenoma												X		X				9
Acinar cell carcinoma										X								2
Esophagus	+	−	+	+	−	+	+	+	+	+	+	+	+	+	+	+	+	115
Stomach	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	117
Adenocarcinoma, NOS																		1
Small intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	117
Adenomatous polyp, NOS																		1
Mucinous cystadenocarcinoma																		2
Large intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	117
Leiomyosarcoma																		1
URINARY SYSTEM																		
Kidney	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	117
Urinary bladder	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	116

* Animals necropsied

TABLE A2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF MALE RATS: CONTROL (Continued)

ANIMAL NUMBER	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216
WEEKS ON STUDY	072	114	123	134	120	107	127	127	137	133	122	133	098	133	120	125	090	087	095	141	101	123	127	141	128
ENDOCRINE SYSTEM																									
Pituitary	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS																									
Adenoma, NOS				X				X			X	X		X											
Adrenal	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Pheochromocytoma		X	X				X	X		X	X					X			X	X					X
Pheochromocytoma, malignant							X																		
Thyroid	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Follicular cell adenoma																									X
Follicular cell carcinoma				X																					
C cell adenoma									X														X	X	
C-cell carcinoma											X														
Parathyroid	+	+	+	–	+	+	+	+	+	+	+	+	+	+	+	+	–	+	+	+	–	+	+	+	+
Adenoma, NOS										X	X														
C cell carcinoma, invasive																									
Pancreatic islets	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Islet cell adenoma			X									X											X		
Islet cell carcinoma									X																
REPRODUCTIVE SYSTEM																									
Mammary gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenoma, NOS																									
Adenocarcinoma, NOS																									
Fibroadenoma		X			X	X						X													X
Testis	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Interstitial cell tumor		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Prostate	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Lipoma																									
Liposarcoma, metastatic																									
Seminal vesicle	N	+	+	+	+	N	+	N	+	+	+	+	+	+	+	+	N	N	N	+	N	+	+	+	+
Mucinous cystadenocarcinoma																									
Preputial/clitoral gland	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Carcinoma, NOS						X																			
NERVOUS SYSTEM																									
Brain	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS, invasive																									
Astrocytoma										X															
Astrocytoma, invasive																									
Spinal cord	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	+	N	N	N	N	N	N	N
Liposarcoma, invasive																									
SPECIAL SENSE ORGANS																									
Zymbal gland	N	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	N	N	+	+	+
Carcinoma, NOS																									
MUSCULOSKELETAL SYSTEM																									
Bone	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Liposarcoma																									
Liposarcoma, invasive																									
Osteoma																									
Neurofibrosarcoma							X																		
BODY CAVITIES																									
Mediastinum	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Squamous cell carcinoma, metastatic																									
Alveolar/bronchiolar carcinoma, invasive																							X		
Peritoneum	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Osteosarcoma, metastatic																									
Tunica vaginalis	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Mesothelioma, malignant																			X						
Mesentery	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Fibrosarcoma, metastatic																									
ALL OTHER SYSTEMS																									
Multiple organs, NOS	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Carcinoma, NOS, invasive																									
Sarcoma, NOS, invasive																						X			
Mesothelioma, invasive																			X						
Mesothelioma, metastatic																									
Malignant lymphoma, histiocytic type																									
Monocytic leukemia							X					X	X				X					X			X
Shoulder, NOS																									
Osteosarcoma																									
Hip, NOS																									
Osteosarcoma																									
Leg, NOS																									
Osteosarcoma																									
Scrotum, NOS																									
Keratoacanthoma																									

TABLE A2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF MALE RATS: CONTROL (Continued)

ANIMAL NUMBER	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241
WEEKS ON STUDY	140	101	108	114	139	125	122	108	104	098	108	114	105	139	125	118	100	134	141	103	118	129	130	124	141
ENDOCRINE SYSTEM																									
Pituitary	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS																									
Adenoma, NOS											X	X											X		
Adrenal	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Pheochromocytoma	X						X				X			X								X	X	X	X
Pheochromocytoma, malignant																								X	
Thyroid	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Follicular cell adenoma																			X				X		
Follicular cell carcinoma										X															
C-cell adenoma					X							X													X
C-cell carcinoma								X										X							
Parathyroid	+	+	−	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenoma, NOS																									
C cell carcinoma, invasive																									
Pancreatic islets	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Islet cell adenoma		X				X								X				X					X		
Islet cell carcinoma																									
REPRODUCTIVE SYSTEM																									
Mammary gland	+	+	+	+	+	+	+	+	+	N	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenoma, NOS																									
Adenocarcinoma, NOS					X																				
Fibroadenoma															X										X
Testis	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Interstitial cell tumor	X	X	X	X	X		X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X
Prostate	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Lipoma																X									
Liposarcoma, metastatic																									
Seminal vesicle	+	+	N	+	+	N	+	N	N	+	+	N	N	+	+	+	+	+	N	N	+	+	+	+	+
Mucinous cystadenocarcinoma																									
Preputial/clitoral gland	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Carcinoma, NOS																									
NERVOUS SYSTEM																									
Brain	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS, invasive																									
Astrocytoma									X																
Astrocytoma, invasive									X																
Spinal cord	N	N	N	N	N	N	N	N	N	N	N	+	N	N	N	N	N	N	N	N	N	N	N	N	N
Liposarcoma, invasive												X													
SPECIAL SENSE ORGANS																									
Zymbal gland	+	+	+	+	+	+	+	+	N	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS																									
MUSCULOSKELETAL SYSTEM																									
Bone	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Liposarcoma												X													
Liposarcoma, invasive																									
Osteoma																				X					
Neurofibrosarcoma																									
BODY CAVITIES																									
Mediastinum	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Squamous cell carcinoma, metastatic																									
Alveolar/bronchiolar carcinoma, invasive																									
Peritoneum	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Osteosarcoma, metastatic																									
Tunica vaginalis	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Mesothelioma, malignant																									
Mesentery	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Fibrosarcoma, metastatic																									
ALL OTHER SYSTEMS																									
Multiple organs, NOS	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Carcinoma, NOS, invasive																									
Sarcoma, NOS, invasive																									
Mesothelioma, invasive																									
Mesothelioma, metastatic																									
Malignant lymphoma, histiocytic type										X															
Monocytic leukemia	X		X				X	X					X		X	X		X	X						X
Shoulder, NOS																									
Osteosarcoma																									
Hip, NOS																									
Osteosarcoma																									
Leg NOS																									
Osteosarcoma																									
Scrotum, NOS																									
Keratoacanthoma																									

TABLE A2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF MALE RATS: CONTROL (Continued)

ANIMAL NUMBER	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266
WEEKS ON STUDY	117	140	114	120	096	114	117	081	138	132	125	141	141	072	132	120	133	115	137	115	117	124	132	090	136
ENDOCRINE SYSTEM																									
Pituitary	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS	X					X																			
Adenoma, NOS			X	X	X					X	X	X			X							X	X		X
Adrenal	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Pheochromocytoma		X		X								X			X		X			X	X		X		X
Pheochromocytoma, malignant																					X				
Thyroid	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Follicular cell adenoma									X																
Follicular cell carcinoma							X																		
C-cell adenoma															X										
C-cell carcinoma							X		X							X									X
Parathyroid	+	+	+	+	+	+	+	+	+	–	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenoma, NOS						X																			
C cell carcinoma, invasive																									
Pancreatic islets	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Islet cell adenoma						X																			X
Islet cell carcinoma																									
REPRODUCTIVE SYSTEM																									
Mammary gland	+	+	N	+	N	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenoma, NOS		X																							
Adenocarcinoma, NOS																									
Fibroadenoma				X					X			X			X						X				
Testis	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Interstitial cell tumor	X	X	X	X		X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X
Prostate	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Lipoma																									
Liposarcoma, metastatic																									
Seminal vesicle	+	+	+	+	+	N	+	+	+	N	+	+	+	N	+	+	+	+	+	+	N	+	N	N	+
Mucinous cystadenocarcinoma															X										
Preputial/clitoral gland	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Carcinoma, NOS											X													X	
NERVOUS SYSTEM																									
Brain	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS, invasive	X																								
Astrocytoma																									
Astrocytoma, invasive																									
Spinal cord	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Liposarcoma, invasive																									
SPECIAL SENSE ORGANS																									
Zymbal gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS																									
MUSCULOSKELETAL SYSTEM																									
Bone	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Liposarcoma																									
Liposarcoma, invasive																									
Osteoma																									
Neurofibrosarcoma																									
BODY CAVITIES																									
Mediastinum	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Squamous cell carcinoma, metastatic																									
Alveolar/bronchiolar carcinoma, invasive																									
Peritoneum	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Osteosarcoma, metastatic								X																	
Tunica vaginalis	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Mesothelioma, malignant																									
Mesentery	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Fibrosarcoma, metastatic								X																	
ALL OTHER SYSTEMS																									
Multiple organs, NOS	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Carcinoma, NOS, invasive											X														
Sarcoma, NOS, invasive																									
Mesothelioma, invasive																									
Mesothelioma, metastatic																									
Malignant lymphoma, histiocytic type							X																		
Monocytic leukemia		X			X	X			X							X			X		X				
Shoulder, NOS																									
Osteosarcoma								X																	
Hip, NOS																									
Osteosarcoma															X										
Leg, NOS																									
Osteosarcoma								X																	
Scrotum, NOS																									
Keratoacanthoma																									

TABLE A2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF MALE RATS: CONTROL (Continued)

ANIMAL NUMBER	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291
WEEKS ON STUDY	123	120	117	112	120	078	122	122	139	131	132	109	136	107	094	136	123	133	117	122	128	127	120	120	096
ENDOCRINE SYSTEM																									
Pituitary	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS																									
Adenoma, NOS									X					X						X					
Adrenal	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Pheochromocytoma		X			X	X	X		X		X		X			X		X							
Pheochromocytoma, malignant																									
Thyroid	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Follicular cell adenoma																									
Follicular cell carcinoma										X			X			X	X								
C cell adenoma				X					X			X				X	X	X				X			
C cell carcinoma							X				X														
Parathyroid	−	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenoma, NOS													X												
C cell carcinoma, invasive																									
Pancreatic islets	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	−
Islet cell adenoma	X	X																X							
Islet cell carcinoma										X															
REPRODUCTIVE SYSTEM																									
Mammary gland	+	+	+	+	+	+	+	+	+	+	+	+	+	N	+	+	+	+	+	+	+	+	+	N	+
Adenoma, NOS													X					X							
Adenocarcinoma, NOS																									
Fibroadenoma										X															
Testis	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Interstitial cell tumor	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Prostate	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Lipoma																									
Liposarcoma, metastatic																									
Seminal vesicle	+	+	N	N	+	N	+	+	+	+	+	+	+	+	N	+	+	+	N	+	+	+	N	+	N
Mucinous cystadenocarcinoma																									
Preputial/clitoral gland	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Carcinoma, NOS																									
NERVOUS SYSTEM																									
Brain	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS, invasive																									
Astrocytoma																									
Astrocytoma, invasive																									
Spinal cord	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	+	N	N	N	N	N
Liposarcoma, invasive																									
SPECIAL SENSE ORGANS																									
Zymbal gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS															X										
MUSCULOSKELETAL SYSTEM																									
Bone	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Liposarcoma																									
Liposarcoma, invasive																									
Osteoma																									
Neurofibrosarcoma																									
BODY CAVITIES																									
Mediastinum	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Squamous cell carcinoma, metastatic		X																							
Alveolar/bronchiolar carcinoma, invasive																									
Peritoneum	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Osteosarcoma, metastatic																									
Tunica vaginalis	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Mesothelioma, malignant																			X						
Mesentery	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Fibrosarcoma, metastatic																									
ALL OTHER SYSTEMS																									
Multiple organs, NOS	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Carcinoma, NOS, invasive																									
Sarcoma, NOS, invasive																									
Mesothelioma, invasive																									
Mesothelioma, metastatic																			X						
Malignant lymphoma, histiocytic type																									
Monocytic leukemia	X			X	X		X				X							X		X		X	X	X	
Shoulder, NOS																									
Osteosarcoma																									
Hip, NOS																									
Osteosarcoma																									
Leg, NOS																									
Osteosarcoma																									
Scrotum, NOS																									
Keratoacanthoma									X																

TABLE A2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF MALE RATS: CONTROL (Continued)

ANIMAL NUMBER	29 2	29 3	29 4	29 5	29 6	29 7	29 8	29 9	30 0	30 1	30 2	30 3	30 4	30 5	30 6	30 7	30 8	TOTAL TISSUES TUMORS
WEEKS ON STUDY	11 5	09 5	13 7	13 5	09 6	12 0	13 1	12 3	14 1	14 1	11 1	11 9	12 9	12 9	10 4	13 6	12 2	
ENDOCRINE SYSTEM																		
Pituitary	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	117
Carcinoma, NOS																		2
Adenoma, NOS	X		X													X		24
Adrenal	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	117
Pheochromocytoma	X			X					X									39
Pheochromocytoma, malignant																		3
Thyroid	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	117
Follicular cell adenoma																		4
Follicular cell carcinoma																		7
C-cell adenoma						X							X					16
C cell carcinoma		X		X														11
Parathyroid	+	+	+	+	+	+	+	+	+	+	+	+	+	+	−	+	+	110
Adenoma, NOS																		4
C cell carcinoma, invasive		X																1
Pancreatic islets	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	116
Islet cell adenoma														X				14
Islet cell carcinoma									X									3
REPRODUCTIVE SYSTEM																		
Mammary gland	+	+	+	+	+	N	+	+	+	+	+	+	+	+	+	+	+	*117
Adenoma, NOS																		3
Adenocarcinoma, NOS																		1
Fibroadenoma				X			X		X	X								17
Testis	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	117
Interstitial cell tumor	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	111
Prostate	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	117
Lipoma																		1
Liposarcoma, metastatic	X																	1
Seminal vesicle	+	N	+	+	N	+	+	+	+	+	N	+	+	+	+	+	+	*117
Mucinous cystadenocarcinoma																		1
Preputial/clitoral gland	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	*117
Carcinoma, NOS							X				X						X	6
NERVOUS SYSTEM																		
Brain	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	117
Carcinoma, NOS, invasive																		1
Astrocytoma																		2
Astrocytoma, invasive																		1
Spinal cord	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	*117
Liposarcoma, invasive																		1
SPECIAL SENSE ORGANS																		
Zymbal gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	*117
Carcinoma, NOS																		1
MUSCULOSKELETAL SYSTEM																		
Bone	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	*117
Liposarcoma																		1
Liposarcoma, invasive	X																	1
Osteoma																		1
Neurofibrosarcoma																		1
BODY CAVITIES																		
Mediastinum	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	*117
Squamous cell carcinoma, metastatic																		1
Alveolar/bronchiolar carcinoma, invasive																		1
Peritoneum	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	*117
Osteosarcoma, metastatic																		1
Tunica vaginalis	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	*117
Mesothelioma, malignant																		2
Mesentery	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	*117
Fibrosarcoma, metastatic																		1
ALL OTHER SYSTEMS																		
Multiple organs, NOS	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	*117
Carcinoma, NOS, invasive																		1
Sarcoma, NOS, invasive																		1
Mesothelioma, invasive																		1
Mesothelioma, metastatic																		1
Malignant lymphoma, histiocytic type																		2
Monocytic leukemia				X		X									X			36
Shoulder, NOS																		
Osteosarcoma																		1
Hip, NOS																		
Osteosarcoma																		1
Leg, NOS																		
Osteosarcoma																		1
Scrotum, NOS																		
Keratoacanthoma																		1

* Animals necropsied

TABLE A2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF MALE RATS IN THE TWO-YEAR FEED STUDY OF AMOSITE ASBESTOS: 1,2-DIMETHYLHYDRAZINE DIHYDROCHLORIDE

ANIMAL NUMBER	42 26	42 27	42 28	42 29	43 30	43 31	43 32	43 33	43 34	43 35	43 36	43 37	43 38	43 39	44 40	44 41	44 42	44 43	44 44	44 45	44 46	44 47	44 48	44 49	45 50
WEEKS ON STUDY	104	101	041	079	067	097	074	076	071	045	069	049	098	066	066	067	117	062	111	068	043	066	066	061	071
INTEGUMENTARY SYSTEM																									
Skin	+	+	+	+	N	+	+	+	+	+	+	+	+	N	N	+	N	+	+	N	+	+	+	+	N
Fibrosarcoma																X									
Subcutaneous tissue	+	+	+	+	N	+	+	+	+	+	+	+	+	N	N	+	N	+	+	N	+	+	+	+	N
Sarcoma, NOS																									
Fibroma																									
Neurofibroma																									
RESPIRATORY SYSTEM																									
Lungs and bronchi	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenocarcinoma in adenomatous polyp, metastatic																	X								
Alveolar/bronchiolar carcinoma																									
C cell carcinoma, metastatic																									
Mucinous cystadenocarcinoma, metastatic																									
Trachea	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
HEMATOPOIETIC SYSTEM																									
Bone marrow	+	+	+	+	+	+	+	+	+	+	+	−	+	+	+	+	−	+	+	+	−	+	+	+	−
Spleen	−	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Lymph nodes	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
C-cell carcinoma, metastatic																									
Mucinous cystadenocarcinoma, metastatic																			X						
Thymus	−	−	−	+	+	−	+	+	+	+	+	−	+	+	+	+	+	−	+	−	−	+	+	+	+
CIRCULATORY SYSTEM																									
Heart	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
DIGESTIVE SYSTEM																									
Oral cavity	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Squamous cell papilloma																X									
Keratoacanthoma																									
Salivary gland	+	+	−	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Sarcoma, NOS																									
Liver	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Neoplastic nodule	X																						X		
Hepatocellular carcinoma																		X	X						
Monocytic leukemia																									
Bile duct	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Gallbladder & common bile duct	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Pancreas	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenocarcinoma, NOS, metastatic																									
Neurofibrosarcoma, metastatic																					X				
Esophagus	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Stomach	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Small intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS																									
Adenocarcinoma, NOS																									
Adenomatous polyp, NOS																									
Mucinous cystadenocarcinoma	X						X			X		X													X
Signet ring carcinoma																									
Leiomyosarcoma																									
Large intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma in-situ, NOS																									
Adenocarcinoma, NOS																			X					X	
Adenomatous polyp, NOS		X												X @X				X				X	X	X	
Adenocarcinoma in adenomatous polyp		X									X		X		X		X								
Mucinous cystadenocarcinoma			X																	X					
Signet ring carcinoma									X				X												
URINARY SYSTEM																									
Kidney	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Transitional cell carcinoma																									
Tubular cell adenocarcinoma																									
Neurofibrosarcoma																					X				
Urinary bladder	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+

@ Multiple occurrence of morphology

TABLE A2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF MALE RATS: 1,2-DIMETHYLHYDRAZINE DIHYDROCHLORIDE (Continued)

ANIMAL NUMBER	45101	45202	45303	45404	45505	45606	45707	45808	45909	46010	46101	46202	46303	46404	46505	46606	46707	46808	46909	47010	47101	47212	47303	47404	47505
WEEKS ON STUDY	069	087	079	071	104	066	050	117	066	049	076	117	117	046	117	117	105	067	100	067	087	117	101	075	117
INTEGUMENTARY SYSTEM																									
Skin	N	+	+	+	+	+	N	+	+	N	+	+	+	N	+	N	+	+	+	+	+	+	+	+	+
Fibrosarcoma																									
Subcutaneous tissue	N	+	+	+	+	+	N	+	+	N	+	+	+	N	+	N	+	+	+	+	+	+	+	+	+
Sarcoma, NOS																									
Fibroma				X																		X			
Neurofibroma																									
RESPIRATORY SYSTEM																									
Lungs and bronchi	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenocarcinoma in adenomatous polyp, metastatic																									
Alveolar/bronchiolar carcinoma																						X			
C cell carcinoma, metastatic																									
Mucinous cystadenocarcinoma, metastatic									X																
Trachea	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
HEMATOPOIETIC SYSTEM																									
Bone marrow	+	+	+	+	+	+	–	+	+	–	+	–	+	–	+	+	+	+	+	+	+	+	+	+	+
Spleen	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Lymph nodes	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
C cell carcinoma, metastatic																									
Mucinous cystadenocarcinoma, metastatic									X																
Thymus	+	–	+	+	+	–	+	+	–	–	+	–	+	+	+	–	–	+	+	+	+	+	+	–	–
CIRCULATORY SYSTEM																									
Heart	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
DIGESTIVE SYSTEM																									
Oral cavity	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Squamous cell papilloma																									
Keratoacanthoma																									
Salivary gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Sarcoma, NOS																									
Liver	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Neoplastic nodule												X				X			X			X	X		
Hepatocellular carcinoma																X	X								
Monocytic leukemia								X																	
Bile duct	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Gallbladder & common bile duct	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Pancreas	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenocarcinoma, NOS, metastatic																									
Neurofibrosarcoma, metastatic																									
Esophagus	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Stomach	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Small intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS																									
Adenocarcinoma, NOS										X						X									
Adenomatous polyp, NOS																									
Mucinous cystadenocarcinoma		X											X												
Signet ring carcinoma																									
Leiomyosarcoma																X									
Large intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma in situ, NOS																									
Adenocarcinoma, NOS			X	X																X				X	
Adenomatous polyp, NOS	X							X			X		X					X		X	X	X			X
Adenocarcinoma in adenomatous polyp					X							X		X	X				X		X				
Mucinous cystadenocarcinoma						X	X		X																
Signet ring carcinoma																									
URINARY SYSTEM																									
Kidney	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Transitional cell carcinoma																									
Tubular cell adenocarcinoma																									
Neurofibrosarcoma																									
Urinary bladder	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+

TABLE A2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF MALE RATS: 1,2-DIMETHYLHYDRAZINE DIHYDROCHLORIDE (Continued)

ANIMAL NUMBER	47 6	47 7	47 8	47 9	48 0	48 1	48 2	48 3	48 4	48 5	48 6	48 7	48 8	48 9	49 0	49 1	49 2	49 3	49 4	49 5	49 6	49 7	49 8	49 9	50 0
WEEKS ON STUDY	08 0	05 9	11 7	07 5	07 0	06 9	06 8	11 1	06 8	11 7	07 6	08 7	06 7	08 1	10 8	11 0	09 3	07 6	10 0	08 9	06 6	06 6	11 7	06 7	11 7
INTEGUMENTARY SYSTEM																									
Skin	+	N	+	+	N	N	N	+	N	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Fibrosarcoma																									
Subcutaneous tissue	+	N	+	+	N	N	N	+	N	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Sarcoma, NOS																									
Fibroma																X									
Neurofibroma																									
RESPIRATORY SYSTEM																									
Lungs and bronchi	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenocarcinoma in adenomatous polyp, metastatic																									
Alveolar/bronchiolar carcinoma																									
C-cell carcinoma, metastatic																									
Mucinous cystadenocarcinoma, metastatic																									
Trachea	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
HEMATOPOIETIC SYSTEM																									
Bone marrow	+	–	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Spleen	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Lymph nodes	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
C cell carcinoma, metastatic																									
Mucinous cystadenocarcinoma, metastatic		X																							
Thymus	+	+	+	–	+	+	+	+	+	+	+	+	–	+	+	–	+	+	+	+	+	+	+	+	+
CIRCULATORY SYSTEM																									
Heart	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
DIGESTIVE SYSTEM																									
Oral cavity	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Squamous cell papilloma																									
Keratoacanthoma																X									
Salivary gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Sarcoma, NOS																									
Liver	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Neoplastic nodule			X							X					X		X								
Hepatocellular carcinoma										X															
Monocytic leukemia																									
Bile duct	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Gallbladder & common bile duct	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Pancreas	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenocarcinoma, NOS, metastatic																									
Neurofibrosarcoma, metastatic																									
Esophagus	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Stomach	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Small intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS																									
Adenocarcinoma, NOS																									
Adenomatous polyp, NOS																									
Mucinous cystadenocarcinoma																						X			
Signet ring carcinoma																									
Leiomyosarcoma																									
Large intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma in situ, NOS																									
Adenocarcinoma, NOS																									
Adenomatous polyp, NOS					X	X	@X		X	X	X		X	@X							X				
Adenocarcinoma in adenomatous polyp														X	X				X	X		X		X	
Mucinous cystadenocarcinoma		X																							
Signet ring carcinoma																									
URINARY SYSTEM																									
Kidney	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Transitional cell carcinoma																									
Tubular cell adenocarcinoma																									
Neurofibrosarcoma																									
Urinary bladder	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+

@ Multiple occurrence of morphology

TABLE A2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF MALE RATS: 1,2-DIMETHYLHYDRAZINE DIHYDROCHLORIDE (Continued)

ANIMAL NUMBER	501	502	503	504	505	506	507	508	509	510	511	512	513	514	515	516	517	518	519	520	521	522	523	524	525
WEEKS ON STUDY	087	117	061	116	069	096	079	075	031	092	087	044	067	075	080	098	093	086	054	069	109	098	072	072	103
INTEGUMENTARY SYSTEM																									
Skin	+	+	N	+	+	+	+	+	+	+	+	N	+	+	+	+	+	+	N	N	+	+	+	+	+
Fibrosarcoma																									
Subcutaneous tissue	+	+	N	+	+	+	+	+	+	+	+	N	+	+	+	+	+	+	N	N	+	+	+	+	+
Sarcoma, NOS																									
Fibroma																									
Neurofibroma																									X
RESPIRATORY SYSTEM																									
Lungs and bronchi	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenocarcinoma in adenomatous polyp, metastatic																									
Alveolar/bronchiolar carcinoma																									
C cell carcinoma, metastatic																									
Mucinous cystadenocarcinoma, metastatic																									
Trachea	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
HEMATOPOIETIC SYSTEM																									
Bone marrow	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	–	+	+	+	+	+	+
Spleen	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Lymph nodes	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
C cell carcinoma, metastatic																									
Mucinous cystadenocarcinoma, metastatic																									
Thymus	+	–	+	–	+	–	+	+	+	+	–	+	+	–	–	+	–	+	+	+	–	–	–	+	–
CIRCULATORY SYSTEM																									
Heart	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
DIGESTIVE SYSTEM																									
Oral cavity	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Squamous cell papilloma																									
Keratoacanthoma																									
Salivary gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Sarcoma, NOS						X																			
Liver	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Neoplastic nodule		X				X								X							X				X
Hepatocellular carcinoma																		X			X				
Monocytic leukemia		X																							
Bile duct	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Gallbladder & common bile duct	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Pancreas	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenocarcinoma, NOS, metastatic															X										
Neurofibrosarcoma, metastatic																									
Esophagus	+	+	+	+	+	+	+	+	–	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Stomach	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Small intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS												X													
Adenocarcinoma, NOS															X										
Adenomatous polyp, NOS					X																				
Mucinous cystadenocarcinoma																									
Signet ring carcinoma											X			X											
Leiomyosarcoma																									
Large intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma in situ, NOS																									X
Adenocarcinoma, NOS					X							X													
Adenomatous polyp, NOS					X			X			X		X							X	X				X
Adenocarcinoma in adenomatous polyp	X		X		X						X	X					@X					X		X	X
Mucinous cystadenocarcinoma			X																						
Signet ring carcinoma									X	X														X	
URINARY SYSTEM																									
Kidney	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Transitional cell carcinoma																		X							
Tubular cell adenocarcinoma																									X
Neurofibrosarcoma																									
Urinary bladder	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+

@ Multiple occurrence of morphology

TABLE A2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF MALE RATS: 1,2-DIMETHYLHYDRAZINE DIHYDROCHLORIDE (Continued)

ANIMAL NUMBER	52 6	52 7	52 8	52 9	53 0	53 1	53 2	53 3	53 4	53 5	53 6	53 7	53 8	53 9	54 0	54 1	54 2	54 3	54 4	54 5	54 6	54 7	54 8	54 9	55 0	TOTAL
WEEKS ON STUDY	09 8	08 1	05 1	06 7	08 1	09 3	08 9	06 6	10 1	08 8	10 7	08 5	11 2	08 6	06 7	04 0	06 7	04 2	06 9	08 4	11 7	04 9	09 5	07 1	05 2	TISSUES TUMORS
INTEGUMENTARY SYSTEM																										
Skin	+	+	N	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	N	+	+	N	*125
Fibrosarcoma																										1
Subcutaneous tissue	+	+	N	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	N	+	+	N	*125
Sarcoma, NOS																				X						1
Fibroma																										3
Neurofibroma																										1
RESPIRATORY SYSTEM																										
Lungs and bronchi	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	125
Adenoca in adenomatous polyp, meta																										1
Alveolar/bronchiolar carcinoma																										1
C cell carcinoma, metastatic													X													1
Mucinous cystadenocarcinoma, meta																										1
Trachea	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	125
HEMATOPOIETIC SYSTEM																										
Bone marrow	+	+	–	+	+	+	+	+	+	+	+	+	+	+	+	+	–	–	+	+	+	–	+	+	–	110
Spleen	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	124
Lymph nodes	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	125
C cell carcinoma, metastatic													X													1
Mucinous cystadenocarcinoma, meta																		X								4
Thymus	–	+	+	–	+	~	+	+	+	+	+	–	–	–	–	+	–	+	+	+	–	+	–	+	–	83
CIRCULATORY SYSTEM																										
Heart	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	125
DIGESTIVE SYSTEM																										
Oral cavity	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	*125
Squamous cell papilloma																										1
Keratoacanthoma																										1
Salivary gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	124
Sarcoma, NOS																										1
Liver	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	125
Neoplastic nodule							X				X															18
Hepatocellular carcinoma									X				X													9
Monocytic leukemia																										2
Bile duct	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	125
Gallbladder & common bile duct	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	*125
Pancreas	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	125
Adenocarcinoma, NOS, metastatic																										1
Neurofibrosarcoma, metastatic																										1
Esophagus	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	124
Stomach	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	125
Small intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	125
Carcinoma, NOS																										1
Adenocarcinoma, NOS																										3
Adenomatous polyp, NOS																										1
Mucinous cystadenocarcinoma																										8
Signet ring carcinoma										X																3
Leiomyosarcoma							X																			2
Large intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	125
Carcinoma in situ, NOS		X																								2
Adenocarcinoma, NOS								X																		9
Adenomatous polyp, NOS	@X	X			X		X			X		X			X				X	X			X	X		43
Adenocarcinoma in adenomatous polyp					X			X			X					X										30
Mucinous cystadenocarcinoma								X										X							X	10
Signet ring carcinoma			X																							6
URINARY SYSTEM																										
Kidney	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	125
Transitional cell carcinoma																										1
Tubular cell adenocarcinoma																										1
Neurofibrosarcoma																										1
Urinary bladder	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	–	+	+	124

* Animals necropsied

TABLE A2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF MALE RATS: 1,2-DIMETHYLHYDRAZINE DIHYDROCHLORIDE (Continued)

ANIMAL NUMBER	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450
WEEKS ON STUDY	104	101	041	079	067	097	074	076	071	045	069	049	098	066	067	117	062	111	068	043	066	069	117	066	071
ENDOCRINE SYSTEM																									
Pituitary	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	−	+	+	+	+
Adenoma, NOS																X									
Adrenal	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Pheochromocytoma				X																			X		
Thyroid	+	+	−	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Follicular cell adenoma																									
Follicular cell carcinoma																X									
C-cell adenoma																									
C-cell carcinoma																									
Parathyroid	+	+	−	+	+	−	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenoma, NOS																									
REPRODUCTIVE SYSTEM																									
Mammary gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Fibroadenoma																									
Testis	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	−	+	+	+	+	+	+	+
Interstitial cell tumor	X	X		X		X		X	X		X		X		X	X						X	X	X	
Prostate	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Preputial/clitoral gland	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Carcinoma, NOS																X									
Epididymis	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Mesothelioma, invasive																									
NERVOUS SYSTEM																									
Brain	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Astrocytoma																									
Meningioma																									
SPECIAL SENSE ORGANS																									
Lacrimal gland	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Carcinoma, NOS																									
Ear	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Squamous cell papilloma						X																			
Squamous cell carcinoma																									
Zymbal gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS		X			X																	X			
Squamous cell papilloma									X							X									
Keratoacanthoma																									
MUSCULOSKELETAL SYSTEM																									
Muscle	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	+	N	N	N	N
Rhabdomyosarcoma																					X				
BODY CAVITIES																									
Peritoneum	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Mucinous cystadenocarcinoma, metastatic			X																						
Sarcoma, NOS																									
Tunica vaginalis	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	N	+	+	+	+	+	+	+
Mesothelioma, malignant																									
Mesentery	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Sarcoma, NOS																									
ALL OTHER SYSTEMS																									
Multiple organs, NOS	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Carcinoma, NOS, metastatic		X																							
Adenocarcinoma, NOS, metastatic																									
Mucinous cystadenocarcinoma, metastatic	X						X													X					X
Signet ring carcinoma, metastatic									X				X												
Sarcoma, NOS, invasive																									
Mesothelioma, invasive																									
Mesothelioma, metastatic																									
Malignant lymphoma, histiocytic type																X									
Monocytic leukemia	X					X		X										X							
Orbital region																									
Sarcoma, NOS																									
Scrotum, NOS																									
Mesothelioma, invasive																									

TABLE A2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF MALE RATS: 1,2-DIMETHYLHYDRAZINE DIHYDROCHLORIDE (Continued)

ANIMAL NUMBER	451	452	453	454	455	456	457	458	459	460	461	462	463	464	465	466	467	468	469	470	471	472	473	474	475
WEEKS ON STUDY	069	087	079	071	104	066	050	117	066	049	076	117	117	046	117	117	105	067	100	067	087	117	101	075	117
ENDOCRINE SYSTEM																									
Pituitary	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenoma, NOS												X	X				X	X							
Adrenal	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Pheochromocytoma		X						X					X		X	X	X								X
Thyroid	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Follicular cell adenoma																									
Follicular cell carcinoma																									
C-cell adenoma																									
C-cell carcinoma																									
Parathyroid	–	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenoma, NOS																									
REPRODUCTIVE SYSTEM																									
Mammary gland	+	N	+	+	+	+	+	+	+	+	+	+	+	+	+	N	+	+	+	+	+	+	+	+	+
Fibroadenoma											X														
Testis	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Interstitial cell tumor		X	X	X	X			X			X	X	X		X	X	X		X		X	X	X	X	X
Prostate	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Preputial/clitoral gland	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Carcinoma, NOS												X													
Epididymis	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Mesothelioma, invasive																									
NERVOUS SYSTEM																									
Brain	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Astrocytoma																									
Meningioma																									
SPECIAL SENSE ORGANS																									
Lacrimal gland	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Carcinoma, NOS																									
Ear	+	+	+	+	+	N	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Squamous cell papilloma																									
Squamous cell carcinoma																									
Zymbal gland	+	+	+	+	+	N	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS					X			X			X		X	X								X			X
Squamous cell papilloma																									
Keratoacanthoma																									
MUSCULOSKELETAL SYSTEM																									
Muscle	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Rhabdomyosarcoma																									
BODY CAVITIES																									
Peritoneum	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Mucinous cystadenocarcinoma, metastatic																									
Sarcoma, NOS																									
Tunica vaginalis	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Mesothelioma, malignant																							X		
Mesentery	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Sarcoma, NOS																									
ALL OTHER SYSTEMS																									
Multiple organs, NOS	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Carcinoma, NOS, metastatic																									
Adenocarcinoma, NOS, metastatic			X	X												X								X	
Mucinous cystadenocarcinoma, metastatic						X	X																		
Signet ring carcinoma, metastatic																									
Sarcoma, NOS, invasive																									
Mesothelioma, invasive																							X		
Mesothelioma, metastatic																									
Malignant lymphoma, histiocytic type																									
Monocytic leukemia					X												X					X			
Orbital region																									
Sarcoma, NOS																									
Scrotum, NOS																									
Mesothelioma, invasive																									

TABLE A2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF MALE RATS: 1,2-DIMETHYLHYDRAZINE DIHYDROCHLORIDE (Continued)

ANIMAL NUMBER	476	477	478	479	480	481	482	483	484	485	486	487	488	489	490	491	492	493	494	495	496	497	498	499	500
WEEKS ON STUDY	080	059	117	075	070	069	068	111	068	117	076	087	067	081	108	110	093	076	100	089	066	066	117	067	117
ENDOCRINE SYSTEM																									
Pituitary	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	–	+	+
Adenoma, NOS																						X			
Adrenal	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Pheochromocytoma	X		X								X												X		
Thyroid	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Follicular cell adenoma															X								X		
Follicular cell carcinoma										X													X		
C-cell adenoma															X	X									
C-cell carcinoma			X				X			X						X									
Parathyroid	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	–	+	+	+
Adenoma, NOS																									
REPRODUCTIVE SYSTEM																									
Mammary gland	+	+	+	N	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	N	+
Fibroadenoma																									
Testis	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Interstitial cell tumor	X		X			X	X	X	X	X	X	X		X	X	X			X	X			X		X
Prostate	+	+	+	+	+	+	–	+	–	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Preputial/clitoral gland	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Carcinoma, NOS																									
Epididymis	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Mesothelioma, invasive															X										
NERVOUS SYSTEM																									
Brain	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Astrocytoma																									
Meningioma																									
SPECIAL SENSE ORGANS																									
Lacrimal gland	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Carcinoma, NOS										X															
Ear	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Squamous cell papilloma																									
Squamous cell carcinoma											X														
Zymbal gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS	X					X											X	X					X		X
Squamous cell papilloma								X		X						X									
Keratoacanthoma																									
MUSCULOSKELETAL SYSTEM																									
Muscle	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Rhabdomyosarcoma																									
BODY CAVITIES																									
Peritoneum	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Mucinous cystadenocarcinoma, metastatic																									
Sarcoma, NOS																									
Tunica vaginalis	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Mesothelioma, malignant															X										
Mesentery	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Sarcoma, NOS																									
ALL OTHER SYSTEMS																									
Multiple organs, NOS	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Carcinoma, NOS, metastatic																									
Adenocarcinoma, NOS, metastatic																									
Mucinous cystadenocarcinoma, metastatic																									
Signet ring carcinoma, metastatic																									
Sarcoma, NOS, invasive																									
Mesothelioma, invasive																									
Mesothelioma, metastatic																									
Malignant lymphoma, histiocytic type									X																
Monocytic leukemia			X					X		X					X	X									
Orbital region																									
Sarcoma, NOS				X																					
Scrotum, NOS																									
Mesothelioma, invasive															X										

TABLE A2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF MALE RATS: 1,2-DIMETHYLHYDRAZINE DIHYDROCHLORIDE (Continued)

ANIMAL NUMBER	501	502	503	504	505	506	507	508	509	510	511	512	513	514	515	516	517	518	519	520	521	522	523	524	525
WEEKS ON STUDY	087	117	061	116	069	096	079	075	031	092	087	044	067	075	080	098	093	086	054	069	109	098	072	072	103
ENDOCRINE SYSTEM																									
Pituitary	+	+	+	+	–	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenoma, NOS																									
Adrenal	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Pheochromocytoma																						X			
Thyroid	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Follicular cell adenoma															X		X								
Follicular cell carcinoma																									
C-cell adenoma																									
C-cell carcinoma				X														X							
Parathyroid	–	+	+	+	+	–	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenoma, NOS																									
REPRODUCTIVE SYSTEM																									
Mammary gland	N	+	+	+	+	N	+	+	+	N	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Fibroadenoma																									
Testis	+	+	+	+	+	+	–	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Interstitial cell tumor	X	X		X	X	X		X		X	X				X	X	X	X		X	X	X	X	X	X
Prostate	+	+	–	+	+	+	+	+	+	+	+	+	+	+	+	+	–	+	+	+	+	+	+	–	+
Preputial/clitoral gland	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Carcinoma, NOS																									
Epididymis	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Mesothelioma, invasive																									
NERVOUS SYSTEM																									
Brain	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Astrocytoma																				X					
Meningioma																				X					
SPECIAL SENSE ORGANS																									
Lacrimal gland	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Carcinoma, NOS																									
Ear	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Squamous cell papilloma																									
Squamous cell carcinoma																									
Zymbal gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS																		X				X			
Squamous cell papilloma											X														
Keratoacanthoma																				X					
MUSCULOSKELETAL SYSTEM																									
Muscle	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Rhabdomyosarcoma																									
BODY CAVITIES																									
Peritoneum	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Mucinous cystadenocarcinoma, metastatic																									
Sarcoma, NOS																			X						
Tunica vaginalis	+	+	+	+	+	+	N	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Mesothelioma, malignant		X																							
Mesentery	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Sarcoma, NOS																			X						
ALL OTHER SYSTEMS																									
Multiple organs, NOS	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Carcinoma, NOS, metastatic																									
Adenocarcinoma, NOS, metastatic												X													
Mucinous cystadenocarcinoma, metastatic			X																						
Signet ring carcinoma, metastatic									X		X			X										X	
Sarcoma, NOS, invasive																			X						
Mesothelioma, invasive		X																							
Mesothelioma, metastatic		X																							
Malignant lymphoma, histiocytic type																									
Monocytic leukemia							X																X		
Orbital region																									
Sarcoma, NOS																									
Scrotum, NOS																									
Mesothelioma, invasive																									

TABLE A2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF MALE RATS: 1,2-DIMETHYLHYDRAZINE DIHYDROCHLORIDE (Continued)

ANIMAL NUMBER	526	527	528	529	530	531	532	533	534	535	536	537	538	539	540	541	542	543	544	545	546	547	548	549	550	TOTAL TISSUES TUMORS
WEEKS ON STUDY	098	081	051	067	081	093	089	066	101	088	107	085	112	086	067	040	067	042	069	084	117	049	095	071	052	
ENDOCRINE SYSTEM																										
Pituitary	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	122
Adenoma, NOS																										6
Adrenal	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	125
Pheochromocytoma	X									X																16
Thyroid	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	124
Follicular cell adenoma																										4
Follicular cell carcinoma																										3
C-cell adenoma																										2
C-cell carcinoma													X													7
Parathyroid	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	119
Adenoma, NOS															X											1
REPRODUCTIVE SYSTEM																										
Mammary gland	+	+	+	+	+	N	N	+	+	+	+	+	N	+	+	+	+	+	+	N	+	+	N	+	+	*125
Fibroadenoma																										1
Testis	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	123
Interstitial cell tumor	X	X		X	X		X		X	X	X		X	X			X		X	X	X		X			79
Prostate	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	123
Preputial/clitoral gland	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	*125
Carcinoma, NOS				X						X											X					5
Epididymis	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	*125
Mesothelioma, invasive																										1
NERVOUS SYSTEM																										
Brain	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	125
Astrocytoma																										1
Meningioma																										1
SPECIAL SENSE ORGANS																										
Lacrimal gland	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	*125
Carcinoma, NOS																										1
Ear	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	*125
Squamous cell papilloma																										1
Squamous cell carcinoma												X														2
Zymbal gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	*125
Carcinoma, NOS	X			X					X						X							X				23
Squamous cell papilloma																	X									7
Keratoacanthoma								X									X									3
MUSCULOSKELETAL SYSTEM																										
Muscle	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	*125
Rhabdomyosarcoma																										1
BODY CAVITIES																										
Peritoneum	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	*125
Mucinous cystadenocarcinoma, meta																		X								2
Sarcoma, NOS																										1
Tunica vaginalis	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	*125
Mesothelioma, malignant						X																				4
Mesentery	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	*125
Sarcoma, NOS																										1
ALL OTHER SYSTEMS																										
Multiple organs, NOS	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	*125
Carcinoma, NOS, metastatic																										1
Adenocarcinoma, NOS, metastatic																										5
Mucinous cystadenocarcinoma, meta								X																	X	9
Signet ring carcinoma, metastatic			X																							7
Sarcoma, NOS, invasive																										1
Mesothelioma, invasive						X																				3
Mesothelioma, metastatic																										1
Malignant lymphoma, histiocytic type																										2
Monocytic leukemia		X									X			X									X			18
Orbital region																										
Sarcoma, NOS																										1
Scrotum, NOS																										
Mesothelioma, invasive																										1

* Animals necropsied

TABLE A2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF MALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS: 1% AMOSITE

ANIMAL NUMBER	67 76	67 77	67 78	67 79	68 80	68 81	68 82	68 83	68 84	68 85	68 86	68 87	68 88	68 89	69 00	69 01	69 02	69 03	69 04	69 05	69 06	69 07	69 08	69 09	70 00
WEEKS ON STUDY	11 17	12 11	14 11	13 15	14 11	14 11	11 16	12 19	11 19	08 07	12 14	14 11	14 11	13 16	13 11	14 11	13 14	14 11	12 11	12 12	11 12	13 18	13 15	13 17	12 17
INTEGUMENTARY SYSTEM																									
Skin	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma in situ, NOS																									
Squamous cell papilloma																X									
Squamous cell carcinoma																									
Basal cell tumor																									
Basal cell carcinoma	X														X										
Keratoacanthoma	X												X			X		X							
Fibroma														X											
Fibrosarcoma																									
Myxoma																									
Osteosarcoma																									
Subcutaneous tissue	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Sarcoma, NOS																									
Sarcoma, NOS, invasive																									
Fibroma	X			X									X							X					X
Fibrosarcoma																									
Lipoma																									
Liposarcoma																									
Hemangiosarcoma																									
Neurofibroma																									
RESPIRATORY SYSTEM																									
Lungs and bronchi	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS, metastatic																									
Squamous cell carcinoma, metastatic				X																					
Alveolar/bronchiolar adenoma																									
Alveolar/bronchiolar carcinoma					X																				
Papillary adenocarcinoma																									
C cell carcinoma, metastatic																									
Pheochromocytoma, metastatic																									
Sarcoma, NOS, metastatic																									
Liposarcoma, metastatic																									
Trachea	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
C-cell carcinoma, invasive																									
HEMATOPOIETIC SYSTEM																									
Bone marrow	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Spleen	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Fibrosarcoma																									
Mesothelioma, metastatic																									
Hemangiosarcoma																									
Lymph nodes	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
C-cell carcinoma, metastatic																									
Sarcoma, NOS, invasive																									
Fibrosarcoma, invasive																									
Thymus	−	+	+	−	+	+	+	+	+	+	−	+	+	+	+	−	−	+	+	−	+	+	+	−	+
Carcinoma, NOS																									
CIRCULATORY SYSTEM																									
Heart	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+

TABLE A2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF MALE RATS: 1% AMOSITE (Continued)

ANIMAL NUMBER	701	702	703	704	705	706	707	708	709	710	711	712	713	714	715	716	717	718	719	720	721	722	723	724	725
WEEKS ON STUDY	137	134	120	137	108	131	137	118	136	117	101	096	071	113	137	141	129	141	140	139	128	120	141	139	105
INTEGUMENTARY SYSTEM																									
Skin	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma in-situ, NOS																									
Squamous cell papilloma																									
Squamous cell carcinoma																									
Basal cell tumor																									
Basal cell carcinoma																									
Keratoacanthoma																									
Fibroma																									
Fibrosarcoma																									X
Myxoma																									
Osteosarcoma																									
Subcutaneous tissue	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Sarcoma, NOS								X																	
Sarcoma, NOS, invasive																									
Fibroma												X				X	X						X		
Fibrosarcoma																									
Lipoma													X												
Liposarcoma																									
Hemangiosarcoma																									
Neurofibroma																									
RESPIRATORY SYSTEM																									
Lungs and bronchi	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS, metastatic																						X			
Squamous cell carcinoma, metastatic																									
Alveolar/bronchiolar adenoma																									
Alveolar/bronchiolar carcinoma							X																		
Papillary adenocarcinoma																									
C-cell carcinoma, metastatic																									
Pheochromocytoma, metastatic																									
Sarcoma, NOS, metastatic								X																	
Liposarcoma, metastatic																									
Trachea	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+
C-cell carcinoma, invasive																									
HEMATOPOIETIC SYSTEM																									
Bone marrow	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Spleen	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Fibrosarcoma																									
Mesothelioma, metastatic																									
Hemangiosarcoma																								X	
Lymph nodes	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
C cell carcinoma, metastatic																									
Sarcoma, NOS, invasive																									
Fibrosarcoma, invasive																									
Thymus	+	+	+	+	+	+	+	+	-	+	+	+	+	+	-	+	+	+	-	+	+	+	-	+	-
Carcinoma, NOS																									
CIRCULATORY SYSTEM																									
Heart	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+

TABLE A2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF MALE RATS: 1% AMOSITE (Continued)

ANIMAL NUMBER	726	727	728	729	730	731	732	733	734	735	736	737	738	739	740	741	742	743	744	745	746	747	748	749	750
WEEKS ON STUDY	127	113	137	126	131	133	099	108	141	129	089	106	135	110	085	141	126	100	119	123	131	141	115	065	133
INTEGUMENTARY SYSTEM																									
Skin	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma in-situ, NOS																									X
Squamous cell papilloma										X															
Squamous cell carcinoma																									
Basal cell tumor																									
Basal cell carcinoma																									
Keratoacanthoma																									
Fibroma																									
Fibrosarcoma																									
Myxoma																									
Osteosarcoma																									
Subcutaneous tissue	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Sarcoma, NOS																									
Sarcoma, NOS, invasive																									
Fibroma			X			X							X												
Fibrosarcoma																									
Lipoma																									
Liposarcoma								X																	
Hemangiosarcoma																									
Neurofibroma																X									
RESPIRATORY SYSTEM																									
Lungs and bronchi	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS, metastatic																									
Squamous cell carcinoma, metastatic																									
Alveolar/bronchiolar adenoma																									
Alveolar/bronchiolar carcinoma																									
Papillary adenocarcinoma																									
C cell carcinoma, metastatic																						X			
Pheochromocytoma, metastatic																									
Sarcoma, NOS, metastatic																									
Liposarcoma, metastatic											X														
Trachea	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
C-cell carcinoma, invasive																									
HEMATOPOIETIC SYSTEM																									
Bone marrow	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Spleen	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Fibrosarcoma																									
Mesothelioma, metastatic																									
Hemangiosarcoma																									
Lymph nodes	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
C-cell carcinoma, metastatic																									
Sarcoma, NOS, invasive																									
Fibrosarcoma, invasive																									
Thymus	+	+	+	+	+	–	+	+	–	+	+	–	+	–	+	+	+	+	–	+	+	+	–	+	–
Carcinoma, NOS																									
CIRCULATORY SYSTEM																									
Heart	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+

TABLE A2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF MALE RATS: 1% AMOSITE (Continued)

ANIMAL NUMBER	751	752	753	754	755	756	757	758	759	760	761	762	763	764	765	766	767	768	769	770	771	772	773	774	775
WEEKS ON STUDY	134	117	128	126	137	133	130	141	129	139	134	139	113	141	136	123	141	136	126	111	069	106	089	141	080
INTEGUMENTARY SYSTEM																									
Skin	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	N	+	+	+	+	+	+	+	+	+
Carcinoma in-situ, NOS																									
Squamous cell papilloma								X																	
Squamous cell carcinoma																									
Basal cell tumor																									
Basal cell carcinoma																									
Keratoacanthoma																	X								
Fibroma																									
Fibrosarcoma																									
Myxoma																									
Osteosarcoma																					X				
Subcutaneous tissue	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	N	+	+	+	+	+	+	+	+	+
Sarcoma, NOS																									
Sarcoma, NOS, invasive																									
Fibroma																						X			
Fibrosarcoma							X						X												X
Lipoma																									
Liposarcoma																									
Hemangiosarcoma																									
Neurofibroma														X											
RESPIRATORY SYSTEM																									
Lungs and bronchi	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+
Carcinoma, NOS, metastatic																									
Squamous cell carcinoma, metastatic																									
Alveolar/bronchiolar adenoma																									
Alveolar/bronchiolar carcinoma										X															
Papillary adenocarcinoma																									
C-cell carcinoma, metastatic																									
Pheochromocytoma, metastatic									X																
Sarcoma, NOS, metastatic																									
Liposarcoma, metastatic																									
Trachea	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+
C cell carcinoma, invasive																									
HEMATOPOIETIC SYSTEM																									
Bone marrow	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+
Spleen	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+
Fibrosarcoma																									
Mesothelioma, metastatic																									
Hemangiosarcoma																		X							
Lymph nodes	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+
C-cell carcinoma, metastatic																									
Sarcoma, NOS, invasive																									
Fibrosarcoma, invasive																									
Thymus	–	–	+	+	+	–	+	+	+	+	+	+	+	–	+	A	–	+	–	–	–	–	+	+	–
Carcinoma, NOS																									
CIRCULATORY SYSTEM																									
Heart	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+

TABLE A2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF MALE RATS: 1% AMOSITE (Continued)

ANIMAL NUMBER	77 76	77 77	77 78	77 79	78 80	78 81	78 82	78 83	78 84	78 85	78 86	78 87	78 88	78 89	79 90	79 91	79 92	79 93	79 94	79 95	79 96	79 97	79 98	79 99	80 00
WEEKS ON STUDY	110	141	141	141	117	129	089	089	108	126	092	131	113	131	101	141	126	122	141	107	137	141	134	133	123
INTEGUMENTARY SYSTEM																									
Skin	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma in-situ, NOS																									
Squamous cell papilloma	X																								
Squamous cell carcinoma																									
Basal cell tumor																									
Basal cell carcinoma																X									
Keratoacanthoma		X																	X						
Fibroma																									
Fibrosarcoma																									
Myxoma																									
Osteosarcoma																									
Subcutaneous tissue	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Sarcoma, NOS																									
Sarcoma, NOS, invasive																									
Fibroma																		X			X				
Fibrosarcoma																									
Lipoma																				X					
Liposarcoma																									
Hemangiosarcoma																									
Neurofibroma																									
RESPIRATORY SYSTEM																									
Lungs and bronchi	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS, metastatic																									
Squamous cell carcinoma, metastatic																									
Alveolar/bronchiolar adenoma					X																				
Alveolar/bronchiolar carcinoma																									
Papillary adenocarcinoma														X											
C-cell carcinoma, metastatic																									X
Pheochromocytoma, metastatic																									
Sarcoma, NOS, metastatic																									
Liposarcoma, metastatic																									
Trachea	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
C-cell carcinoma, invasive																									
HEMATOPOIETIC SYSTEM																									
Bone marrow	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Spleen	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Fibrosarcoma																									
Mesothelioma, metastatic					X																				
Hemangiosarcoma																									
Lymph nodes	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
C-cell carcinoma, metastatic																									X
Sarcoma, NOS, invasive																									
Fibrosarcoma, invasive																									
Thymus	−	−	+	−	+	+	+	+	+	+	+	+	+	+	+	+	−	+	+	+	+	+	−	+	+
Carcinoma, NOS																									
CIRCULATORY SYSTEM																									
Heart	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+

TABLE A2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF MALE RATS: 1% AMOSITE (Continued)

ANIMAL NUMBER	801	802	803	804	805	806	807	808	809	810	811	812	813	814	815	816	817	818	819	820	821	822	823	824	825
WEEKS ON STUDY	096	117	120	119	121	121	080	134	105	124	141	058	133	141	136	131	141	128	113	126	133	133	137	117	070
INTEGUMENTARY SYSTEM																									
Skin	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma in situ, NOS																									
Squamous cell papilloma								X																	
Squamous cell carcinoma																									
Basal cell tumor		X																							
Basal cell carcinoma																								X	
Keratoacanthoma														X		X									
Fibroma																									
Fibrosarcoma																									
Myxoma																									
Osteosarcoma																									
Subcutaneous tissue	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Sarcoma, NOS																									
Sarcoma, NOS, invasive																									
Fibroma		X																							
Fibrosarcoma																									
Lipoma																									
Liposarcoma																									
Hemangiosarcoma																									
Neurofibroma																									
RESPIRATORY SYSTEM																									
Lungs and bronchi	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS, metastatic																									
Squamous cell carcinoma, metastatic																									
Alveolar/bronchiolar adenoma																									
Alveolar/bronchiolar carcinoma																									
Papillary adenocarcinoma																									
C cell carcinoma, metastatic																									
Pheochromocytoma, metastatic																			X						
Sarcoma, NOS, metastatic																									
Liposarcoma, metastatic													X												
Trachea	−	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
C cell carcinoma, invasive																									
HEMATOPOIETIC SYSTEM																									
Bone marrow	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Spleen	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Fibrosarcoma																				X					
Mesothelioma, metastatic																									
Hemangiosarcoma																									
Lymph nodes	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
C-cell carcinoma, metastatic																									
Sarcoma, NOS, invasive																									
Fibrosarcoma, invasive																									
Thymus	−	+	+	+	−	+	+	−	−	−	−	+	−	−	−	+	+	+	+	+	−	−	+	+	+
Carcinoma, NOS																									
CIRCULATORY SYSTEM																									
Heart	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+

TABLE A2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF MALE RATS: 1% AMOSITE (Continued)

ANIMAL NUMBER	826	827	828	829	830	831	832	833	834	835	836	837	838	839	840	841	842	843	844	845	846	847	848	849	850
WEEKS ON STUDY	127	115	122	139	141	134	096	129	140	136	105	113	140	134	137	111	119	141	143	082	109	100	141	141	128
INTEGUMENTARY SYSTEM																									
Skin	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma in situ, NOS																									
Squamous cell papilloma																									
Squamous cell carcinoma	X														X										
Basal cell tumor																									
Basal cell carcinoma					X																				
Keratoacanthoma				X											X									X	
Fibroma																									
Fibrosarcoma															X										
Myxoma																									
Osteosarcoma																									
Subcutaneous tissue	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Sarcoma, NOS																									
Sarcoma, NOS, invasive								X																	
Fibroma								X	X														X		
Fibrosarcoma																									X
Lipoma																									
Liposarcoma																									
Hemangiosarcoma																									
Neurofibroma																									
RESPIRATORY SYSTEM																									
Lungs and bronchi	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS, metastatic																									
Squamous cell carcinoma, metastatic																									
Alveolar/bronchiolar adenoma																									
Alveolar/bronchiolar carcinoma																									
Papillary adenocarcinoma																									
C cell carcinoma, metastatic																									
Pheochromocytoma, metastatic											X														
Sarcoma, NOS, metastatic																									
Liposarcoma, metastatic																									
Trachea	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
C-cell carcinoma, invasive																									
HEMATOPOIETIC SYSTEM																									
Bone marrow	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Spleen	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Fibrosarcoma																									
Mesothelioma, metastatic																									
Hemangiosarcoma																									
Lymph nodes	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
C-cell carcinoma, metastatic																									
Sarcoma, NOS, invasive																							X		
Fibrosarcoma, invasive																									
Thymus	–	–	+	–	+	+	–	+	+	+	+	+	+	+	+	–	+	+	+	–	+	+	–	+	+
Carcinoma, NOS																									
CIRCULATORY SYSTEM																									
Heart	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+

TABLE A2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF MALE RATS: 1% AMOSITE (Continued)

ANIMAL NUMBER	85 51	85 52	85 53	85 54	85 55	85 56	85 57	85 58	85 59	86 60	86 61	86 62	86 63	86 64	86 65	86 66	86 67	86 68	86 69	87 70	87 71	87 72	87 73	87 74	87 75
WEEKS ON STUDY	14 41	12 66	10 08	12 24	10 08	14 41	11 10	11 16	14 41	11 10	12 26	13 36	12 20	12 28	14 41	14 41	12 24	13 31	13 31	12 20	13 38	14 41	13 31	08 80	12 27
INTEGUMENTARY SYSTEM																									
Skin	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma in situ, NOS																									
Squamous cell papilloma																									
Squamous cell carcinoma																								X	
Basal cell tumor																									
Basal cell carcinoma															X										
Keratoacanthoma																									
Fibroma									X																
Fibrosarcoma										X															
Myxoma																									
Osteosarcoma																									
Subcutaneous tissue	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Sarcoma, NOS																									
Sarcoma, NOS, invasive																									
Fibroma						X								X											X
Fibrosarcoma																									
Lipoma																									
Liposarcoma																									
Hemangiosarcoma																									
Neurofibroma														X											
RESPIRATORY SYSTEM																									
Lungs and bronchi	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS, metastatic																									
Squamous cell carcinoma, metastatic																									
Alveolar/bronchiolar adenoma																									
Alveolar/bronchiolar carcinoma	X																								
Papillary adenocarcinoma																									
C cell carcinoma, metastatic																									
Pheochromocytoma, metastatic					X																				
Sarcoma, NOS, metastatic																									
Liposarcoma, metastatic																									
Trachea	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
C cell carcinoma, invasive																									X
HEMATOPOIETIC SYSTEM																									
Bone marrow	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	–	+	+	+	+	+
Spleen	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Fibrosarcoma																									
Mesothelioma, metastatic																									
Hemangiosarcoma																									
Lymph nodes	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
C-cell carcinoma, metastatic																									
Sarcoma, NOS, invasive																									
Fibrosarcoma, invasive																									
Thymus	+	+	–	+	–	–	–	+	–	+	+	+	+	+	+	–	–	+	+	–	+	+	+	+	+
Carcinoma, NOS																									
CIRCULATORY SYSTEM																									
Heart	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+

TABLE A2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF MALE RATS: 1% AMOSITE (Continued)

ANIMAL NUMBER	87 6	87 7	87 8	87 9	88 0	88 1	88 2	88 3	88 4	88 5	88 6	88 7	88 8	88 9	89 0	89 1	89 2	89 3	89 4	89 5	89 6	89 7	89 8	89 9	90 0
WEEKS ON STUDY	120	121	136	105	131	131	138	135	104	121	108	123	133	118	127	141	108	132	137	127	137	137	131	141	139
INTEGUMENTARY SYSTEM																									
Skin	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma in-situ, NOS																									
Squamous cell papilloma																									
Squamous cell carcinoma																						X			
Basal cell tumor																									
Basal cell carcinoma									X																
Keratoacanthoma					X		X															X			
Fibroma																									
Fibrosarcoma																									
Myxoma																X									
Osteosarcoma																									
Subcutaneous tissue	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Sarcoma, NOS																									
Sarcoma, NOS, invasive																									
Fibroma		X								X		@X		X		X			X						
Fibrosarcoma																X									
Lipoma																									
Liposarcoma																									
Hemangiosarcoma				X																					
Neurofibroma																X									
RESPIRATORY SYSTEM																									
Lungs and bronchi	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS, metastatic																									
Squamous cell carcinoma, metastatic																									
Alveolar/bronchiolar adenoma						X																			
Alveolar/bronchiolar carcinoma																		X					X		
Papillary adenocarcinoma																									
C-cell carcinoma, metastatic																									
Pheochromocytoma, metastatic																									
Sarcoma, NOS, metastatic																									
Liposarcoma, metastatic																									
Trachea	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
C-cell carcinoma, invasive																									
HEMATOPOIETIC SYSTEM																									
Bone marrow	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Spleen	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Fibrosarcoma																									
Mesothelioma, metastatic																									
Hemangiosarcoma																									
Lymph nodes	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
C-cell carcinoma, metastatic																									
Sarcoma, NOS, invasive																									
Fibrosarcoma, invasive																									
Thymus	+	+	+	+	+	+	−	−	+	−	+	+	−	−	+	+	−	+	−	+	+	+	+	−	+
Carcinoma, NOS																									
CIRCULATORY SYSTEM																									
Heart	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+

@ Multiple occurrence of morphology

TABLE A2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF MALE RATS: 1% AMOSITE (Continued)

ANIMAL NUMBER	90 01	90 02	90 03	90 04	90 05	90 06	90 07	90 08	90 09	91 10	91 11	91 12	91 13	91 14	91 15	91 16	91 17	91 18	91 19	92 20	92 21	92 22	92 23	92 24	92 25	TOTAL TISSUES TUMORS
WEEKS ON STUDY	12 26	14 11	12 20	12 20	08 22	14 41	13 39	13 31	11 16	13 30	11 12	12 21	12 26	13 37	13 32	13 31	13 34	11 12	10 03	12 29	12 25	12 21	12 20	12 11	12 25	
INTEGUMENTARY SYSTEM																										
Skin	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	*250
Carcinoma in-situ, NOS																										1
Squamous cell papilloma	X																									6
Squamous cell carcinoma																										4
Basal cell tumor																										1
Basal cell carcinoma																										7
Keratoacanthoma		X				X																				17
Fibroma																										2
Fibrosarcoma			X																							4
Myxoma																										1
Osteosarcoma																										1
Subcutaneous tissue	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	*250
Sarcoma, NOS											X															2
Sarcoma, NOS, invasive																										1
Fibroma													X									X		X		31
Fibrosarcoma																										5
Lipoma																										2
Liposarcoma																										1
Hemangiosarcoma																										1
Neurofibroma						X																				5
RESPIRATORY SYSTEM																										
Lungs and bronchi	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	250
Carcinoma, NOS, metastatic																										1
Squamous cell carcinoma, metastatic																										1
Alveolar/bronchiolar adenoma																										2
Alveolar/bronchiolar carcinoma																										6
Papillary adenocarcinoma																										1
C-cell carcinoma, metastatic																										2
Pheochromocytoma, metastatic																										4
Sarcoma, NOS, metastatic																										1
Liposarcoma, metastatic			X																							3
Trachea	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	248
C cell carcinoma, invasive																										1
HEMATOPOIETIC SYSTEM																										
Bone marrow	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	249
Spleen	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	250
Fibrosarcoma																										1
Mesothelioma, metastatic																										1
Hemangiosarcoma																										2
Lymph nodes	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	250
C-cell carcinoma, metastatic																										1
Sarcoma, NOS, invasive																										1
Fibrosarcoma, invasive			X																							1
Thymus	+	+	−	−	+	+	−	+	+	+	−	−	+	+	+	−	−	+	−	−	+	+	−	+	+	171
Carcinoma, NOS		X																								1
CIRCULATORY SYSTEM																										
Heart	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	249

* Animals necropsied

TABLE A2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF MALE RATS: 1% AMOSITE (Continued)

ANIMAL NUMBER	67676	67677	67678	67679	68680	68681	68682	68683	68684	68685	68686	68687	68688	68689	68690	68691	68692	68693	68694	68695	68696	68697	68698	68699	70700
WEEKS ON STUDY	117	121	141	135	141	141	116	129	119	087	124	141	141	136	131	141	134	141	121	122	112	138	135	137	127
DIGESTIVE SYSTEM																									
Oral cavity	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Squamous cell papilloma																									
Squamous cell carcinoma					X																				
Basal cell carcinoma																									
Salivary gland	+	+	+	+	+	+	+	+	+	−	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS																									
Sarcoma, NOS																									
Fibrosarcoma																									
Fibrosarcoma, invasive																									
Liver	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Neoplastic nodule																									
Hepatocellular carcinoma																	X								
Monocytic leukemia																									
Bile duct	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Gallbladder & common bile duct	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Pancreas	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS																									
Acinar cell adenoma					X										X	X									
Acinar cell carcinoma																								X	
Mixed tumor, benign																									
Mesothelioma, metastatic																									
Esophagus	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Stomach	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma in-situ, NOS																									
Adenomatous polyp, NOS																									
Leiomyosarcoma																									
Small intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenocarcinoma in adenomatous polyp																									
Leiomyoma																									
Leiomyosarcoma																									
Malignant lymphoma, histiocytic type																									
Large intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma in-situ, NOS																									
Adenomatous polyp, NOS																									X
Leiomyoma																									
URINARY SYSTEM																									
Kidney	+	+	+	+	+	+	+	+	+	−	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS																									
Tubular cell adenoma																									
Tubular cell adenocarcinoma																									
Sarcoma, NOS																									
Lipoma																									
Mixed tumor, malignant																									
Urinary bladder	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
ENDOCRINE SYSTEM																									
Pituitary	−	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS						X																			
Adenoma, NOS		X											X		X		X			X	X	X			
Adrenal	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Tubular cell adenocarcinoma, invasive																									
Cortical adenoma																									
Pheochromocytoma	X		X	X	X				X		X	X	X				X								
Pheochromocytoma, malignant																									
Ganglioneuroma																									
Thyroid	+	+	+	+	+	+	+	+	+	−	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Follicular cell adenoma		X															X	X							
Follicular cell carcinoma																									
C-cell adenoma	X														X										
C-cell carcinoma													X						X						
Parathyroid	+	+	+	+	+	+	+	+	+	−	+	+	+	−	+	+	+	+	+	+	+	+	+	+	+
Adenoma, NOS																									
C-cell carcinoma, invasive																									
Pancreatic islets	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Islet cell adenoma																									
Islet cell carcinoma			X																						

TABLE A2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF MALE RATS: 1% AMOSITE
(Continued)

ANIMAL NUMBER	701	702	703	704	705	706	707	708	709	710	711	712	713	714	715	716	717	718	719	720	721	722	723	724	725
WEEKS ON STUDY	137	134	120	137	108	131	137	118	136	117	101	096	071	113	137	141	129	141	140	139	128	120	141	139	105
DIGESTIVE SYSTEM																									
Oral cavity	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Squamous cell papilloma																									
Squamous cell carcinoma																	X								
Basal cell carcinoma																									
Salivary gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS																									
Sarcoma, NOS																									
Fibrosarcoma																									
Fibrosarcoma, invasive																									
Liver	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Neoplastic nodule							X																		
Hepatocellular carcinoma																									
Monocytic leukemia																									
Bile duct	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Gallbladder & common bile duct	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Pancreas	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS																									
Acinar cell adenoma																	X								
Acinar cell carcinoma																									
Mixed tumor, benign																									
Mesothelioma, metastatic																									
Esophagus	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Stomach	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma in-situ, NOS																									
Adenomatous polyp, NOS																									
Leiomyosarcoma																									
Small intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenocarcinoma in adenomatous polyp					X																				
Leiomyoma																									
Leiomyosarcoma																									
Malignant lymphoma, histiocytic type																									
Large intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma in-situ, NOS																									
Adenomatous polyp, NOS																									
Leiomyoma																									
URINARY SYSTEM																									
Kidney	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS																									
Tubular cell adenoma																									
Tubular cell adenocarcinoma																									
Sarcoma, NOS																									
Lipoma																									
Mixed tumor, malignant																	X								
Urinary bladder	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
ENDOCRINE SYSTEM																									
Pituitary	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS										X															
Adenoma, NOS				X											X			X	X						
Adrenal	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Tubular cell adenocarcinoma, invasive																									
Cortical adenoma																									
Pheochromocytoma				X		X											X		X			X			
Pheochromocytoma, malignant																									
Ganglioneuroma																									
Thyroid	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Follicular cell adenoma							X																		
Follicular cell carcinoma											X				X								X		
C-cell adenoma										X													X	X	
C-cell carcinoma				X		X								X	X				X	X					
Parathyroid	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	–	+	+	+	+	+	–	+	+
Adenoma, NOS																									
C-cell carcinoma, invasive																									
Pancreatic islets	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Islet cell adenoma			X																X						X
Islet cell carcinoma										X										X					

TABLE A2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF MALE RATS: 1% AMOSITE (Continued)

ANIMAL NUMBER	726	727	728	729	730	731	732	733	734	735	736	737	738	739	740	741	742	743	744	745	746	747	748	749	750
WEEKS ON STUDY	127	113	137	126	131	133	099	108	141	129	089	106	135	110	085	141	126	100	119	123	131	141	115	065	133
DIGESTIVE SYSTEM																									
Oral cavity	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Squamous cell papilloma																									
Squamous cell carcinoma																									
Basal cell carcinoma																									
Salivary gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS																									
Sarcoma, NOS																									
Fibrosarcoma																									
Fibrosarcoma, invasive																									
Liver	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Neoplastic nodule				X		X																			
Hepatocellular carcinoma																									
Monocytic leukemia																									
Bile duct	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Gallbladder & common bile duct	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Pancreas	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS																									
Acinar cell adenoma	X			X		X																X			
Acinar cell carcinoma																									
Mixed tumor, benign																									
Mesothelioma, metastatic																									
Esophagus	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Stomach	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma in-situ, NOS																									
Adenomatous polyp, NOS																X									
Leiomyosarcoma																									
Small intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenocarcinoma in adenomatous polyp																									
Leiomyoma																									
Leiomyosarcoma																									
Malignant lymphoma, histiocytic type																									
Large intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	–	+	+	+	+	+	+
Carcinoma in-situ, NOS																									
Adenomatous polyp, NOS			X																						
Leiomyoma																									
URINARY SYSTEM																									
Kidney	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS																									
Tubular cell adenoma																									
Tubular cell adenocarcinoma																									
Sarcoma, NOS																									
Lipoma																									
Mixed tumor, malignant																									
Urinary bladder	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
ENDOCRINE SYSTEM																									
Pituitary	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS																									
Adenoma, NOS		X												X								X			
Adrenal	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Tubular cell adenocarcinoma, invasive																									
Cortical adenoma																									X
Pheochromocytoma	X			X		X			X	X			X												
Pheochromocytoma, malignant											X														
Ganglioneuroma																									
Thyroid	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Follicular cell adenoma																									
Follicular cell carcinoma													X												
C-cell adenoma											X	X													
C-cell carcinoma																						X		X	
Parathyroid	+	+	+	+	+	–	+	+	+	+	+	+	+	+	+	+	+	–	+	+	+	+	+	–	+
Adenoma, NOS																									
C-cell carcinoma, invasive																									
Pancreatic islets	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Islet cell adenoma																									
Islet cell carcinoma																									

TABLE A2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF MALE RATS: 1% AMOSITE (Continued)

ANIMAL NUMBER	75151	75152	75153	75154	75155	75156	75157	75158	75159	75160	76161	76162	76163	76164	76165	76166	76167	76168	76169	77170	77171	77172	77173	77174	77175
WEEKS ON STUDY	13 34	11 17	12 28	12 26	13 37	13 33	13 30	14 41	12 29	13 39	13 34	13 39	11 13	14 41	13 36	12 23	14 41	13 36	12 26	11 11	06 09	10 06	08 09	14 41	08 80
DIGESTIVE SYSTEM																									
Oral cavity	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Squamous cell papilloma																									
Squamous cell carcinoma					X																				
Basal cell carcinoma																									
Salivary gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+
Carcinoma, NOS																									
Sarcoma, NOS																									
Fibrosarcoma																									
Fibrosarcoma, invasive																									
Liver	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+
Neoplastic nodule		X		X																				X	
Hepatocellular carcinoma																									
Monocytic leukemia																									
Bile duct	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+
Gallbladder & common bile duct	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Pancreas	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	−	+	+	+	+	+
Carcinoma, NOS																									
Acinar cell adenoma								X										X							
Acinar cell carcinoma								X																	
Mixed tumor, benign																									
Mesothelioma, metastatic																									
Esophagus	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+
Stomach	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+
Carcinoma in-situ, NOS																									
Adenomatous polyp, NOS																									
Leiomyosarcoma																									
Small intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+
Adenocarcinoma in adenomatous polyp																									
Leiomyoma																				X					
Leiomyosarcoma																									
Malignant lymphoma, histiocytic type																									
Large intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+
Carcinoma in-situ, NOS																									
Adenomatous polyp, NOS																									
Leiomyoma								X																	
URINARY SYSTEM																									
Kidney	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+
Carcinoma, NOS			X																						
Tubular cell adenoma																									
Tubular cell adenocarcinoma																									
Sarcoma, NOS																									
Lipoma	X																								
Mixed tumor, malignant																									
Urinary bladder	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+
ENDOCRINE SYSTEM																									
Pituitary	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+
Carcinoma, NOS																									
Adenoma, NOS			X					X	X		X			X					X						
Adrenal	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+
Tubular cell adenocarcinoma, invasive																									
Cortical adenoma					X					X								X							
Pheochromocytoma			X						X					X					X						
Pheochromocytoma, malignant									X																
Ganglioneuroma																									
Thyroid	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+
Follicular cell adenoma					X																				
Follicular cell carcinoma																									
C-cell adenoma	X			X						X								X	X						
C-cell carcinoma		X			X	X			X																
Parathyroid	+	+	+	+	+	−	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+
Adenoma, NOS																									
C-cell carcinoma, invasive																									
Pancreatic islets	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	−	+	+	+	+	+
Islet cell adenoma											X														
Islet cell carcinoma																									

TABLE A2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF MALE RATS: 1% AMOSITE (Continued)

ANIMAL NUMBER	77676	77677	77678	77679	78680	78681	78682	78683	78684	78685	78686	78687	78688	78689	79690	79691	79692	79693	79694	79695	79696	79697	79698	79699	80000
WEEKS ON STUDY	110	141	141	141	117	129	089	089	108	126	092	131	113	131	101	141	126	122	141	107	137	141	134	133	123
DIGESTIVE SYSTEM																									
Oral cavity	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Squamous cell papilloma																							X		
Squamous cell carcinoma																									
Basal cell carcinoma																									
Salivary gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS																									
Sarcoma, NOS																									
Fibrosarcoma																									
Fibrosarcoma, invasive																									
Liver	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Neoplastic nodule															X	X									
Hepatocellular carcinoma																									
Monocytic leukemia																									
Bile duct	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Gallbladder & common bile duct	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Pancreas	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS																									
Acinar cell adenoma																									
Acinar cell carcinoma																									
Mixed tumor, benign																									
Mesothelioma, metastatic					X																				
Esophagus	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Stomach	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma in-situ, NOS																									
Adenomatous polyp, NOS																									
Leiomyosarcoma																									
Small intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenocarcinoma in adenomatous polyp																									
Leiomyoma																									
Leiomyosarcoma																									
Malignant lymphoma, histiocytic type																									
Large intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma in-situ, NOS					X																				
Adenomatous polyp, NOS																									
Leiomyoma																									
URINARY SYSTEM																									
Kidney	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS																									
Tubular cell adenoma																									
Tubular cell adenocarcinoma																									
Sarcoma, NOS																									
Lipoma																									
Mixed tumor, malignant																									
Urinary bladder	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
ENDOCRINE SYSTEM																									
Pituitary	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS																									
Adenoma, NOS			X													X									
Adrenal	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Tubular cell adenocarcinoma, invasive																									
Cortical adenoma																									
Pheochromocytoma			X			X				X				X	X					X		X	X		
Pheochromocytoma, malignant																									
Ganglioneuroma																									
Thyroid	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Follicular cell adenoma																									
Follicular cell carcinoma																			X						
C-cell adenoma						X							X	X		X									
C-cell carcinoma	X	X	X							X			X					X					X		X
Parathyroid	+	+	+	+	+	+	+	+	–	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenoma, NOS																									
C-cell carcinoma, invasive																									
Pancreatic islets	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Islet cell adenoma														X											
Islet cell carcinoma				X																					

TABLE A2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF MALE RATS: 1% AMOSITE (Continued)

ANIMAL NUMBER	801	802	803	804	805	806	807	808	809	810	811	812	813	814	815	816	817	818	819	820	821	822	823	824	825
WEEKS ON STUDY	096	117	120	119	121	121	080	134	105	124	141	058	133	141	136	131	141	128	113	126	133	141	137	117	070
DIGESTIVE SYSTEM																									
Oral cavity	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Squamous cell papilloma																									
Squamous cell carcinoma																									
Basal cell carcinoma																									
Salivary gland	–	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS														X											
Sarcoma, NOS																									
Fibrosarcoma																									
Fibrosarcoma, invasive																									
Liver	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Neoplastic nodule																									
Hepatocellular carcinoma															X										
Monocytic leukemia																									
Bile duct	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Gallbladder & common bile duct	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Pancreas	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS																									
Acinar cell adenoma														X											
Acinar cell carcinoma																									
Mixed tumor, benign																									
Mesothelioma, metastatic																									
Esophagus	–	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Stomach	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma in-situ, NOS				X																					
Adenomatous polyp, NOS																									
Leiomyosarcoma									X																
Small intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenocarcinoma in adenomatous polyp																									
Leiomyoma																									
Leiomyosarcoma																									
Malignant lymphoma, histiocytic type																									
Large intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma in-situ, NOS																									
Adenomatous polyp, NOS																									
Leiomyoma																									
URINARY SYSTEM																									
Kidney	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS																									
Tubular cell adenoma																		X							
Tubular cell adenocarcinoma																									
Sarcoma, NOS																X									
Lipoma																									
Mixed tumor, malignant																									
Urinary bladder	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
ENDOCRINE SYSTEM																									
Pituitary	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS						X																			
Adenoma, NOS												X	X			X	X				X				
Adrenal	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Tubular cell adenocarcinoma, invasive																									
Cortical adenoma																									
Pheochromocytoma		X						X					X		X										
Pheochromocytoma, malignant																			X						
Ganglioneuroma																									
Thyroid	–	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Follicular cell adenoma								X														X			
Follicular cell carcinoma																									
C-cell adenoma										X	X														
C-cell carcinoma					X			X					X									X	X		
Parathyroid	–	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenoma, NOS																									
C-cell carcinoma, invasive																									
Pancreatic islets	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Islet cell adenoma						X								X											
Islet cell carcinoma																									

TABLE A2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF MALE RATS: 1% AMOSITE (Continued)

ANIMAL NUMBER	8 2 6	8 2 7	8 2 8	8 2 9	8 3 0	8 3 1	8 3 2	8 3 3	8 3 4	8 3 5	8 3 6	8 3 7	8 3 8	8 3 9	8 4 0	8 4 1	8 4 2	8 4 3	8 4 4	8 4 5	8 4 6	8 4 7	8 4 8	8 4 9	8 5 0
WEEKS ON STUDY	1 2 7	1 1 5	1 2 2	1 3 9	1 4 1	1 3 4	0 9 6	1 2 9	1 4 0	1 3 6	1 0 5	1 1 3	1 4 0	1 3 4	1 3 7	1 1 1	1 1 9	1 4 1	1 3 8	0 8 2	1 0 9	1 0 0	1 4 1	1 4 1	1 2 8
DIGESTIVE SYSTEM																									
Oral cavity	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Squamous cell papilloma																									
Squamous cell carcinoma																									
Basal cell carcinoma																									
Salivary gland	+	+	+	+	+	+	+	+	+	+	–	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS																									
Sarcoma, NOS								X															X		
Fibrosarcoma																									
Fibrosarcoma, invasive																									
Liver	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Neoplastic nodule														X											
Hepatocellular carcinoma																									
Monocytic leukemia														X											
Bile duct	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Gallbladder & common bile duct	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Pancreas	+	+	+	+	+	+	+	+	+	+	–	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS																									
Acinar cell adenoma				X				X						X											
Acinar cell carcinoma																									
Mixed tumor, benign										X															
Mesothelioma, metastatic																									
Esophagus	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Stomach	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma in-situ, NOS																									
Adenomatous polyp, NOS																									
Leiomyosarcoma																									
Small intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenocarcinoma in adenomatous polyp																									
Leiomyoma																									
Leiomyosarcoma				X																					
Malignant lymphoma, histiocytic type																	X								
Large intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma in-situ, NOS																									
Adenomatous polyp, NOS																									
Leiomyoma																									
URINARY SYSTEM																									
Kidney	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS																									
Tubular cell adenoma																									
Tubular cell adenocarcinoma	X																								
Sarcoma, NOS																									
Lipoma																									
Mixed tumor, malignant																									
Urinary bladder	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
ENDOCRINE SYSTEM																									
Pituitary	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS																									
Adenoma, NOS	X					X				X						X									
Adrenal	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Tubular cell adenocarcinoma, invasive	X																								
Cortical adenoma																									
Pheochromocytoma				X	X				X	X	X		X						X					X	X
Pheochromocytoma, malignant											X														
Ganglioneuroma																									
Thyroid	+	+	+	+	+	+	+	+	+	+	–	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Follicular cell adenoma										X															
Follicular cell carcinoma																			X						
C-cell adenoma				X															X						
C-cell carcinoma									X	X					X								X		X
Parathyroid	+	+	+	+	+	+	–	+	+	+	–	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenoma, NOS																									
C-cell carcinoma, invasive																									
Pancreatic islets	+	+	+	+	+	+	+	+	+	+	–	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Islet cell adenoma			X																X						
Islet cell carcinoma														X											

TABLE A2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF MALE RATS: 1% AMOSITE (Continued)

ANIMAL NUMBER	85 51	85 52	85 53	85 54	85 55	85 56	85 57	85 58	85 59	86 00	86 01	86 02	86 03	86 04	86 05	86 06	86 07	86 08	86 09	87 00	87 11	87 12	87 13	87 14	87 15
WEEKS ON STUDY	14 1	12 6	10 8	12 4	10 8	14 1	11 0	11 6	14 1	11 0	12 6	13 6	12 0	12 8	14 1	14 1	12 4	13 1	13 1	12 0	13 8	14 1	13 1	08 0	12 7
DIGESTIVE SYSTEM																									
Oral cavity	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Squamous cell papilloma																									
Squamous cell carcinoma																									
Basal cell carcinoma																									
Salivary gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS																									
Sarcoma, NOS																									
Fibrosarcoma																									
Fibrosarcoma, invasive																									
Liver	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Neoplastic nodule																									
Hepatocellular carcinoma																									
Monocytic leukemia																									
Bile duct	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Gallbladder & common bile duct	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Pancreas	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS																									
Acinar cell adenoma															X										
Acinar cell carcinoma																									
Mixed tumor, benign	X																								
Mesothelioma, metastatic																									
Esophagus	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Stomach	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma in-situ, NOS																									
Adenomatous polyp, NOS																									
Leiomyosarcoma																									
Small intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenocarcinoma in adenomatous polyp																									
Leiomyoma																									
Leiomyosarcoma																									
Malignant lymphoma, histiocytic type																									
Large intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma in-situ, NOS																									
Adenomatous polyp, NOS										X															
Leiomyoma																									
URINARY SYSTEM																									
Kidney	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS																									
Tubular cell adenoma																				X					
Tubular cell adenocarcinoma																									
Sarcoma, NOS																									
Lipoma																									
Mixed tumor, malignant																									
Urinary bladder	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
ENDOCRINE SYSTEM																									
Pituitary	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS							X																		
Adenoma, NOS		X	X										X							X			X		X
Adrenal	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Tubular cell adenocarcinoma, invasive																									
Cortical adenoma																									
Pheochromocytoma	X			X					X				X				X	X							
Pheochromocytoma, malignant					X																				
Ganglioneuroma					X																				
Thyroid	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Follicular cell adenoma															X								X		
Follicular cell carcinoma																X									
C-cell adenoma		X												X						X					
C-cell carcinoma																		X	X				X		X
Parathyroid	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	–	+	+	+	+	+	+	+	+	+
Adenoma, NOS											X														
C-cell carcinoma, invasive																									
Pancreatic islets	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Islet cell adenoma													X				X			X					X
Islet cell carcinoma																									

TABLE A2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF MALE RATS: 1% AMOSITE
(Continued)

ANIMAL NUMBER	876	877	878	879	880	881	882	883	884	885	886	887	888	889	890	891	892	893	894	895	896	897	898	899	900
WEEKS ON STUDY	120	121	136	105	131	131	138	135	104	121	108	123	133	118	127	141	108	132	137	127	137	137	131	141	139
DIGESTIVE SYSTEM																									
Oral cavity	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Squamous cell papilloma																									
Squamous cell carcinoma																									
Basal cell carcinoma																									
Salivary gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS																									
Sarcoma, NOS																									
Fibrosarcoma					X																				
Fibrosarcoma, invasive																									
Liver	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Neoplastic nodule																									
Hepatocellular carcinoma																			X						
Monocytic leukemia																									
Bile duct	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Gallbladder & common bile duct	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Pancreas	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS																									
Acinar cell adenoma					X						X													X	X
Acinar cell carcinoma																									
Mixed tumor, benign																									
Mesothelioma, metastatic																									
Esophagus	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Stomach	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma in-situ, NOS																									
Adenomatous polyp, NOS																									
Leiomyosarcoma																									
Small intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenocarcinoma in adenomatous polyp																									
Leiomyoma																									
Leiomyosarcoma																									
Malignant lymphoma, histiocytic type																									
Large intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma in-situ, NOS																									
Adenomatous polyp, NOS																									
Leiomyoma																									
URINARY SYSTEM																									
Kidney	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS																									
Tubular cell adenoma																									
Tubular cell adenocarcinoma																									
Sarcoma, NOS																									
Lipoma																									
Mixed tumor, malignant																									
Urinary bladder	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
ENDOCRINE SYSTEM																									
Pituitary	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS																									
Adenoma, NOS																									
Adrenal	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Tubular cell adenocarcinoma, invasive																									
Cortical adenoma																							X		
Pheochromocytoma			X		X	X	X					X				X		X		X					X
Pheochromocytoma, malignant																									
Ganglioneuroma																									
Thyroid	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Follicular cell adenoma	X		X																						
Follicular cell carcinoma																X									
C-cell adenoma						X													X						
C-cell carcinoma			X				X	X	X					X				X							X
Parathyroid	+	+	–	+	+	+	+	+	+	+	–	+	+	+	+	+	–	–	+	+	+	+	+	+	+
Adenoma, NOS																									
C-cell carcinoma, invasive																									
Pancreatic islets	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Islet cell adenoma																								X	
Islet cell carcinoma																									

TABLE A2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF MALE RATS: 1% AMOSITE (Continued)

ANIMAL NUMBER	901	902	903	904	905	906	907	908	909	910	911	912	913	914	915	916	917	918	919	920	921	922	923	924	925	TOTAL: TISSUES TUMORS
WEEKS ON STUDY	126	141	120	120	082	141	139	131	116	130	112	121	126	137	132	131	134	112	103	129	125	121	120	121	125	
DIGESTIVE SYSTEM																										
Oral cavity	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	*250
Squamous cell papilloma																										1
Squamous cell carcinoma																										3
Basal cell carcinoma		X																								1
Salivary gland	+	+	+	+	+	+	+	+	+	+	+	+	–	+	+	+	+	+	+	+	+	+	+	+	+	245
Carcinoma, NOS																										1
Sarcoma, NOS																										2
Fibrosarcoma										X																2
Fibrosarcoma, invasive			X																							1
Liver	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	250
Neoplastic nodule																										9
Hepatocellular carcinoma																										3
Monocytic leukemia				X																				X		3
Bile duct	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	250
Gallbladder & common bile duct	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	*250
Pancreas	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	248
Carcinoma, NOS									X																	1
Acinar cell adenoma																										19
Acinar cell carcinoma																										2
Mixed tumor, benign																										2
Mesothelioma, metastatic																										1
Esophagus	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	249
Stomach	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	250
Carcinoma in-situ, NOS																										1
Adenomatous polyp, NOS																										1
Leiomyosarcoma																										1
Small intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	250
Adenocarcinoma in adenomatous polyp																										1
Leiomyoma																										1
Leiomyosarcoma																										1
Malignant lymphoma, histiocytic type																										1
Large intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	250
Carcinoma in-situ, NOS																										1
Adenomatous polyp, NOS																										3
Leiomyoma																										1
URINARY SYSTEM																										
Kidney	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	249
Carcinoma, NOS																										1
Tubular cell adenoma																										2
Tubular cell adenocarcinoma																										1
Sarcoma, NOS																										1
Lipoma																										1
Mixed tumor, malignant																										1
Urinary bladder	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	250
ENDOCRINE SYSTEM																										
Pituitary	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	249
Carcinoma, NOS																										4
Adenoma, NOS		X							X				X												X	41
Adrenal	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	250
Tubular cell adenocarcinoma, invasive																										1
Cortical adenoma																										5
Pheochromocytoma						X				X		X			X									X		65
Pheochromocytoma, malignant																										5
Ganglioneuroma																										1
Thyroid	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	246
Follicular cell adenoma	X																									13
Follicular cell carcinoma				X																			X			10
C-cell adenoma									X																	26
C-cell carcinoma		X	X			X							X					X		X		X				50
Parathyroid	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	234
Adenoma, NOS																										1
C-cell carcinoma, invasive		X																								1
Pancreatic islets	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	248
Islet cell adenoma									X					X					X							17
Islet cell carcinoma																										5

* Animals necropsied

TABLE A2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF MALE RATS: 1% AMOSITE
(Continued)

ANIMAL NUMBER	676	677	678	679	680	681	682	683	684	685	686	687	688	689	690	691	692	693	694	695	696	697	698	699	700
WEEKS ON STUDY	117	121	141	135	141	141	116	129	119	087	124	141	141	136	131	141	134	141	121	122	112	138	135	137	127
REPRODUCTIVE SYSTEM																									
Mammary gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenoma, NOS																									
Adenocarcinoma, NOS																									
Papillary adenocarcinoma																									
Sarcoma, NOS, invasive																									
Fibrosarcoma																									
Fibroadenoma																X		X				X		X	X
Testis	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Interstitial cell tumor	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Prostate	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Squamous cell carcinoma																									
Preputial/clitoral gland	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Carcinoma, NOS								X								X									
Squamous cell carcinoma																									
Epididymis	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Lipoma																									
NERVOUS SYSTEM																									
Brain	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS, invasive																									
Astrocytoma																			X						
Astrocytoma, invasive																									
SPECIAL SENSE ORGANS																									
Ear	N	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	N	+	+	+	+	+	+
Squamous cell papilloma																									
Zymbal gland	N	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	N	+	+	+	+	+	+
Carcinoma, NOS																									
Squamous cell papilloma																									
Adenoma, NOS																									
MUSCULOSKELETAL SYSTEM																									
Bone	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Liposarcoma																									
Osteoma																									
Osteosarcoma							X																		
BODY CAVITIES																									
Peritoneum	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Sarcoma, NOS																									
Sarcoma, NOS, invasive																									
Mesothelioma, invasive																									
Tunica vaginalis	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Mesothelioma, NOS																									
Mesothelioma, malignant																									
Mesentery	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Mesothelioma, malignant																									
ALL OTHER SYSTEMS																									
Multiple organs, NOS	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Squamous cell carcinoma, invasive																									
Tubular cell adenocarcinoma, metastatic																									
C-cell carcinoma, metastatic																									
Sarcoma, NOS, invasive																									
Fibrosarcoma, invasive																									
Mesothelioma, invasive																									
Mesothelioma, metastatic																									
Osteosarcoma, metastatic																									
Malignant lymphoma, lymphocytic type																									
Malignant lymphoma, histiocytic type																									
Myelomonocytic leukemia																									
Monocytic leukemia	X								X	X	X	X	X	X	X	X	X		X			X		X	
Back, NOS																									
Basal cell carcinoma																									
Flank, NOS																									
Rhabdomyosarcoma																									
Sacral region																									
Neurofibroma																									
Axilla, NOS																									
Fibroma																									
Fibrosarcoma																									
Scrotum, NOS																									
Mesothelioma, invasive																									

TABLE A2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF MALE RATS: 1% AMOSITE (Continued)

ANIMAL NUMBER	701	702	703	704	705	706	707	708	709	710	711	712	713	714	715	716	717	718	719	720	721	722	723	724	725
WEEKS ON STUDY	137	134	120	137	108	131	137	118	136	117	101	096	071	113	137	141	129	141	140	139	128	120	141	139	105
REPRODUCTIVE SYSTEM																									
Mammary gland	+	+	+	+	+	+	+	+	+	+	+	+	N	+	+	+	+	+	+	+	+	+	+	+	+
Adenoma, NOS																									
Adenocarcinoma, NOS																									
Papillary adenocarcinoma																									
Sarcoma, NOS, invasive																									
Fibrosarcoma																									
Fibroadenoma				X																					
Testis	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Interstitial cell tumor	X	X	X	X	X	X	X	X	X		X	X		X	X	X	X	X	X	X	X	X	X	X	X
Prostate	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Squamous cell carcinoma																X									
Preputial/clitoral gland	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Carcinoma, NOS						X													X			X			
Squamous cell carcinoma																					X				
Epididymis	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Lipoma																									
NERVOUS SYSTEM																									
Brain	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS, invasive										X															
Astrocytoma						X																			
Astrocytoma, invasive						X																			
SPECIAL SENSE ORGANS																									
Ear	+	+	+	+	+	+	+	+	N	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Squamous cell papilloma																									
Zymbal gland	+	+	+	+	+	+	+	+	N	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS			X																						
Squamous cell papilloma																									
Adenoma, NOS																									
MUSCULOSKELETAL SYSTEM																									
Bone	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Liposarcoma																									
Osteoma																									
Osteosarcoma																									
BODY CAVITIES																									
Peritoneum	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Sarcoma, NOS																									
Sarcoma, NOS, invasive																									
Mesothelioma, invasive																									
Tunica vaginalis	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Mesothelioma, NOS																									
Mesothelioma, malignant																									
Mesentery	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Mesothelioma, malignant																									
ALL OTHER SYSTEMS																									
Multiple organs, NOS	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Squamous cell carcinoma, invasive																	X								
Tubular cell adenocarcinoma, metastatic																									
C-cell carcinoma, metastatic																									
Sarcoma, NOS, invasive								X																	
Fibrosarcoma, invasive																									
Mesothelioma, invasive																									
Mesothelioma, metastatic																									
Osteosarcoma, metastatic																									
Malignant lymphoma, lymphocytic type																									
Malignant lymphoma, histiocytic type																									
Myelomonocytic leukemia																									
Monocytic leukemia		X	X				X			X	X			X		X		X	X					X	
Back, NOS																									
Basal cell carcinoma																									
Flank, NOS																									
Rhabdomyosarcoma																									
Sacral region																									
Neurofibroma																									
Axilla, NOS																									
Fibroma															X										
Fibrosarcoma																									
Scrotum, NOS																									
Mesothelioma, invasive																									

TABLE A2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF MALE RATS: 1% AMOSITE
(Continued)

ANIMAL NUMBER	726	727	728	729	730	731	732	733	734	735	736	737	738	739	740	741	742	743	744	745	746	747	748	749	750
WEEKS ON STUDY	127	113	137	126	131	133	099	108	141	129	089	106	135	110	085	141	126	100	119	123	131	141	115	065	133
REPRODUCTIVE SYSTEM																									
Mammary gland	+	+	+	+	+	N	+	+	+	N	+	+	+	+	N	+	N	+	+	+	+	+	+	+	+
Adenoma, NOS																									
Adenocarcinoma, NOS																									
Papillary adenocarcinoma																									
Sarcoma, NOS, invasive																									
Fibrosarcoma																									
Fibroadenoma																						X			
Testis	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Interstitial cell tumor	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X
Prostate	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Squamous cell carcinoma																									
Preputial/clitoral gland	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Carcinoma, NOS												X													
Squamous cell carcinoma																									
Epididymis	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Lipoma					X																				
NERVOUS SYSTEM																									
Brain	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS, invasive																									
Astrocytoma																									
Astrocytoma, invasive																									
SPECIAL SENSE ORGANS																									
Ear	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	N	+	+	+	+	+
Squamous cell papilloma																									
Zymbal gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	N	+	+	+	+	+
Carcinoma, NOS		X																							
Squamous cell papilloma																									
Adenoma, NOS																									
MUSCULOSKELETAL SYSTEM																									
Bone	N	N	N	+	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Liposarcoma																									
Osteoma																									
Osteosarcoma																									
BODY CAVITIES																									
Peritoneum	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Sarcoma, NOS																									
Sarcoma, NOS, invasive																									
Mesothelioma, invasive																									
Tunica vaginalis	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Mesothelioma, NOS																									
Mesothelioma, malignant																			X						
Mesentery	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Mesothelioma, malignant																									
ALL OTHER SYSTEMS																									
Multiple organs, NOS	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Squamous cell carcinoma, invasive																									
Tubular cell adenocarcinoma, metastatic																									
C-cell carcinoma, metastatic																								X	
Sarcoma, NOS, invasive																									
Fibrosarcoma, invasive																									
Mesothelioma, invasive																			X						
Mesothelioma, metastatic																									
Osteosarcoma, metastatic																									
Malignant lymphoma, lymphocytic type																									
Malignant lymphoma, histiocytic type																									
Myelomonocytic leukemia																									
Monocytic leukemia			X	X		X	X		X			X			X			X		X		X	X		
Back, NOS																									
Basal cell carcinoma																									
Flank, NOS																									
Rhabdomyosarcoma																									
Sacral region																									
Neurofibroma																X									
Axilla, NOS																									
Fibroma																									
Fibrosarcoma																									
Scrotum, NOS																									
Mesothelioma, invasive																									

TABLE A2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF MALE RATS: 1% AMOSITE (Continued)

ANIMAL NUMBER	751	752	753	754	755	756	757	758	759	760	761	762	763	764	765	766	767	768	769	770	771	772	773	774	775
WEEKS ON STUDY	134	117	128	126	137	133	130	141	129	139	134	139	113	141	136	123	141	136	126	111	069	106	089	141	080
REPRODUCTIVE SYSTEM																									
Mammary gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	N	+	+	+	+	+	+	+	+	N
Adenoma, NOS																									
Adenocarcinoma, NOS																									
Papillary adenocarcinoma																									
Sarcoma, NOS, invasive																									
Fibrosarcoma																									
Fibroadenoma								X		X				X		A	X		X					X	
Testis	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+
Interstitial cell tumor	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X		X	X	X	
Prostate	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+
Squamous cell carcinoma																									
Preputial/clitoral gland	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Carcinoma, NOS																									
Squamous cell carcinoma																									
Epididymis	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Lipoma																									
NERVOUS SYSTEM																									
Brain	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+
Carcinoma, NOS, invasive																									
Astrocytoma																									
Astrocytoma, invasive																									
SPECIAL SENSE ORGANS																									
Ear	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	N	+	+	+	+	+	+	N	+	+
Squamous cell papilloma																									
Zymbal gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	N	+	+	+	+	+	+	N	+	+
Carcinoma, NOS																									
Squamous cell papilloma																									
Adenoma, NOS																									
MUSCULOSKELETAL SYSTEM																									
Bone	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Liposarcoma																									
Osteoma																									
Osteosarcoma																									
BODY CAVITIES																									
Peritoneum	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Sarcoma, NOS																									
Sarcoma, NOS, invasive																									
Mesothelioma, invasive																									
Tunica vaginalis	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	N	+	+	+	+	+	+	+	+	+
Mesothelioma, NOS																									
Mesothelioma, malignant																									
Mesentery	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Mesothelioma, malignant	X																								
ALL OTHER SYSTEMS																									
Multiple organs, NOS	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Squamous cell carcinoma, invasive																									
Tubular cell adenocarcinoma, metastatic																									
C-cell carcinoma, metastatic																									
Sarcoma, NOS, invasive																									
Fibrosarcoma, invasive																									
Mesothelioma, invasive	X																								
Mesothelioma, metastatic																									
Osteosarcoma, metastatic																					X				
Malignant lymphoma, lymphocytic type																									
Malignant lymphoma, histiocytic type																									
Myelomonocytic leukemia																									
Monocytic leukemia	X	X	X	X				X												X				X	
Back, NOS																									
Basal cell carcinoma																									
Flank, NOS																									
Rhabdomyosarcoma																									
Sacral region																									
Neurofibroma																									
Axilla, NOS																									
Fibroma																									
Fibrosarcoma																									
Scrotum, NOS																									
Mesothelioma, invasive																									

TABLE A2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF MALE RATS: 1% AMOSITE (Continued)

ANIMAL NUMBER	77 6	77 7	77 8	77 9	78 0	78 1	78 2	78 3	78 4	78 5	78 6	78 7	78 8	78 9	79 0	79 1	79 2	79 3	79 4	79 5	79 6	79 7	79 8	79 9	80 0
WEEKS ON STUDY	110	141	141	141	117	129	089	089	108	126	092	131	113	131	101	141	126	122	141	107	137	141	134	133	123
REPRODUCTIVE SYSTEM																									
Mammary gland	+	+	+	+	+	N	+	+	+	+	+	+	+	+	+	+	+	N	+	+	+	+	+	+	+
Adenoma, NOS										X															
Adenocarcinoma, NOS																									
Papillary adenocarcinoma																						X			
Sarcoma, NOS, invasive																									
Fibrosarcoma																									
Fibroadenoma					X							X													
Testis	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Interstitial cell tumor	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Prostate	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Squamous cell carcinoma																									
Preputial/clitoral gland	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Carcinoma, NOS																									
Squamous cell carcinoma																									
Epididymis	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Lipoma																									
NERVOUS SYSTEM																									
Brain	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS, invasive																									
Astrocytoma																									
Astrocytoma, invasive																									
SPECIAL SENSE ORGANS																									
Ear	N	+	+	+	+	+	+	N	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Squamous cell papilloma																									
Zymbal gland	N	+	+	+	+	+	+	N	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS																									
Squamous cell papilloma																									
Adenoma, NOS																									
MUSCULOSKELETAL SYSTEM																									
Bone	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Liposarcoma																									
Osteoma																									
Osteosarcoma																									
BODY CAVITIES																									
Peritoneum	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Sarcoma, NOS																									
Sarcoma, NOS, invasive																									
Mesothelioma, invasive																									
Tunica vaginalis	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Mesothelioma, NOS																									
Mesothelioma, malignant	X				X				X																
Mesentery	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Mesothelioma, malignant				X																					
ALL OTHER SYSTEMS																									
Multiple organs, NOS	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Squamous cell carcinoma, invasive																									
Tubular cell adenocarcinoma, metastatic																									
C-cell carcinoma, metastatic																									
Sarcoma, NOS, invasive																									
Fibrosarcoma, invasive																									
Mesothelioma, invasive	X				X				X																
Mesothelioma, metastatic																									
Osteosarcoma, metastatic																									
Malignant lymphoma, lymphocytic type																									
Malignant lymphoma, histiocytic type																									
Myelomonocytic leukemia																									
Monocytic leukemia		X				X				X	X	X	X		X		X		X	X	X			X	
Back, NOS																									
Basal cell carcinoma																									
Flank, NOS																									
Rhabdomyosarcoma			X																						
Sacral region																									
Neurofibroma																									
Axilla, NOS																									
Fibroma																									
Fibrosarcoma																									
Scrotum, NOS																									
Mesothelioma, invasive																									

TABLE A2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF MALE RATS: 1% AMOSITE (Continued)

ANIMAL NUMBER	801	802	803	804	805	806	807	808	809	810	811	812	813	814	815	816	817	818	819	820	821	822	823	824	825
WEEKS ON STUDY	096	117	120	119	121	121	080	134	105	124	141	058	133	141	136	131	141	128	113	126	133	141	137	117	070
REPRODUCTIVE SYSTEM																									
Mammary gland	+	+	N	+	+	N	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenoma, NOS																									
Adenocarcinoma, NOS																									
Papillary adenocarcinoma																									
Sarcoma, NOS, invasive																									
Fibrosarcoma																									
Fibroadenoma																		X							
Testis	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Interstitial cell tumor	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	
Prostate	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Squamous cell carcinoma																									
Preputial/clitoral gland	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Carcinoma, NOS																									
Squamous cell carcinoma																									
Epididymis	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Lipoma																									
NERVOUS SYSTEM																									
Brain	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS, invasive						X																			
Astrocytoma																									
Astrocytoma, invasive																									
SPECIAL SENSE ORGANS																									
Ear	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Squamous cell papilloma																									
Zymbal gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS			X																						
Squamous cell papilloma																									
Adenoma, NOS																									
MUSCULOSKELETAL SYSTEM																									
Bone	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Liposarcoma													X												
Osteoma																									
Osteosarcoma																									
BODY CAVITIES																									
Peritoneum	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Sarcoma, NOS																									
Sarcoma, NOS, invasive																									
Mesothelioma, invasive																									
Tunica vaginalis	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Mesothelioma, NOS																									
Mesothelioma, malignant																X									
Mesentery	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Mesothelioma, malignant																									
ALL OTHER SYSTEMS																									
Multiple organs, NOS	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Squamous cell carcinoma, invasive																									
Tubular cell adenocarcinoma, metastatic																									
C-cell carcinoma, metastatic																									
Sarcoma, NOS, invasive																									
Fibrosarcoma, invasive																									
Mesothelioma, invasive																X									
Mesothelioma, metastatic																									
Osteosarcoma, metastatic																									
Malignant lymphoma, lymphocytic type												X													X
Malignant lymphoma, histiocytic type																									
Myelomonocytic leukemia																									
Monocytic leukemia	X	X		X	X		X	X		X				X					X		X	X			
Back, NOS																									
Basal cell carcinoma																									
Flank, NOS																									
Rhabdomyosarcoma																									
Sacral region																									
Neurofibroma																									
Axilla, NOS																									
Fibroma																									
Fibrosarcoma																									
Scrotum, NOS																									
Mesothelioma, invasive																									

TABLE A2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF MALE RATS: 1% AMOSITE (Continued)

ANIMAL NUMBER	82 26	82 27	82 28	82 29	83 30	83 31	83 32	83 33	83 34	83 35	83 36	83 37	83 38	83 39	84 40	84 41	84 42	84 43	84 44	84 45	84 46	84 47	84 48	84 49	85 50
WEEKS ON STUDY	12 7	11 5	12 2	13 9	14 1	13 4	09 6	12 9	14 0	13 6	10 5	11 3	14 0	13 4	13 7	11 1	11 9	14 1	13 8	08 2	10 9	10 0	11 4	14 1	12 8
REPRODUCTIVE SYSTEM																									
Mammary gland	+	+	+	+	+	+	+	+	+	+	N	+	+	+	+	+	+	+	+	N	+	+	+	+	+
Adenoma, NOS																									
Adenocarcinoma, NOS																									
Papillary adenocarcinoma																									
Sarcoma, NOS, invasive								X																	
Fibrosarcoma													X												
Fibroadenoma													X						X					X	
Testis	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Interstitial cell tumor	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X
Prostate	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Squamous cell carcinoma																									
Preputial/clitoral gland	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Carcinoma, NOS																									
Squamous cell carcinoma																									
Epididymis	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Lipoma																									
NERVOUS SYSTEM																									
Brain	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS, invasive																									
Astrocytoma																									
Astrocytoma, invasive																									
SPECIAL SENSE ORGANS																									
Ear	+	+	+	+	+	+	+	+	+	+	N	+	+	+	+	+	+	+	+	N	+	+	+	+	+
Squamous cell papilloma																									
Zymbal gland	+	+	+	+	+	+	+	+	+	+	N	+	+	+	+	+	+	+	+	N	+	+	+	+	+
Carcinoma, NOS																									
Squamous cell papilloma																									
Adenoma, NOS																									X
MUSCULOSKELETAL SYSTEM																									
Bone	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Liposarcoma																									
Osteoma																									
Osteosarcoma																									
BODY CAVITIES																									
Peritoneum	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Sarcoma, NOS																									X
Sarcoma, NOS, invasive																									X
Mesothelioma, invasive																									
Tunica vaginalis	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Mesothelioma, NOS																									
Mesothelioma, malignant						X																			
Mesentery	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Mesothelioma, malignant																									
ALL OTHER SYSTEMS																									
Multiple organs, NOS	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Squamous cell carcinoma, invasive																									
Tubular cell adenocarcinoma, metastatic	X																								
C-cell carcinoma, metastatic																									
Sarcoma, NOS, invasive																									
Fibrosarcoma, invasive																									
Mesothelioma, invasive						X																			
Mesothelioma, metastatic																									
Osteosarcoma, metastatic																									
Malignant lymphoma, lymphocytic type																									
Malignant lymphoma, histiocytic type																									
Myelomonocytic leukemia									X																
Monocytic leukemia			X	X	X		X			X		X	X						X		X	X		X	X
Back, NOS																									
Basal cell carcinoma																									
Flank, NOS																									
Rhabdomyosarcoma																									
Sacral region																									
Neurofibroma																									
Axilla, NOS																									
Fibroma																									
Fibrosarcoma																									
Scrotum, NOS																									
Mesothelioma, invasive																									

TABLE A2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF MALE RATS: 1% AMOSITE (Continued)

ANIMAL NUMBER	851	852	853	854	855	856	857	858	859	860	861	862	863	864	865	866	867	868	869	870	871	872	873	874	875
WEEKS ON STUDY	141	126	108	124	108	141	110	116	141	110	126	136	120	128	141	141	124	131	131	120	138	141	131	080	127
REPRODUCTIVE SYSTEM																									
Mammary gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	N	+	N	+	+	+	+	+
Adenoma, NOS																						X			
Adenocarcinoma, NOS																									
Papillary adenocarcinoma																									
Sarcoma, NOS, invasive																									
Fibrosarcoma																									
Fibroadenoma												X									X	X			
Testis	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Interstitial cell tumor	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Prostate	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Squamous cell carcinoma																									
Preputial/clitoral gland	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Carcinoma, NOS																			X						
Squamous cell carcinoma																									
Epididymis	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Lipoma																									
NERVOUS SYSTEM																									
Brain	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS, invasive																									
Astrocytoma																									
Astrocytoma, invasive																									
SPECIAL SENSE ORGANS																									
Ear	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Squamous cell papilloma																									
Zymbal gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS		X																					X		
Squamous cell papilloma					X																				
Adenoma, NOS																									
MUSCULOSKELETAL SYSTEM																									
Bone	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Liposarcoma																									
Osteoma																									
Osteosarcoma																									
BODY CAVITIES																									
Peritoneum	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Sarcoma, NOS																									
Sarcoma, NOS, invasive																									
Mesothelioma, invasive																									
Tunica vaginalis	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Mesothelioma, NOS																									
Mesothelioma, malignant																									
Mesentery	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Mesothelioma, malignant																									
ALL OTHER SYSTEMS																									
Multiple organs, NOS	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Squamous cell carcinoma, invasive																									
Tubular cell adenocarcinoma, metastatic																									
C-cell carcinoma, metastatic																									
Sarcoma, NOS, invasive																									
Fibrosarcoma, invasive																									
Mesothelioma, invasive																									
Mesothelioma, metastatic																									
Osteosarcoma, metastatic																									
Malignant lymphoma, lymphocytic type																									
Malignant lymphoma, histiocytic type																									
Myelomonocytic leukemia																									
Monocytic leukemia				X	X	X		X	X			X	X	X			X		X			X			
Back, NOS																									
Basal cell carcinoma																									
Flank, NOS																									
Rhabdomyosarcoma																									
Sacral region																									
Neurofibroma																									
Axilla, NOS																									
Fibroma																									
Fibrosarcoma																									
Scrotum, NOS																									
Mesothelioma, invasive																									

TABLE A2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF MALE RATS: 1% AMOSITE (Continued)

ANIMAL NUMBER	876	877	878	879	880	881	882	883	884	885	886	887	888	889	890	891	892	893	894	895	896	897	898	899	900
WEEKS ON STUDY	120	121	136	105	131	131	138	135	104	121	108	123	133	118	127	141	108	132	137	127	137	137	131	141	139
REPRODUCTIVE SYSTEM																									
Mammary gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenoma, NOS																					X				
Adenocarcinoma, NOS																									
Papillary adenocarcinoma																									
Sarcoma, NOS, invasive																									
Fibrosarcoma																									
Fibroadenoma	X				X								X												
Testis	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Interstitial cell tumor	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Prostate	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Squamous cell carcinoma																									
Preputial/clitoral gland	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Carcinoma, NOS			X																						
Squamous cell carcinoma																									
Epididymis	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Lipoma																									
NERVOUS SYSTEM																									
Brain	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS, invasive																									
Astrocytoma																									
Astrocytoma, invasive																									
SPECIAL SENSE ORGANS																									
Ear	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Squamous cell papilloma			X																						
Zymbal gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS					X								X												
Squamous cell papilloma																									
Adenoma, NOS																									
MUSCULOSKELETAL SYSTEM																									
Bone	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Liposarcoma																									
Osteoma													X												
Osteosarcoma																									
BODY CAVITIES																									
Peritoneum	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Sarcoma, NOS																									
Sarcoma, NOS, invasive																									
Mesothelioma, invasive										X															
Tunica vaginalis	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Mesothelioma, NOS	X																								
Mesothelioma, malignant										X															
Mesentery	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Mesothelioma, malignant																									
ALL OTHER SYSTEMS																									
Multiple organs, NOS	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Squamous cell carcinoma, invasive																									
Tubular cell adenocarcinoma, metastatic																									
C-cell carcinoma, metastatic																									
Sarcoma, NOS, invasive																									
Fibrosarcoma, invasive																									
Mesothelioma, invasive																									
Mesothelioma, metastatic										X															
Osteosarcoma, metastatic																									
Malignant lymphoma, lymphocytic type																									
Malignant lymphoma, histiocytic type																									
Myelomonocytic leukemia																									
Monocytic leukemia	X						X								X	X	X			X	X	X	X		X
Back, NOS																									
Basal cell carcinoma																									
Flank, NOS																									
Rhabdomyosarcoma																									
Sacral region																									
Neurofibroma																									
Axilla, NOS																									
Fibroma																									
Fibrosarcoma																									
Scrotum, NOS																									
Mesothelioma, invasive										X															

TABLE A2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF MALE RATS: 1% AMOSITE (Continued)

ANIMAL NUMBER	901	902	903	904	905	906	907	908	909	910	911	912	913	914	915	916	917	918	919	920	921	922	923	924	925	TOTAL TISSUES TUMORS
WEEKS ON STUDY	126	141	120	120	082	141	139	131	116	130	112	121	126	137	132	131	134	112	103	129	125	121	120	121	125	
REPRODUCTIVE SYSTEM																										
Mammary gland	+	+	+	N	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	*250
Adenoma, NOS																				X						4
Adenocarcinoma, NOS																	X									1
Papillary adenocarcinoma																										1
Sarcoma, NOS, invasive																										1
Fibrosarcoma																										1
Fibroadenoma		X																			X					27
Testis	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	250
Interstitial cell tumor	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	240
Prostate	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	250
Squamous cell carcinoma																										1
Preputial/clitoral gland	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	*250
Carcinoma, NOS																		X								9
Squamous cell carcinoma																										1
Epididymis	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	*250
Lipoma																										1
NERVOUS SYSTEM																										
Brain	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	250
Carcinoma, NOS, invasive																										2
Astrocytoma																										2
Astrocytoma, invasive																										1
SPECIAL SENSE ORGANS																										
Ear	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	*250
Squamous cell papilloma																										1
Zymbal gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	*250
Carcinoma, NOS																										7
Squamous cell papilloma								X																		2
Adenoma, NOS																										1
MUSCULOSKELETAL SYSTEM																										
Bone	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	*250
Liposarcoma																										1
Osteoma																										1
Osteosarcoma																										1
BODY CAVITIES																										
Peritoneum	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	*250
Sarcoma, NOS																										1
Sarcoma, NOS, invasive																										1
Mesothelioma, invasive																										1
Tunica vaginalis	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	*250
Mesothelioma, NOS																										1
Mesothelioma, malignant																										7
Mesentery	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	*250
Mesothelioma, malignant																										2
ALL OTHER SYSTEMS																										
Multiple organs, NOS	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	*250
Squamous cell carcinoma, invasive																										1
Tubular cell adenocarcinoma, metastatic																										1
C-cell carcinoma, metastatic																										1
Sarcoma, NOS, invasive																										1
Fibrosarcoma, invasive										X																1
Mesothelioma, invasive																										7
Mesothelioma, metastatic																										1
Osteosarcoma, metastatic																										1
Malignant lymphoma, lymphocytic type																										2
Malignant lymphoma, histiocytic type																			X							1
Myelomonocytic leukemia																										1
Monocytic leukemia							X	X	X					X							X		X			103
Back, NOS																										
Basal cell carcinoma					X																					1
Flank, NOS																										
Rhabdomyosarcoma																										1
Sacral region																										
Neurofibroma																										1
Axilla, NOS																										
Fibroma																										1
Fibrosarcoma				X																						1
Scrotum, NOS																										
Mesothelioma, invasive																										1

* Animals necropsied

TABLE A2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF MALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS: 1% AMOSITE AND 1,2-DIMETHYLHYDRAZINE DIHYDROCHLORIDE

ANIMAL NUMBER	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200
WEEKS ON STUDY	063	069	097	092	115	039	069	105	083	102	120	120	106	120	093	066	120	082	080	095	095	069	074	120	065
INTEGUMENTARY SYSTEM																									
Skin	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	N	N	+	+	+	+
Squamous cell papilloma																									
Basal cell carcinoma																									
Keratoacanthoma				X																					
Fibrosarcoma																									
Subcutaneous tissue	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	N	N	+	+	+	+
Squamous cell carcinoma																									
Sarcoma, NOS																									
Fibroma																									
Fibrosarcoma																									
Hemangiosarcoma																									
Neurofibroma																									
RESPIRATORY SYSTEM																									
Lungs and bronchi	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS, metastatic																									
Hepatocellular carcinoma, metastatic					X																				
Alveolar/bronchiolar adenoma																									
Alveolar/bronchiolar carcinoma												X													
Pheochromocytoma, metastatic																									
Fibrosarcoma, metastatic																									
Trachea	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
HEMATOPOIETIC SYSTEM																									
Bone marrow	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Spleen	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenocarcinoma, NOS, metastatic																									
Mesothelioma, metastatic																									
Hemangiopericytoma, malignant																									
Lymph nodes	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS, metastatic																									
Adenocarcinoma, NOS, metastatic																									
Mucinous cystadenoca, metastatic																									X
Signet ring carcinoma, metastatic												X													
Pheochromocytoma, metastatic																									
Mesothelioma, metastatic																									
Thymus	+	+	+	+	–	+	+	–	+	–	–	+	+	+	+	–	–	+	+	+	+	+	+	+	+
CIRCULATORY SYSTEM																									
Heart	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
DIGESTIVE SYSTEM																									
Salivary gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	–	+	+	+	+	+	+	+	+	+
Liver	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Neoplastic nodule					X						X											X		X	
Hepatocellular carcinoma					X																				
Sarcoma, NOS																									
Lipoma																									
Hemangioma																									
Hemangiosarcoma											X														
Monocytic leukemia																									
Bile duct	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Gallbladder & common bile duct	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Pancreas	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Acinar cell adenoma																	X								
Esophagus	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Stomach	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenocarcinoma, NOS																									
Adenocarcinoma in adenomatous polyp, metastatic																									
Mucinous cystadenocarcinoma																X									
Small intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS																									
Adenocarcinoma, NOS		X												X				X							
Adenomatous polyp, NOS																									
Mucinous cystadenocarcinoma	X																		X		X			X	
Mucinous cystadenocarcinoma, metastatic																X									
Large intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma in-situ, NOS																									
Adenocarcinoma, NOS						X																			
Adenomatous polyp, NOS		X			X		X	X						X		X		X				X	@X		
Adenocarcinoma in adenomatous polyp	X		X	X	X										X				X						
Mucinous cystadenocarcinoma																									X
Mucinous cystadenocarcinoma, metastatic																									
Signet ring carcinoma												X	X												
URINARY SYSTEM																									
Kidney	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Sarcoma, NOS																									
Mixed tumor, malignant																									
Urinary bladder	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenomatous polyp, NOS																									

@: Multiple occurrence of morphology

TABLE A2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF MALE RATS: 1% AMOSITE AND 1,2-DIMETHYLHYDRAZINE DIHYDROCHLORIDE (Continued)

ANIMAL NUMBER	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225
WEEKS ON STUDY	086	065	105	120	102	070	119	083	077	100	095	120	106	067	080	078	094	110	095	116	095	107	070	086	120
INTEGUMENTARY SYSTEM																									
Skin	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Squamous cell papilloma																									
Basal cell carcinoma																									
Keratoacanthoma				X																					
Fibrosarcoma																									
Subcutaneous tissue	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Squamous cell carcinoma																									
Sarcoma, NOS																						X			
Fibroma																		X							
Fibrosarcoma																									
Hemangiosarcoma																									
Neurofibroma																									
RESPIRATORY SYSTEM																									
Lungs and bronchi	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS, metastatic																									
Hepatocellular carcinoma, metastatic																									
Alveolar/bronchiolar adenoma																									
Alveolar/bronchiolar carcinoma																									
Pheochromocytoma, metastatic																									
Fibrosarcoma, metastatic																									
Trachea	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
HEMATOPOIETIC SYSTEM																									
Bone marrow	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Spleen	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenocarcinoma, NOS, metastatic											X														
Mesothelioma, metastatic																									
Hemangiopericytoma, malignant											X														
Lymph nodes	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS, metastatic																									
Adenocarcinoma, NOS, metastatic																									
Mucinous cystadenoca, metastatic																									
Signet ring carcinoma, metastatic																									
Pheochromocytoma, metastatic																									
Mesothelioma, metastatic																									
Thymus	+	+	+	+	+	–	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
CIRCULATORY SYSTEM																									
Heart	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
DIGESTIVE SYSTEM																									
Salivary gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Liver	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Neoplastic nodule				X						X		X							X						
Hepatocellular carcinoma					X																				
Sarcoma, NOS																									
Lipoma																									
Hemangioma																									
Hemangiosarcoma																									
Monocytic leukemia																		X							
Bile duct	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Gallbladder & common bile duct	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Pancreas	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Acinar cell adenoma																									
Esophagus	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Stomach	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenocarcinoma, NOS																									
Adenocarcinoma in adenomatous polyp, metastatic																									
Mucinous cystadenocarcinoma																									
Small intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS																									
Adenocarcinoma, NOS																									X
Adenomatous polyp, NOS																									
Mucinous cystadenocarcinoma																									
Mucinous cystadenocarcinoma, metastatic																									
Large intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma in-situ, NOS																									
Adenocarcinoma, NOS																									
Adenomatous polyp, NOS			X		X				X										X		X			X	X
Adenocarcinoma in adenomatous polyp				X							@X	X		X	X	X									
Mucinous cystadenocarcinoma	@X											X			X										
Mucinous cystadenocarcinoma, metastatic																									
Signet ring carcinoma								X																	
URINARY SYSTEM																									
Kidney	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Sarcoma, NOS														X											
Mixed tumor, malignant			X																						
Urinary bladder	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenomatous polyp, NOS																									

@ Multiple occurrence of morphology

TABLE A2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF MALE RATS: 1% AMOSITE AND 1,2-DIMETHYLHYDRAZINE DIHYDROCHLORIDE (Continued)

ANIMAL NUMBER	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250
WEEKS ON STUDY	086	059	078	074	073	110	078	059	120	120	087	101	060	074	070	107	063	073	051	084	098	070	120	108	120
INTEGUMENTARY SYSTEM																									
Skin	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Squamous cell papilloma																									
Basal cell carcinoma																								X	
Keratoacanthoma																									
Fibrosarcoma																									
Subcutaneous tissue	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Squamous cell carcinoma																									
Sarcoma, NOS																									
Fibroma										X															
Fibrosarcoma																									
Hemangiosarcoma							X																		
Neurofibroma																									
RESPIRATORY SYSTEM																									
Lungs and bronchi	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS, metastatic		X																							
Hepatocellular carcinoma, metastatic																									
Alveolar/bronchiolar adenoma																									
Alveolar/bronchiolar carcinoma																							X		
Pheochromocytoma, metastatic																									
Fibrosarcoma, metastatic																									
Trachea	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
HEMATOPOIETIC SYSTEM																									
Bone marrow	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	–	+	+	+	+	+	+	+	+
Spleen	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenocarcinoma, NOS, metastatic																									
Mesothelioma, metastatic																									
Hemangiopericytoma, malignant																									
Lymph nodes	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS, metastatic		X																							
Adenocarcinoma, NOS, metastatic																									
Mucinous cystadenocarcinoma, metastatic																						X			
Signet ring carcinoma, metastatic																									
Pheochromocytoma, metastatic					X																				
Mesothelioma, metastatic											X														
Thymus	+	+	–	+	–	+	+	+	+	+	+	+	–	+	–	+	–	–	+	+	+	+	–	+	–
CIRCULATORY SYSTEM																									
Heart	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
DIGESTIVE SYSTEM																									
Salivary gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Liver	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Neoplastic nodule									X	X						X							X	X	
Hepatocellular carcinoma			X																						
Sarcoma, NOS																X									
Lipoma																									
Hemangioma																									
Hemangiosarcoma																									
Monocytic leukemia																									
Bile duct	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Gallbladder & common bile duct	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Pancreas	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Acinar cell adenoma									X																
Esophagus	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Stomach	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenocarcinoma, NOS																	X								
Adenocarcinoma in adenomatous polyp, metastatic																									
Mucinous cystadenocarcinoma																									
Small intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS																									
Adenocarcinoma, NOS																								X	
Adenomatous polyp, NOS																									
Mucinous cystadenocarcinoma				X									X												
Mucinous cystadenocarcinoma, metastatic																									
Large intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma in-situ, NOS																									
Adenocarcinoma, NOS												X						X							
Adenomatous polyp, NOS			X	X		X									X		X	X			X	X	@X		
Adenocarcinoma in adenomatous polyp			X	X					X					X		@X			X	X					
Mucinous cystadenocarcinoma	X																		X						
Mucinous cystadenocarcinoma, metastatic																									
Signet ring carcinoma																									
URINARY SYSTEM																									
Kidney	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Sarcoma, NOS																									
Mixed tumor, malignant																									
Urinary bladder	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenomatous polyp, NOS																									

@ Multiple occurrence of morphology

TABLE A2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF MALE RATS: 1% AMOSITE AND 1,2-DIMETHYLHYDRAZINE DIHYDROCHLORIDE (Continued)

ANIMAL NUMBER	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275
WEEKS ON STUDY	069	103	080	073	097	120	070	074	073	069	083	097	080	088	120	073	079	120	084	074	107	059	071	071	077
INTEGUMENTARY SYSTEM																									
Skin	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Squamous cell papilloma																									
Basal cell carcinoma																									
Keratoacanthoma																									
Fibrosarcoma						X																			
Subcutaneous tissue	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Squamous cell carcinoma																									
Sarcoma, NOS																									
Fibroma															X										
Fibrosarcoma																									
Hemangiosarcoma																									
Neurofibroma																								X	
RESPIRATORY SYSTEM																									
Lungs and bronchi	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS, metastatic																									
Hepatocellular carcinoma, metastatic																									
Alveolar/bronchiolar adenoma																									
Alveolar/bronchiolar carcinoma																									
Pheochromocytoma, metastatic																									
Fibrosarcoma, metastatic																									
Trachea	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
HEMATOPOIETIC SYSTEM																									
Bone marrow	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Spleen	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenocarcinoma, NOS, metastatic																									
Mesothelioma, metastatic																									
Hemangiopericytoma, malignant																									
Lymph nodes	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS, metastatic																									
Adenocarcinoma, NOS, metastatic																									X
Mucinous cystadenocarcinoma, metastatic																									
Signet ring carcinoma, metastatic																									
Pheochromocytoma, metastatic																									
Mesothelioma, metastatic																									
Thymus	−	−	+	−	+	−	+	+	+	+	+	+	+	+	+	−	+	+	+	+	+	+	−	−	+
CIRCULATORY SYSTEM																									
Heart	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
DIGESTIVE SYSTEM																									
Salivary gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Liver	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Neoplastic nodule				X		X																			
Hepatocellular carcinoma																									
Sarcoma, NOS																									
Lipoma																									
Hemangioma																									
Hemangiosarcoma																									
Monocytic leukemia															X										
Bile duct	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Gallbladder & common bile duct	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Pancreas	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Acinar cell adenoma		X																							
Esophagus	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Stomach	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenocarcinoma, NOS																									
Adenocarcinoma in adenomatous polyp, metastatic																									
Mucinous cystadenocarcinoma																									
Small intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS																									
Adenocarcinoma, NOS																									
Adenomatous polyp, NOS																									
Mucinous cystadenocarcinoma					X																				
Mucinous cystadenocarcinoma, metastatic																									
Large intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma in-situ, NOS																									
Adenocarcinoma, NOS				X																					X
Adenomatous polyp, NOS				X		X		X	@X						@X			X	X			X			
Adenocarcinoma in adenomatous polyp			X		X		X	X							X			X							
Mucinous cystadenocarcinoma															X										
Mucinous cystadenocarcinoma, metastatic																									
Signet ring carcinoma																									
URINARY SYSTEM																									
Kidney	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Sarcoma, NOS																									
Mixed tumor, malignant																									
Urinary bladder	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	−	+	+	+
Adenomatous polyp, NOS																									

@ Multiple occurrence of morphology

TABLE A2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF MALE RATS: 1% AMOSITE AND 1,2-DIMETHYLHYDRAZINE DIHYDROCHLORIDE (Continued)

ANIMAL NUMBER	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300
WEEKS ON STUDY	079	090	074	074	119	120	106	079	099	084	072	086	099	081	062	105	087	095	071	070	049	070	080	078	117
INTEGUMENTARY SYSTEM																									
Skin	+	+	+	+	+	+	+	+	+	N	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Squamous cell papilloma																									
Basal cell carcinoma																									
Keratoacanthoma							X				X														
Fibrosarcoma																					X				
Subcutaneous tissue	+	+	+	+	+	+	+	+	+	N	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Squamous cell carcinoma								X																	
Sarcoma, NOS																									
Fibroma																									
Fibrosarcoma																X									
Hemangiosarcoma																									
Neurofibroma																									
RESPIRATORY SYSTEM																									
Lungs and bronchi	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS, metastatic																									
Hepatocellular carcinoma, metastatic																									
Alveolar/bronchiolar adenoma																			X						
Alveolar/bronchiolar carcinoma																									
Pheochromocytoma, metastatic																									
Fibrosarcoma, metastatic																					X				
Trachea	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
HEMATOPOIETIC SYSTEM																									
Bone marrow	+	+	+	+	+	+	+	+	+	+	+	+	+	+	−	+	+	+	+	+	+	+	+	+	+
Spleen	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenocarcinoma, NOS, metastatic																									
Mesothelioma, metastatic											X														
Hemangiopericytoma, malignant																									
Lymph nodes	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS, metastatic																									
Adenocarcinoma, NOS, metastatic																									
Mucinous cystadenocarcinoma, metastatic																			@X						
Signet ring carcinoma, metastatic																							X		
Pheochromocytoma, metastatic																									
Mesothelioma, metastatic																									
Thymus	+	+	−	−	−	+	+	+	+	+	+	+	+	−	+	−	−	+	−	−	+	+	+	+	+
CIRCULATORY SYSTEM																									
Heart	+	+	+	+	+	+	+	+	+	+	+	+	+	+	−	+	+	+	+	+	+	+	+	+	+
DIGESTIVE SYSTEM																									
Salivary gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Liver	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Neoplastic nodule		X					X				X														
Hepatocellular carcinoma																X									
Sarcoma, NOS					X																				
Lipoma																									
Hemangioma																									
Hemangiosarcoma																									
Monocytic leukemia																									
Bile duct	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Gallbladder & common bile duct	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Pancreas	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Acinar cell adenoma																									
Esophagus	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Stomach	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenocarcinoma, NOS																									
Adenocarcinoma in adenomatous polyp, metastatic																									
Mucinous cystadenocarcinoma																									
Small intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS																									
Adenocarcinoma, NOS							X								X		X								
Adenomatous polyp, NOS																									
Mucinous cystadenocarcinoma																									
Mucinous cystadenocarcinoma, metastatic																									
Large intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma in-situ, NOS		X										X													
Adenocarcinoma, NOS	X																								
Adenomatous polyp, NOS	X	X	X	X	X	X	X	X		X	X	X	X					X	X					X	
Adenocarcinoma in adenomatous polyp	X	X		X	@X							X			X									X	
Mucinous cystadenocarcinoma									X										X						
Mucinous cystadenocarcinoma, metastatic																									
Signet ring carcinoma			X																				X		
URINARY SYSTEM																									
Kidney	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Sarcoma, NOS																									
Mixed tumor, malignant																									
Urinary bladder	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenomatous polyp, NOS																									

@ Multiple occurrence of morphology

TABLE A2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF MALE RATS: 1% AMOSITE AND 1,2-DIMETHYLHYDRAZINE DIHYDROCHLORIDE (Continued)

ANIMAL NUMBER	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325
WEEKS ON STUDY	103	080	120	111	083	092	074	076	089	049	099	077	098	057	120	120	120	093	080	099	120	070	074	082	074
INTEGUMENTARY SYSTEM																									
Skin	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Squamous cell papilloma																									
Basal cell carcinoma																									
Keratoacanthoma						X																			
Fibrosarcoma																									
Subcutaneous tissue	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Squamous cell carcinoma																									
Sarcoma, NOS																									
Fibroma				X											X	X									
Fibrosarcoma																									
Hemangiosarcoma																									
Neurofibroma																									
RESPIRATORY SYSTEM																									
Lungs and bronchi	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS, metastatic																									
Hepatocellular carcinoma, metastatic																									
Alveolar/bronchiolar adenoma																									
Alveolar/bronchiolar carcinoma																									
Pheochromocytoma, metastatic																									
Fibrosarcoma, metastatic																									
Trachea	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
HEMATOPOIETIC SYSTEM																									
Bone marrow	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Spleen	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenocarcinoma, NOS, metastatic																									
Mesothelioma, metastatic																									
Hemangiopericytoma, malignant																									
Lymph nodes	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS, metastatic																									
Adenocarcinoma, NOS, metastatic																									
Mucinous cystadenocarcinoma, metastatic																									
Signet ring carcinoma, metastatic																									
Pheochromocytoma, metastatic																									
Mesothelioma, metastatic																									
Thymus	−	+	+	+	+	+	+	+	+	+	+	+	+	+	+	−	−	+	+	+	−	−	+	+	+
CIRCULATORY SYSTEM																									
Heart	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
DIGESTIVE SYSTEM																									
Salivary gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Liver	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Neoplastic nodule											X	X				X					X				
Hepatocellular carcinoma												X									X				
Sarcoma, NOS																									
Lipoma																									
Hemangioma						X																			
Hemangiosarcoma																									
Monocytic leukemia																									
Bile duct	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Gallbladder & common bile duct	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Pancreas	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Acinar cell adenoma																									
Esophagus	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Stomach	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenocarcinoma, NOS																									
Adenocarcinoma in adenomatous polyp, metastatic					X																				
Mucinous cystadenocarcinoma																									
Small intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS																									X
Adenocarcinoma, NOS														X											
Adenomatous polyp, NOS																						X			
Mucinous cystadenocarcinoma																									
Mucinous cystadenocarcinoma, metastatic																									
Large intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma in-situ, NOS																									
Adenocarcinoma, NOS																									
Adenomatous polyp, NOS							X				X							@X			X		@X		
Adenocarcinoma in adenomatous polyp					X		X									X								@X	X
Mucinous cystadenocarcinoma								X		X			X												
Mucinous cystadenocarcinoma, metastatic																									
Signet ring carcinoma																									
URINARY SYSTEM																									
Kidney	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Sarcoma, NOS																							X		
Mixed tumor, malignant																									
Urinary bladder	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenomatous polyp, NOS																									

@ Multiple occurrence of morphology

TABLE A2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF MALE RATS: 1% AMOSITE AND 1,2-DIMETHYLHYDRAZINE DIHYDROCHLORIDE (Continued)

ANIMAL NUMBER	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	TOTAL. TISSUES TUMORS
WEEKS ON STUDY	082	069	062	110	097	073	053	111	078	075	073	067	113	120	120	120	120	073	120	071	102	063	070	074	098	
INTEGUMENTARY SYSTEM																										
Skin	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	*175
Squamous cell papilloma																X										1
Basal cell carcinoma																										1
Keratoacanthoma																										5
Fibrosarcoma																										2
Subcutaneous tissue	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	*175
Squamous cell carcinoma																										1
Sarcoma, NOS																										1
Fibroma																										6
Fibrosarcoma																										1
Hemangiosarcoma					X																					2
Neurofibroma																										1
RESPIRATORY SYSTEM																										
Lungs and bronchi	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	175
Carcinoma, NOS, metastatic																										1
Hepatocellular carcinoma, metastatic																										1
Alveolar/bronchiolar adenoma																										1
Alveolar/bronchiolar carcinoma																										2
Pheochromocytoma, metastatic													X													1
Fibrosarcoma, metastatic																										1
Trachea	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	175
HEMATOPOIETIC SYSTEM																										
Bone marrow	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	173
Spleen	+	+	+	+	+	+	+	+	+	+	+	+	+	−	+	+	+	+	+	+	+	+	+	+	+	174
Adenocarcinoma, NOS, metastatic																										1
Mesothelioma, metastatic																										1
Hemangiopericytoma, malignant																										1
Lymph nodes	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	175
Carcinoma, NOS, metastatic																										1
Adenocarcinoma, NOS, metastatic																										1
Mucinous cystadenocarcinoma, meta						X																				4
Signet ring carcinoma, metastatic																										2
Pheochromocytoma, metastatic																										1
Mesothelioma, metastatic																										1
Thymus	+	+	−	+	+	−	+	+	+	+	+	+	+	−	+	−	+	+	+	+	+	A	−	+	+	134
CIRCULATORY SYSTEM																										
Heart	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	174
DIGESTIVE SYSTEM																										
Salivary gland	+	−	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	173
Liver	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	175
Neoplastic nodule	X			X				X								X			X							27
Hepatocellular carcinoma																	X									7
Sarcoma, NOS																										2
Lipoma								X																		1
Hemangioma																										1
Hemangiosarcoma																										1
Monocytic leukemia																			X							3
Bile duct	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	175
Gallbladder & common bile duct	N	N	N	N	N	N	N	+	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	*175
Pancreas	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	175
Acinar cell adenoma				X												X										5
Esophagus	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	175
Stomach	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	175
Adenocarcinoma, NOS																										1
Adenoca in adenomatous polyp, meta																										1
Mucinous cystadenocarcinoma																										1
Small intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	175
Carcinoma, NOS																										1
Adenocarcinoma, NOS																										9
Adenomatous polyp, NOS																										1
Mucinous cystadenocarcinoma																										7
Mucinous cystadenocarcinoma, meta																										1
Large intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	175
Carcinoma in situ, NOS																										2
Adenocarcinoma, NOS																										6
Adenomatous polyp, NOS	X						X		X							X	X		@X	X		@X				61
Adenocarcinoma in adenomatous polyp		X								X			X			X			X	X					X	45
Mucinous cystadenocarcinoma			X			X	@X					X											X			18
Mucinous cystadenocarcinoma, meta						X																				1
Signet ring carcinoma																										5
URINARY SYSTEM																										
Kidney	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	175
Sarcoma, NOS								X																		3
Mixed tumor, malignant																										1
Urinary bladder	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	174
Adenomatous polyp, NOS	X																									1

* Animals necropsied
@ Multiple occurrence of morphology

TABLE A2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF MALE RATS: 1% AMOSITE AND 1,2-DIMETHYLHYDRAZINE DIHYDROCHLORIDE (Continued)

ANIMAL NUMBER	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200
WEEKS ON STUDY	063	069	097	092	115	039	069	105	083	102	120	120	106	120	093	066	120	082	080	095	095	089	074	120	065
ENDOCRINE SYSTEM																									
Pituitary	+	+	+	+	−	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenoma, NOS																	X								
Adrenal	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Pheochromocytoma								X						X										X	
Pheochromocytoma, malignant																									
Thyroid	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	−	+	+	+	+	+	+	+	+	+
Follicular cell adenoma																	X								
Follicular cell carcinoma													X												
C-cell adenoma			X								X						X								
C-cell carcinoma					X							X		X											
Parathyroid	+	+	+	+	+	+	+	+	+	+	+	+	+	−	+	−	+	+	+	+	+	+	+	+	+
Adenoma, NOS																									
Pancreatic islets	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Islet cell adenoma																									
Islet cell carcinoma												X													
REPRODUCTIVE SYSTEM																									
Mammary gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Fibroadenoma											X														
Testis	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Interstitial cell tumor			X	X	X			X	X	X	X	X	X	X	X		X	X	X		X		X	X	
Prostate	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Coagulating gland	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Adenoma, NOS																				X					
Preputial/clitoral gland	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Carcinoma, NOS			X									X													
Epididymis	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Mesothelioma, invasive																									
NERVOUS SYSTEM																									
Brain	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
SPECIAL SENSE ORGANS																									
Harderian gland	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Carcinoma, NOS																									
Ear	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	N	+	+	+	+	+	+	+	+	+
Squamous cell papilloma																									
Zymbal gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	N	+	+	+	+	+	+	+	+	+
Carcinoma, NOS				X																					X
Squamous cell papilloma					X												X								
Keratoacanthoma																									
BODY CAVITIES																									
Mediastinum	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Hemangiosarcoma																									
Tunica vaginalis	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Mesothelioma, NOS																									
Mesothelioma, malignant																				X					
Mesentery	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Adenocarcinoma, NOS, invasive																									
Adenocarcinoma in adenomatous polyp, metastatic																									
Mesothelioma, metastatic																									
ALL OTHER SYSTEMS																									
Multiple organs, NOS	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Adenocarcinoma, NOS, metastatic		X				X																			
Mucinous cystadenocarcinoma, metastatic																									
Signet ring carcinoma, invasive												X													
Sarcoma, NOS, invasive																									
Mesothelioma, invasive																				X					
Mesothelioma, metastatic																									
Malignant lymphoma, histiocytic type																									
Monocytic leukemia					X			X		X														X	
Scrotum, NOS																									
Mesothelioma, invasive																									

TABLE A2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF MALE RATS: 1% AMOSITE AND 1,2-DIMETHYLHYDRAZINE DIHYDROCHLORIDE (Continued)

ANIMAL NUMBER	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225
WEEKS ON STUDY	086	065	105	120	102	070	119	083	077	100	095	120	106	067	080	078	094	110	095	116	095	107	070	086	120
ENDOCRINE SYSTEM																									
Pituitary	+	–	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenoma, NOS			X								X														
Adrenal	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Pheochromocytoma							X																		
Pheochromocytoma, malignant																									
Thyroid	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Follicular cell adenoma																									
Follicular cell carcinoma																									
C-cell adenoma																									
C-cell carcinoma																						X			
Parathyroid	+	+	+	–	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenoma, NOS																									
Pancreatic islets	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Islet cell adenoma																									
Islet cell carcinoma																									
REPRODUCTIVE SYSTEM																									
Mammary gland	N	N	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	N	+	+	+	+	+	+	+
Fibroadenoma				X																					
Testis	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Interstitial cell tumor			X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X
Prostate	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Coagulating gland	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Adenoma, NOS																									
Preputial/clitoral gland	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Carcinoma, NOS										X															
Epididymis	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Mesothelioma, invasive																									
NERVOUS SYSTEM																									
Brain	+	+	+	+	+	+	+	+	+	+	+	+	+	–	+	+	+	+	+	+	+	+	+	+	+
SPECIAL SENSE ORGANS																									
Harderian gland	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Carcinoma, NOS																									
Ear	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Squamous cell papilloma																									
Zymbal gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS	X					X				X									X						
Squamous cell papilloma																	X	X					X	X	
Keratoacanthoma																									
BODY CAVITIES																									
Mediastinum	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Hemangiosarcoma																									
Tunica vaginalis	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Mesothelioma, NOS															X										
Mesothelioma, malignant																									
Mesentery	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Adenocarcinoma, NOS, invasive																									X
Adenocarcinoma in adenomatous polyp, metastatic															X										
Mesothelioma, metastatic																									
ALL OTHER SYSTEMS																									
Multiple organs, NOS	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Adenocarcinoma, NOS, metastatic																									
Mucinous cystadenocarcinoma, metastatic		X																							
Signet ring carcinoma, invasive																									
Sarcoma, NOS, invasive																						X			
Mesothelioma, invasive																									
Mesothelioma, metastatic																									
Malignant lymphoma, histiocytic type																									
Monocytic leukemia				X			X			X	X						X		X	X					
Scrotum, NOS																									
Mesothelioma, invasive																									

TABLE A2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF MALE RATS: 1% AMOSITE AND 1,2-DIMETHYLHYDRAZINE DIHYDROCHLORIDE (Continued)

ANIMAL NUMBER	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250
WEEKS ON STUDY	086	059	078	074	073	110	078	059	120	120	087	101	060	074	070	107	063	073	051	084	098	070	120	108	120
ENDOCRINE SYSTEM																									
Pituitary	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenoma, NOS	X									X															
Adrenal	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Pheochromocytoma						X			X									X							
Pheochromocytoma, malignant						X																			
Thyroid	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Follicular cell adenoma				X																				X	X
Follicular cell carcinoma																									
C-cell adenoma																									
C-cell carcinoma																									
Parathyroid	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenoma, NOS																									X
Pancreatic islets	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Islet cell adenoma																									
Islet cell carcinoma																									
REPRODUCTIVE SYSTEM																									
Mammary gland	+	+	+	+	+	+	+	+	+	+	+	+	N	+	+	+	N	+	+	+	+	+	+	+	+
Fibroadenoma										X														X	
Testis	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Interstitial cell tumor			X	X	X	X	X		X	X		X		X		X		X		X	X	X		X	X
Prostate	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Coagulating gland	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Adenoma, NOS																									
Preputial/clitoral gland	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Carcinoma, NOS																									
Epididymis	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Mesothelioma, invasive																		X							
NERVOUS SYSTEM																									
Brain	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
SPECIAL SENSE ORGANS																									
Harderian gland	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Carcinoma, NOS		X																							
Ear	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	N	+	+	+	+	+	+	+	+	+
Squamous cell papilloma																									
Zymbal gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	N	+	+	+	+	+	+	+	+	+
Carcinoma, NOS						X		X	X												X				
Squamous cell papilloma		X																X							X
Keratoacanthoma																									
BODY CAVITIES																									
Mediastinum	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Hemangiosarcoma																									
Tunica vaginalis	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Mesothelioma, NOS																									
Mesothelioma, malignant											X							X							
Mesentery	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Adenocarcinoma, NOS, invasive																									
Adenocarcinoma in adenomatous polyp, metastatic																									
Mesothelioma, metastatic																									
ALL OTHER SYSTEMS																									
Multiple organs, NOS	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Adenocarcinoma, NOS, metastatic																	X								
Mucinous cystadenocarcinoma, metastatic	X																		X						
Signet ring carcinoma, invasive																									
Sarcoma, NOS, invasive																									
Mesothelioma, invasive											X														
Mesothelioma, metastatic																									
Malignant lymphoma, histiocytic type																									
Monocytic leukemia					X				X	X		X										X		X	
Scrotum, NOS																									
Mesothelioma, invasive																		X							

TABLE A2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF MALE RATS: 1% AMOSITE AND 1,2-DIMETHYLHYDRAZINE DIHYDROCHLORIDE (Continued)

ANIMAL NUMBER	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275
WEEKS ON STUDY	069	103	080	073	097	120	070	074	073	069	083	097	080	088	120	073	079	120	084	074	107	059	071	071	077
ENDOCRINE SYSTEM																									
Pituitary	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenoma, NOS					X							X		X				X							
Adrenal	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Pheochromocytoma		X																X	X						
Pheochromocytoma, malignant																									
Thyroid	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Follicular cell adenoma					X						X	X													
Follicular cell carcinoma															X										
C-cell adenoma																		X							
C-cell carcinoma																									
Parathyroid	+	+	+	+	+	+	+	+	+	+	+	+	+	+	−	+	−	+	+	+	+	+	+	+	+
Adenoma, NOS																									
Pancreatic islets	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Islet cell adenoma																									
Islet cell carcinoma		X																							
REPRODUCTIVE SYSTEM																									
Mammary gland	N	+	+	+	+	+	N	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Fibroadenoma																									
Testis	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	−	+	+	+
Interstitial cell tumor		X	X	X		X		X	X		X	X	X	X	X			X	X	X	X		X	X	X
Prostate	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	−	+	+	+
Coagulating gland	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Adenoma, NOS																									
Preputial/clitoral gland	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Carcinoma, NOS												X													
Epididymis	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Mesothelioma, invasive																									
NERVOUS SYSTEM																									
Brain	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
SPECIAL SENSE ORGANS																									
Harderian gland	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Carcinoma, NOS																									
Ear	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Squamous cell papilloma																									
Zymbal gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS					X		X			X							X		X	X		X			X
Squamous cell papilloma																							X	X	
Keratoacanthoma																									
BODY CAVITIES																									
Mediastinum	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Hemangiosarcoma																									
Tunica vaginalis	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	N	+	+	+
Mesothelioma, NOS																									
Mesothelioma, malignant		X																							
Mesentery	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Adenocarcinoma, NOS, invasive																									
Adenocarcinoma in adenomatous polyp, metastatic																									
Mesothelioma, metastatic																									
ALL OTHER SYSTEMS																									
Multiple organs, NOS	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Adenocarcinoma, NOS, metastatic																									
Mucinous cystadenocarcinoma, metastatic					X																				
Signet ring carcinoma, invasive																									
Sarcoma, NOS, invasive																									
Mesothelioma, invasive																									
Mesothelioma, metastatic		X																							
Malignant lymphoma, histiocytic type																									
Monocytic leukemia						X						X		X				X	X		X				
Scrotum, NOS																									
Mesothelioma, invasive																									

TABLE A2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF MALE RATS: 1% AMOSITE AND 1,2-DIMETHYLHYDRAZINE DIHYDROCHLORIDE (Continued)

ANIMAL NUMBER	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300
WEEKS ON STUDY	079	090	074	074	119	120	106	079	099	084	072	086	099	081	062	105	087	095	071	070	049	070	080	078	117
ENDOCRINE SYSTEM																									
Pituitary	+	+	+	+	+	+	–	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	–
Adenoma, NOS					X																				
Adrenal	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Pheochromocytoma		X				X	X																		
Pheochromocytoma, malignant																									
Thyroid	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Follicular cell adenoma											X														
Follicular cell carcinoma																									
C-cell adenoma					X	X																			X
C-cell carcinoma																X									
Parathyroid	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenoma, NOS																									
Pancreatic islets	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Islet cell adenoma													X												X
Islet cell carcinoma																									
REPRODUCTIVE SYSTEM																									
Mammary gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Fibroadenoma																									
Testis	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Interstitial cell tumor		X			X	X	X	X	X	X	X	X	X	X		X	X	X					X	X	X
Prostate	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Coagulating gland	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Adenoma, NOS																									
Preputial/clitoral gland	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Carcinoma, NOS																									
Epididymis	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Mesothelioma, invasive																									
NERVOUS SYSTEM																									
Brain	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
SPECIAL SENSE ORGANS																									
Harderian gland	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Carcinoma, NOS																									
Ear	+	+	+	+	+	+	N	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Squamous cell papilloma																					X				
Zymbal gland	+	+	+	+	+	+	N	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS				X	X								X					X		X		X			X
Squamous cell papilloma									X																
Keratoacanthoma																			X				X		
BODY CAVITIES																									
Mediastinum	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Hemangiosarcoma																									
Tunica vaginalis	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Mesothelioma, NOS																									
Mesothelioma, malignant											X														
Mesentery	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Adenocarcinoma, NOS, invasive																									
Adenocarcinoma in adenomatous polyp, metastatic																									
Mesothelioma, metastatic											X														
ALL OTHER SYSTEMS																									
Multiple organs, NOS	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Adenocarcinoma, NOS, metastatic							X								X		X								
Mucinous cystadenocarcinoma, metastatic									X																
Signet ring carcinoma, invasive																									
Sarcoma, NOS, invasive																									
Mesothelioma, invasive											X														
Mesothelioma, metastatic																									
Malignant lymphoma, histiocytic type													X												
Monocytic leukemia						X										X									X
Scrotum, NOS																									
Mesothelioma, invasive																									

TABLE A2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF MALE RATS: 1% AMOSITE AND 1,2-DIMETHYLHYDRAZINE DIHYDROCHLORIDE (Continued)

ANIMAL NUMBER	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325
WEEKS ON STUDY	103	080	120	111	083	092	074	076	089	049	099	077	098	057	120	120	120	093	080	099	120	070	074	082	074
ENDOCRINE SYSTEM																									
Pituitary	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenoma, NOS																			X						
Adrenal	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Pheochromocytoma																									
Pheochromocytoma, malignant																									
Thyroid	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Follicular cell adenoma																									
Follicular cell carcinoma																									
C-cell adenoma		X																							
C-cell carcinoma	X												X								X				
Parathyroid	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenoma, NOS																									
Pancreatic islets	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Islet cell adenoma																				X					
Islet cell carcinoma	X																								
REPRODUCTIVE SYSTEM																									
Mammary gland	+	+	+	+	+	+	+	+	+	+	N	+	N	+	+	+	+	+	+	+	+	+	+	+	+
Fibroadenoma																									
Testis	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Interstitial cell tumor	X		X	X	X	X	X	X	X		X		X		X	X	X	X	X	X	X	X		X	
Prostate	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Coagulating gland	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Adenoma, NOS																									
Preputial/clitoral gland	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Carcinoma, NOS																									
Epididymis	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Mesothelioma, invasive																									
NERVOUS SYSTEM																									
Brain	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
SPECIAL SENSE ORGANS																									
Harderian gland	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Carcinoma, NOS																									
Ear	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Squamous cell papilloma																									
Zymbal gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS						X					X							X		X	X	X			
Squamous cell papilloma																X									
Keratoacanthoma																									
BODY CAVITIES																									
Mediastinum	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Hemangiosarcoma																									
Tunica vaginalis	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Mesothelioma, NOS																									
Mesothelioma, malignant																									
Mesentery	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Adenocarcinoma, NOS, invasive																									
Adenocarcinoma in adenomatous polyp, metastatic					X																				
Mesothelioma, metastatic																									
ALL OTHER SYSTEMS																									
Multiple organs, NOS	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Adenocarcinoma, NOS, metastatic														X											
Mucinous cystadenocarcinoma, metastatic										X															
Signet ring carcinoma, invasive																									
Sarcoma, NOS, invasive																									
Mesothelioma, invasive																									
Mesothelioma, metastatic																									
Malignant lymphoma, histiocytic type																									
Monocytic leukemia	X	X							X			X	X		X		X				X				
Scrotum, NOS																									
Mesothelioma, invasive																									

TABLE A2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF MALE RATS: 1% AMOSITE AND 1,2-DIMETHYLHYDRAZINE DIHYDROCHLORIDE (Continued)

ANIMAL NUMBER	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	TOTAL: TISSUES TUMORS
WEEKS ON STUDY	082	069	062	110	097	073	053	111	078	057	073	067	113	120	120	120	120	073	120	071	102	063	070	074	098	
ENDOCRINE SYSTEM																										
Pituitary	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	171
Adenoma, NOS								X																		12
Adrenal	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	175
Pheochromocytoma					X											X										16
Pheochromocytoma, malignant													X													2
Thyroid	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	174
Follicular cell adenoma															X	X										10
Follicular cell carcinoma																	X									3
C-cell adenoma																	X									9
C-cell carcinoma																X					X					10
Parathyroid	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	170
Adenoma, NOS																										1
Pancreatic islets	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	175
Islet cell adenoma																										3
Islet cell carcinoma																										3
REPRODUCTIVE SYSTEM																										
Mammary gland	+	+	N	+	N	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	*175
Fibroadenoma																			X							5
Testis	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	174
Interstitial cell tumor	X			X	X			X	X				X	X	X	X	X	X	X		X			X	X	125
Prostate	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	174
Coagulating gland	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	*175
Adenoma, NOS																										1
Preputial/clitoral gland	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	*175
Carcinoma, NOS																										4
Epididymis	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	*175
Mesothelioma, invasive																										1
NERVOUS SYSTEM																										
Brain	+	–	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	173
SPECIAL SENSE ORGANS																										
Harderian gland	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	*175
Carcinoma, NOS																										1
Ear	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	N	+	+	+	+	+	+	+	+	+	*175
Squamous cell papilloma																										1
Zymbal gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	N	+	+	+	+	+	+	+	+	+	*175
Carcinoma, NOS									X					X							X				X	35
Squamous cell papilloma		X		X				X											X							17
Keratoacanthoma											X															3
BODY CAVITIES																										
Mediastinum	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	*175
Hemangiosarcoma																							X			1
Tunica vaginalis	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	*175
Mesothelioma, NOS																										1
Mesothelioma, malignant																										5
Mesentery	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	*175
Adenocarcinoma, NOS, invasive																										1
Adenoca in adenomatous polyp, meta																										2
Mesothelioma, metastatic																										1
ALL OTHER SYSTEMS																										
Multiple organs, NOS	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	*175
Adenocarcinoma, NOS, metastatic																										7
Mucinous cystadenocarcinoma, meta			X				X					X												X		10
Signet ring carcinoma, invasive																										1
Sarcoma, NOS, invasive																										1
Mesothelioma, invasive																										3
Mesothelioma, metastatic																										1
Malignant lymphoma, histiocytic type																										1
Monocytic leukemia															X	X	X									37
Scrotum, NOS																										
Mesothelioma, invasive																										1

* Animals necropsied

TABLE A2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF MALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS: 1% AMOSITE AND PREWEANING GAVAGE

ANIMAL NUMBER	52 26	52 27	52 28	52 29	53 01	53 31	53 32	53 33	53 34	53 35	53 36	53 37	53 38	53 39	54 01	54 11	54 21	54 31	54 41	54 42	54 43	54 44	54 45	54 46	54 47	54 48	54 49	55 01
WEEKS ON STUDY	122	116	120	134	102	127	082	127	124	086	108	092	091	083	141	113	107	137	119	121	133	141	101	106	141
INTEGUMENTARY SYSTEM																												
Skin	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	X	+	X	+	+
Squamous cell papilloma																												
Squamous cell carcinoma																					X							
Basal cell carcinoma															X													
Trichoepithelioma																												
Keratoacanthoma																												
Subcutaneous tissue	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Sarcoma, NOS										X										X								
Fibroma	X	X					X																					
Fibrosarcoma																												
Lipoma																												
Osteosarcoma																												
Neurofibrosarcoma																												
RESPIRATORY SYSTEM																												
Lungs and bronchi	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Alveolar/bronchiolar carcinoma																												
Interstitial cell tumor, metastatic																									X			
Osteosarcoma, metastatic																												
Trachea	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
HEMATOPOIETIC SYSTEM																												
Bone marrow	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Spleen	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Fibrosarcoma																												
Hemangiosarcoma																												
Lymph nodes	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Neurofibrosarcoma, metastatic																												
Thymus	+	+	+	−	+	+	+	+	+	+	+	+	+	−	+	−	+	−	+	−	−	−	+	−	+	+	+	−
CIRCULATORY SYSTEM																												
Heart	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
DIGESTIVE SYSTEM																												
Oral cavity	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Squamous cell papilloma																			X									
Salivary gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Sarcoma, NOS, invasive																												
Fibrosarcoma, invasive																												
Liver	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Neoplastic nodule																												
Hepatocellular carcinoma																					X							
Alveolar/bronchiolar carcinoma, metastatic																												
Monocytic leukemia																												
Bile duct	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Gallbladder & common bile duct	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Pancreas	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Acinar cell adenoma																												
Acinar cell carcinoma																												
Esophagus	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Squamous cell papilloma																												
Stomach	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Small intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Mucinous cystadenocarcinoma																										X		
Leiomyosarcoma																												
Large intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenomatous polyp, NOS																												
Adenocarcinoma in adenomatous polyp							X																					
Leiomyoma																												X
URINARY SYSTEM																												
Kidney	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Alveolar/bronchiolar carcinoma, metastatic																												
Tubular cell adenoma																												
Tubular cell adenocarcinoma																												
Mixed tumor, benign		X																										
Urinary bladder	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+

TABLE A2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF MALE RATS: 1% AMOSITE AND PREWEANING GAVAGE (Continued)

ANIMAL NUMBER	551	552	553	554	555	556	557	558	559	560	561	562	563	564	565	566	567	568	569	570	571	572	573	574	575
WEEKS ON STUDY	120	135	141	097	124	080	088	122	103	123	114	134	117	124	119	107	130	137	118	080	122	129	122	121	127
INTEGUMENTARY SYSTEM																									
Skin	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Squamous cell papilloma																									X
Squamous cell carcinoma																									
Basal cell carcinoma										X															
Trichoepithelioma																						X			
Keratoacanthoma																	X						X		
Subcutaneous tissue	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Sarcoma, NOS																									
Fibroma												X											X		
Fibrosarcoma					X																				
Lipoma																									
Osteosarcoma																									
Neurofibrosarcoma																									
RESPIRATORY SYSTEM																									
Lungs and bronchi	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Alveolar/bronchiolar carcinoma																	X								
Interstitial cell tumor, metastatic																									
Osteosarcoma, metastatic																									
Trachea	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
HEMATOPOIETIC SYSTEM																									
Bone marrow	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Spleen	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Fibrosarcoma																									
Hemangiosarcoma																				X					
Lymph nodes	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Neurofibrosarcoma, metastatic																									
Thymus	+	−	−	+	+	+	−	+	+	+	+	+	−	+	+	+	+	+	+	+	+	−	−	+	+
CIRCULATORY SYSTEM																									
Heart	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
DIGESTIVE SYSTEM																									
Oral cavity	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Squamous cell papilloma																									
Salivary gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Sarcoma, NOS, invasive																									
Fibrosarcoma, invasive					X																				
Liver	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Neoplastic nodule												X		X							X				
Hepatocellular carcinoma																									
Alveolar/bronchiolar carcinoma, metastatic																									
Monocytic leukemia																									
Bile duct	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Gallbladder & common bile duct	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Pancreas	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Acinar cell adenoma																									
Acinar cell carcinoma																									
Esophagus	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Squamous cell papilloma			X																						
Stomach	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Small intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Mucinous cystadenocarcinoma																									
Leiomyosarcoma			X																						
Large intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenomatous polyp, NOS																									
Adenocarcinoma in adenomatous polyp																									
Leiomyoma																									
URINARY SYSTEM																									
Kidney	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Alveolar/bronchiolar carcinoma, metastatic																									
Tubular cell adenoma																									
Tubular cell adenocarcinoma				X																					
Mixed tumor, benign																									
Urinary bladder	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+

TABLE A2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF MALE RATS: 1% AMOSITE AND PREWEANING GAVAGE (Continued)

ANIMAL NUMBER	57 76	57 77	57 78	57 79	58 80	58 81	58 82	58 83	58 84	58 85	58 86	58 87	58 88	58 89	59 90	59 91	59 92	59 93	59 94	59 95	59 96	59 97	59 98	59 99	60 00
WEEKS ON STUDY	13 35	11 15	12 25	11 15	12 21	09 07	11 17	10 07	10 06	14 11	11 10	09 06	07 70	10 07	12 29	10 07	13 32	14 41	12 28	10 04	13 34	10 07	12 25	11 10	08 87
INTEGUMENTARY SYSTEM																									
Skin	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Squamous cell papilloma																			X		X				
Squamous cell carcinoma																									
Basal cell carcinoma																									
Trichoepithelioma																									
Keratoacanthoma																									
Subcutaneous tissue	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Sarcoma, NOS								X												X					
Fibroma		X																							
Fibrosarcoma																									
Lipoma																									
Osteosarcoma																									
Neurofibrosarcoma													X			X									
RESPIRATORY SYSTEM																									
Lungs and bronchi	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Alveolar/bronchiolar carcinoma															X		X								
Interstitial cell tumor, metastatic																									
Osteosarcoma, metastatic																									
Trachea	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
HEMATOPOIETIC SYSTEM																									
Bone marrow	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Spleen	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Fibrosarcoma	X																								
Hemangiosarcoma																		X							
Lymph nodes	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Neurofibrosarcoma, metastatic																X									
Thymus	+	−	+	−	+	+	+	+	+	−	+	+	+	+	+	+	+	+	+	+	−	+	+	+	+
CIRCULATORY SYSTEM																									
Heart	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
DIGESTIVE SYSTEM																									
Oral cavity	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Squamous cell papilloma																									
Salivary gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Sarcoma, NOS, invasive																				X					
Fibrosarcoma, invasive																									
Liver	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Neoplastic nodule																			X						
Hepatocellular carcinoma																									
Alveolar/bronchiolar carcinoma, metastatic																	X								
Monocytic leukemia																									
Bile duct	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Gallbladder & common bile duct	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Pancreas	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Acinar cell adenoma																		X							
Acinar cell carcinoma																									
Esophagus	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Squamous cell papilloma																									
Stomach	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Small intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Mucinous cystadenocarcinoma																									
Leiomyosarcoma																									
Large intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenomatous polyp, NOS																									
Adenoca in adenomatous polyp																									
Leiomyoma																									
URINARY SYSTEM																									
Kidney	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Alveolar/bronchiolar carcinoma, metastatic																	X								
Tubular cell adenoma			X																						
Tubular cell adenocarcinoma																									
Mixed tumor, benign					X																				
Urinary bladder	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+

TABLE A2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF MALE RATS: 1% AMOSITE AND PREWEANING GAVAGE (Continued)

ANIMAL NUMBER	601	602	603	604	605	606	607	608	609	610	611	612	613	614	615	616	617	618	619	620	621	622	623	624	625	TOTAL: TISSUES TUMORS
WEEKS ON STUDY	128	111	112	087	108	095	114	122	080	134	125	080	136	136	141	098	107	123	141	127	098	123	126	141	124	
INTEGUMENTARY SYSTEM																										
Skin	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	*100
Squamous cell papilloma																										5
Squamous cell carcinoma																										1
Basal cell carcinoma														X					X							4
Trichoepithelioma																							X			2
Keratoacanthoma																										2
Subcutaneous tissue	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	*100
Sarcoma, NOS												X														5
Fibroma							X										X	X	X						X	11
Fibrosarcoma																										1
Lipoma															X											1
Osteosarcoma																	X									1
Neurofibrosarcoma																										2
RESPIRATORY SYSTEM																										
Lungs and bronchi	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	100
Alveolar/bronchiolar carcinoma																							X			4
Interstitial cell tumor, metastatic																										1
Osteosarcoma, metastatic																	X									1
Trachea	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	100
HEMATOPOIETIC SYSTEM																										
Bone marrow	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	100
Spleen	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	100
Fibrosarcoma																										1
Hemangiosarcoma																										2
Lymph nodes	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	100
Neurofibrosarcoma, metastatic																										1
Thymus	+	+	+	+	+	+	–	+	+	–	+	+	–	+	+	+	+	+	–	+	+	+	–	+	+	78
CIRCULATORY SYSTEM																										
Heart	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	100
DIGESTIVE SYSTEM																										
Oral cavity	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	*100
Squamous cell papilloma																X										2
Salivary gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	100
Sarcoma, NOS, invasive																										1
Fibrosarcoma, invasive																										1
Liver	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	100
Neoplastic nodule										X																5
Hepatocellular carcinoma						X													X							3
Alveolar/bronchiolar carcinoma, meta																										1
Monocytic leukemia										X							X									2
Bile duct	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	100
Gallbladder & common bile duct	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	*100
Pancreas	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	100
Acinar cell adenoma													X													2
Acinar cell carcinoma																									X	1
Esophagus	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	100
Squamous cell papilloma																										1
Stomach	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	100
Small intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	100
Mucinous cystadenocarcinoma																										1
Leiomyosarcoma																									X	2
Large intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	100
Adenomatous polyp, NOS															X											1
Adenocarcinoma in adenomatous polyp																										1
Leiomyoma																										1
URINARY SYSTEM																										
Kidney	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	100
Alveolar/bronchiolar carcinoma, meta																										1
Tubular cell adenoma																										1
Tubular cell adenocarcinoma																										1
Mixed tumor, benign																										2
Urinary bladder	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	100

* Animals necropsied

TABLE A2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF MALE RATS: 1% AMOSITE AND PREWEANING GAVAGE (Continued)

ANIMAL NUMBER	52 26	52 27	52 28	52 29	53 00	53 11	53 32	53 33	53 34	53 35	53 36	53 37	53 38	53 39	54 00	54 11	54 22	54 33	54 44	54 55	54 66	54 77	54 88	54 99	55 00
WEEKS ON STUDY	12 22	11 16	12 20	13 34	10 02	12 27	08 22	12 27	12 24	08 86	10 08	09 92	09 91	08 83	14 41	11 13	10 07	13 37	11 19	12 21	13 33	14 41	10 01	10 06	14 41
ENDOCRINE SYSTEM																									
Pituitary	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	–	+	+	+	+	+	+	+	+	+
Carcinoma, NOS																									
Adenoma, NOS	X			X	X					X										X	X				
Adrenal	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Cortical adenoma																									
Pheochromocytoma								X	X		X				X			X							
Thyroid	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Follicular cell adenoma									X																X
Follicular cell carcinoma								X														X			
C-cell adenoma				X						X															
C-cell carcinoma			X			X													X	X					
Parathyroid	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenoma, NOS																									
Pancreatic islets	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Islet cell adenoma						X																			
Islet cell carcinoma																									
REPRODUCTIVE SYSTEM																									
Mammary gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Papillary adenoma																									
Fibroadenoma																									
Testis	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Interstitial cell tumor	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X		X	X	X
Interstitial cell tumor, malignant																						X			
Prostate	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenocarcinoma, NOS																									
NERVOUS SYSTEM																									
Brain	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Astrocytoma														X											
SPECIAL SENSE ORGANS																									
Zymbal gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	N	+	+	+	+	+
Carcinoma, NOS																									
BODY CAVITIES																									
Pleura	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Alveolar/bronchiolar carcinoma, metastatic																									
Peritoneum	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Lipoma																									
Tunica vaginalis	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Mesothelioma, malignant																									
ALL OTHER SYSTEMS																									
Multiple organs, NOS	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Alveolar/bronchiolar carcinoma, invasive																									
Alveolar/bronchiolar carcinoma, metastatic																									
Sarcoma, NOS, invasive																									
Mesothelioma, invasive																									
Monocytic leukemia	X		X	X	X	X			X		X	X				X		X			X	X		X	X

TABLE A2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF MALE RATS: 1% AMOSITE AND PREWEANING GAVAGE (Continued)

ANIMAL NUMBER	551	552	553	554	555	556	557	558	559	560	561	562	563	564	565	566	567	568	569	570	571	572	573	574	575
WEEKS ON STUDY	120	135	114	097	124	080	088	122	103	123	114	134	117	124	119	107	130	137	118	080	122	129	122	121	127
ENDOCRINE SYSTEM																									
Pituitary	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS							X									X									
Adenoma, NOS														X	X			X				X			
Adrenal	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Cortical adenoma											X														
Pheochromocytoma	X									X		X	X			X	X								
Thyroid	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Follicular cell adenoma											X					X	X					X			
Follicular cell carcinoma																X									
C-cell adenoma					X												X	X			X		X		
C-cell carcinoma		X	X							X	X														
Parathyroid	+	+	+	+	+	+	+	+	+	+	+	+	+	+	−	+	+	+	+	+	+	+	+	+	+
Adenoma, NOS										X															
Pancreatic islets	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Islet cell adenoma									X																
Islet cell carcinoma					X																				
REPRODUCTIVE SYSTEM																									
Mammary gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Papillary adenoma																									
Fibroadenoma																									
Testis	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Interstitial cell tumor	X	X	X	X	X			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Interstitial cell tumor, malignant																									
Prostate	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenocarcinoma, NOS																									
NERVOUS SYSTEM																									
Brain	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	−	+	+
Astrocytoma																									
SPECIAL SENSE ORGANS																									
Zymbal gland	+	+	+	+	+	+	N	+	+	+	N	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS						X																			
BODY CAVITIES																									
Pleura	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Alveolar/bronchiolar carcinoma, metastatic																									
Peritoneum	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Lipoma																				X					
Tunica vaginalis	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Mesothelioma, malignant																									
ALL OTHER SYSTEMS																									
Multiple organs, NOS	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Alveolar/bronchiolar carcinoma, invasive																									
Alveolar/bronchiolar carcinoma, metastatic																	X								
Sarcoma, NOS, invasive																									
Mesothelioma, invasive																									
Monocytic leukemia	X		X					X	X			X	X	X			X		X		X		X		X

TABLE A2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF MALE RATS: 1% AMOSITE AND PREWEANING GAVAGE (Continued)

ANIMAL NUMBER	576	577	578	579	580	581	582	583	584	585	586	587	588	589	590	591	592	593	594	595	596	597	598	599	600
WEEKS ON STUDY	135	115	125	115	121	097	117	107	106	141	110	096	070	107	129	107	132	141	128	104	134	107	125	110	087
ENDOCRINE SYSTEM																									
Pituitary	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS																									
Adenoma, NOS			X			X		X	X					X		X									
Adrenal	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Cortical adenoma					X																				
Pheochromocytoma								X		X					X			X					X		
Thyroid	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Follicular cell adenoma																		X							
Follicular cell carcinoma																									
C-cell adenoma																	X								
C-cell carcinoma							X		X										X				X		
Parathyroid	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenoma, NOS																									
Pancreatic islets	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Islet cell adenoma																									
Islet cell carcinoma					X					X															
REPRODUCTIVE SYSTEM																									
Mammary gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Papillary adenoma																									
Fibroadenoma															X										
Testis	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Interstitial cell tumor	X	X		X	X		X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X
Interstitial cell tumor, malignant																									
Prostate	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenocarcinoma, NOS																									
NERVOUS SYSTEM																									
Brain	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Astrocytoma					X																				
SPECIAL SENSE ORGANS																									
Zymbal gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS												X													
BODY CAVITIES																									
Pleura	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Alveolar/bronchiolar carcinoma, metastatic																									
Peritoneum	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Lipoma																									
Tunica vaginalis	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Mesothelioma, malignant				X																	X				
ALL OTHER SYSTEMS																									
Multiple organs, NOS	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Alveolar/bronchiolar carcinoma, invasive																									
Alveolar/bronchiolar carcinoma, metastatic																									
Sarcoma, NOS, invasive								X																	
Mesothelioma, invasive				X																	X				
Monocytic leukemia	X				X		X			X				X							X	X	X	X	

TABLE A2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF MALE RATS: 1% AMOSITE AND PREWEANING GAVAGE (Continued)

ANIMAL NUMBER	6 0 1	6 0 2	6 0 3	6 0 4	6 0 5	6 0 6	6 0 7	6 0 8	6 0 9	6 1 0	6 1 1	6 1 2	6 1 3	6 1 4	6 1 5	6 1 6	6 1 7	6 1 8	6 1 9	6 2 0	6 2 1	6 2 2	6 2 3	6 2 4	6 2 5	TOTAL: TISSUES TUMORS
WEEKS ON STUDY	1 2 8	1 1 1	1 1 2	0 8 7	1 0 8	0 9 5	1 1 4	1 2 2	0 8 0	1 3 4	1 2 5	0 8 0	1 3 6	1 3 6	1 4 1	0 9 8	1 0 7	1 2 3	1 4 1	1 2 7	0 9 8	1 2 3	1 2 6	1 4 1	1 2 4	
ENDOCRINE SYSTEM																										
Pituitary	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	99
Carcinoma, NOS																										2
Adenoma, NOS														X						X				X		19
Adrenal	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	100
Cortical adenoma																										2
Pheochromocytoma				X	X					X				X	X											21
Thyroid	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	100
Follicular cell adenoma					X																					8
Follicular cell carcinoma																								X		4
C-cell adenoma																X						X	X			11
C-cell carcinoma		X									X															14
Parathyroid	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	99
Adenoma, NOS																										1
Pancreatic islets	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	100
Islet cell adenoma																		X		X						4
Islet cell carcinoma																			X							4
REPRODUCTIVE SYSTEM																										
Mammary gland	+	+	+	+	+	+	+	+	N	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	*100
Papillary adenoma		X																								1
Fibroadenoma																										1
Testis	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	100
Interstitial cell tumor	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	92
Interstitial cell tumor, malignant																										1
Prostate	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	100
Adenocarcinoma, NOS					X																					1
NERVOUS SYSTEM																										
Brain	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	100
Astrocytoma																										2
SPECIAL SENSE ORGANS																										
Zymbal gland	+	N	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	*100
Carcinoma, NOS																									X	3
BODY CAVITIES																										
Pleura	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N X	N	N	*100
Alveolar/bronchiolar carcinoma, meta																										1
Peritoneum	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	*100
Lipoma																										1
Tunica vaginalis	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	*100
Mesothelioma, malignant																					X					3
ALL OTHER SYSTEMS																										
Multiple organs, NOS	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N X	N	N	*100
Alveolar/bronchiolar carcinoma, invasive																										1
Alveolar/bronchiolar carcinoma, meta																										1
Sarcoma, NOS, invasive																										1
Mesothelioma, invasive																					X					3
Monocytic leukemia	X	X	X	X	X	X	X	X						X	X					X				X		47

* Animals necropsied

TABLE A3a. ANALYSIS OF PRIMARY TUMORS IN MALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS

	Untreated Control	1% Amosite	1% Amosite + PW	1% Amosite vs. 1% Amosite + PW
Skin: Squamous Cell Papilloma				
Overall Rates (a)	1/117 (1%)	6/250 (2%)	5/100 (5%)	
Adjusted Rates (b)	2.0%	7.8%	18.1%	
Terminal Rates (c)	0/8 (0%)	2/41 (5%)	0/8 (0%)	
Week of First Observation	124	110	101	
Life Table Test (d)		P=0.476	P=0.045	P=0.024
Incidental Tumor Test (d)		P=0.285	P=0.050	P=0.082
Fisher Exact Test (d)		P=0.289	P=0.074	P=0.177
Skin: Squamous Cell Papilloma or Carcinoma				
Overall Rates (a)	2/117 (2%)	10/250 (4%)	6/100 (6%)	
Adjusted Rates (b)	9.5%	11.5%	26.3%	
Terminal Rates (c)	0/8 (0%)	2/41 (5%)	0/8 (0%)	
Week of First Observation	124	80	101	
Life Table Test (d)		P=0.435	P=0.049	P=0.039
Incidental Tumor Test (d)		P=0.263	P=0.054	P=0.142
Fisher Exact Test (d)		P=0.206	P=0.095	P=0.291
Skin: Keratoacanthoma				
Overall Rates (a)	4/117 (3%)	17/250 (7%)	2/100 (2%)	
Adjusted Rates (b)	13.7%	30.9%	6.9%	
Terminal Rates (c)	0/8 (0%)	10/41 (24%)	0/8 (0%)	
Week of First Observation	125	117	122	
Life Table Test (d)		P=0.590	P=0.540N	P=0.358N
Incidental Tumor Test (d)		P=0.290	P=0.518N	P=0.232N
Fisher Exact Test (d)		P=0.144	P=0.418N	P=0.055N
Skin: Basal Cell Carcinoma				
Overall Rates (a)	3/117 (3%)	7/250 (3%)	4/100 (4%)	
Adjusted Rates (b)	20.7%	9.5%	39.1%	
Terminal Rates (c)	1/8 (13%)	3/41 (7%)	3/8 (38%)	
Week of First Observation	123	104	123	
Life Table Tests (d)		P=0.424N	P=0.408	P=0.122
Incidental Tumor Tests (d)		P=0.616	P=0.301	P=0.276
Fisher Exact Test (d)		P=0.599	P=0.414	P=0.388
Skin: Basal Cell Tumor or Carcinoma				
Overall Rates (a)	4/117 (3%)	8/250 (3%)	4/100 (4%)	
Adjusted Rates (b)	21.7%	10.0%	39.1%	
Terminal Rates (c)	1/8 (13%)	3/41 (7%)	3/8 (38%)	
Week of First Observation	117	104	123	
Life Table Tests (d)		P=0.325N	P=0.537	P=0.176
Incidental Tumor Tests (d)		P=0.592N	P=0.436	P=0.370
Fisher Exact Test (d)		P=0.567N	P=0.549	P=0.464
Skin: Trichoepithelioma, Basal Cell Tumor, or Basal Cell Carcinoma				
Overall Rates (a)	5/117 (4%)	8/250 (3%)	6/100 (6%)	
Adjusted Rates (b)	23.1%	10.0%	43.7%	
Terminal Rates (c)	1/8 (13%)	3/41 (7%)	3/8 (38%)	
Week of First Observation	117	104	123	
Life Table Tests (d)		P=0.178N	P=0.331	P=0.020
Incidental Tumor Tests (d)		P=0.441N	P=0.274	P=0.104
Fisher Exact Test (d)		P=0.402N	P=0.393	P=0.180
Subcutaneous Tissue: Fibroma				
Overall Rates (a)	18/117 (15%)	33/250 (13%)	11/100 (11%)	
Adjusted Rates (b)	29.6%	34.2%	30.6%	
Terminal Rates (c)	0/8 (0%)	7/41 (17%)	1/8 (13%)	
Week of First Observation	95	96	82	
Life Table Tests (d)		P=0.056N	P=0.400N	P=0.210
Incidental Tumor Tests (d)		P=0.389N	P=0.247N	P=0.469N
Fisher Exact Test (d)		P=0.340N	P=0.229N	P=0.358N

TABLE A3a. ANALYSIS OF PRIMARY TUMORS IN MALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS (Continued)

	Untreated Control	1% Amosite	1% Amosite + PW	1% Amosite vs. 1% Amosite + PW
Subcutaneous Tissue: Neurofibroma				
Overall Rates (a)	3/117 (3%)	5/250 (2%)	0/100 (0%)	
Adjusted Rates (b)	16.9%	10.5%	0.0%	
Terminal Rates (c)	1/8 (13%)	4/41 (10%)	0/8 (0%)	
Week of First Observation	127	128		
Life Table Tests (d)		P=0.189N	P=0.187N	P=0.347N
Incidental Tumor Tests (d)		P=0.342N	P=0.209N	P=0.322N
Fisher Exact Test (d)		P=0.497N	P=0.155N	P=0.184N
Subcutaneous Tissue: Fibroma or Neurofibroma				
Overall Rates (a)	21/117 (18%)	36/250 (14%)	11/100 (11%)	
Adjusted Rates (b)	41.5%	40.0%	30.6%	
Terminal Rates (c)	1/8 (13%)	10/41 (24%)	1/8 (13%)	
Week of First Observation	95	96	82	
Life Table Tests (d)		P=0.017N	P=0.244N	P=0.273
Incidental Tumor Tests (d)		P=0.230N	P=0.133N	P=0.393N
Fisher Exact Test (d)		P=0.234N	P=0.106N	P=0.255N
Subcutaneous Tissue: Sarcoma				
Overall Rates (a)	4/117 (3%)	2/250 (1%)	5/100 (5%)	
Adjusted Rates (b)	7.1%	1.0%	5.9%	
Terminal Rates (c)	0/8 (0%)	0/41 (0%)	0/8 (0%)	
Week of First Observation	90	108	80	
Life Table Tests (d)		P=0.053N	P=0.343	P=0.010
Incidental Tumor Tests (d)		P=0.136N	P=0.568	P=0.111
Fisher Exact Test (d)		P=0.085N	P=0.403	P=0.022
Subcutaneous Tissue: Fibrosarcoma				
Overall Rates (a)	7/117 (6%)	9/250 (4%)	1/100 (1%)	
Adjusted Rates (b)	40.9%	7.7%	2.7%	
Terminal Rates (c)	3/8 (38%)	1/41 (2%)	0/8 (0%)	
Week of First Observation	72	80	124	
Life Table Tests (d)	P=0.030N	P=0.073N	P=0.059N	P=0.333N
Incidental Tumor Tests (d)	P=0.028N	P=0.192N	P=0.050N	P=0.138N
Fisher Exact Test (d)		P=0.218N	P=0.053N	P=0.169N
Subcutaneous Tissue: Fibroma or Fibrosarcoma				
Overall Rates (a)	25/117 (21%)	41/250 (16%)	12/100 (12%)	
Adjusted Rates (b)	58.4%	37.7%	32.5%	
Terminal Rates (c)	3/8 (38%)	7/41 (17%)	1/8 (13%)	
Week of First Observation	72	80	82	
Life Table Tests (d)	P=0.061N	P=0.010N	P=0.132N	P=0.338
Incidental Tumor Tests (d)	P=0.050N	P=0.176N	P=0.053N	P=0.240N
Fisher Exact Test (d)		P=0.157N	P=0.049N	P=0.193N
Subcutaneous Tissue: Neurofibroma or Neurofibrosarcoma				
Overall Rates (a)	5/117 (4%)	5/250 (2%)	2/100 (2%)	
Adjusted Rates (b)	18.8%	10.5%	2.3%	
Terminal Rates (c)	1/8 (13%)	4/41 (10%)	0/8 (0%)	
Week of First Observation	78	128	70	
Life Table Tests (d)		P=0.032N	P=0.341N	P=0.446
Incidental Tumor Tests (d)		P=0.094N	P=0.218N	P=0.595
Fisher Exact Test (d)		P=0.181N	P=0.292N	P=0.642
Subcutaneous Tissue: Sarcoma, Fibrosarcoma, or Neurofibrosarcoma				
Overall Rates (a)	13/117 (11%)	11/250 (4%)	8/100 (8%)	
Adjusted Rates (b)	46.3%	8.6%	10.6%	
Terminal Rates (c)	3/8 (38%)	1/41 (2%)	0/8 (0%)	
Week of First Observation	72	80	70	
Life Table Tests (d)	P=0.210N	P=0.002N	P=0.359N	P=0.045
Incidental Tumor Tests (d)	P=0.098N	P=0.017N	P=0.134N	P=0.367
Fisher Exact Test (d)		P=0.016N	P=0.295N	P=0.140

TABLE A3a. ANALYSIS OF PRIMARY TUMORS IN MALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS (Continued)

	Untreated Control	1% Amosite	1% Amosite + PW	1% Amosite vs. 1% Amosite + PW
Subcutaneous Tissue: Fibroma, Neurofibroma, Sarcoma, Fibrosarcoma, or Neurofibrosarcoma				
Overall Rates (a)	33/117 (28%)	46/250 (18%)	19/100 (19%)	
Adjusted Rates (b)	70.9%	43.8%	38.0%	
Terminal Rates (c)	4/8 (50%)	10/41 (24%)	1/8 (13%)	
Week of First Observation	72	80	70	
Life Table Tests (d)		P<0.001N	P=0.209N	P=0.046
Incidental Tumor Tests (d)		P=0.025N	P=0.045N	P=0.549
Fisher Exact Test (d)		P=0.024N	P=0.077N	P=0.503
Integumentary System or Salivary Gland: Sarcoma, Fibrosarcoma, or Neurofibrosarcoma				
Overall Rates (a)	14/117 (12%)	15/250 (6%)	8/100 (8%)	
Adjusted Rates (b)	47.4%	13.2%	10.6%	
Terminal Rates (c)	4/8 (50%)	2/41 (5%)	0/8 (0%)	
Week of First Observation	72	80	70	
Life Table Tests (d)	P=0.174N	P=0.005N	P=0.298N	P=0.103
Incidental Tumor Tests (d)	P=0.084N	P=0.037N	P=0.099N	P=0.509
Fisher Exact Test (d)		P=0.041N	P=0.231N	P=0.320
Integumentary System or Salivary Gland: Fibroma, Neurofibroma, Sarcoma, Fibrosarcoma, or Neurofibrosarcoma				
Overall Rates (a)	34/117 (29%)	48/250 (19%)	19/100 (19%)	
Adjusted Rates (b)	71.5%	44.8%	38.0%	
Terminal Rates (c)	4/8 (50%)	10/41 (24%)	1/8 (13%)	
Week of First Observation	72	80	70	
Life Table Tests (d)	P=0.067N	P<0.001N	P=0.180N	P=0.058
Incidental Tumor Tests (d)	P=0.035N	P=0.025N	P=0.034N	P=0.530N
Fisher Exact Test (d)		P=0.025N	P=0.059N	P=0.548N
Lung: Alveolar/Bronchiolar Carcinoma				
Overall Rates (e)	1/117 (1%)	6/249 (2%)	4/100 (4%)	
Adjusted Rates (b)	2.2%	9.8%	16.3%	
Terminal Rates (c)	0/8 (0%)	2/41 (5%)	0/8 (0%)	
Week of First Observation	127	131	126	
Life Table Test (d)		P=0.514	P=0.071	P=0.044
Incidental Tumor Test (d)		P=0.409	P=0.083	P=0.099
Fisher Exact Test (d)		P=0.287	P=0.140	P=0.313
Lung: Alveolar/Bronchiolar Adenoma or Carcinoma				
Overall Rates (e)	2/117 (2%)	8/249 (3%)	4/100 (4%)	
Adjusted Rates (b)	3.8%	11.1%	16.3%	
Terminal Rates (c)	0/8 (0%)	2/41 (5%)	0/8 (0%)	
Week of First Observation	122	117	126	
Life Table Test (d)		P=0.568	P=0.163	P=0.108
Incidental Tumor Test (d)		P=0.413	P=0.187	P=0.219
Fisher Exact Test (d)		P=0.329	P=0.271	P=0.466
Hematopoietic System: Leukemia				
Overall Rates (a)	38/117 (32%)	107/250 (43%)	49/100 (49%)	
Adjusted Rates (b)	71.1%	75.8%	89.7%	
Terminal Rates (c)	2/8 (25%)	19/41 (46%)	5/8 (63%)	
Week of First Observation	87	80	87	
Life Table Test (d)		P=0.351N	P=0.004	P<0.001
Incidental Tumor Test (d)		P=0.030	P=0.003	P=0.107
Fisher Exact Test (d)		P=0.038	P=0.010	P=0.175

TABLE A3a. ANALYSIS OF PRIMARY TUMORS IN MALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS (Continued)

	Untreated Control	1% Amosite	1% Amosite + PW	1% Amosite vs. 1% Amosite + PW
Liver: Neoplastic Nodule				
Overall Rates (e)	9/117 (8%)	9/250 (4%)	5/100 (5%)	
Adjusted Rates (b)	28.9%	10.4%	16.4%	
Terminal Rates (c)	1/8 (13%)	2/41 (5%)	0/8 (0%)	
Week of First Observation	108	101	122	
Life Table Test (d)		P=0.009N	P=0.458N	P=0.087
Incidental Tumor Test (d)		P=0.058N	P=0.417N	P=0.305
Fisher Exact Test (d)		P=0.079N	P=0.301N	P=0.368
Liver: Hepatocellular Carcinoma				
Overall Rates (e)	1/117 (1%)	3/250 (1%)	3/100 (3%)	
Adjusted Rates (b)	1.8%	5.1%	22.2%	
Terminal Rates (c)	0/8 (0%)	1/41 (2%)	1/8 (13%)	
Week of First Observation	123	136	95	
Life Table Test (d)		P=0.663N	P=0.218	P=0.045
Incidental Tumor Test (d)		P=0.652	P=0.226	P=0.114
Fisher Exact Test (d)		P=0.619	P=0.254	P=0.228
Liver: Neoplastic Nodule or Hepatocellular Carcinoma				
Overall Rates (e)	9/117 (8%)	12/250 (5%)	8/100 (8%)	
Adjusted Rates (b)	28.9%	15.1%	34.9%	
Terminal Rates (c)	1/8 (13%)	3/41 (7%)	1/8 (13%)	
Week of First Observation	108	101	95	
Life Table Test (d)		P=0.027N	P=0.403	P=0.009
Incidental Tumor Test (d)		P=0.136N	P=0.436	P=0.088
Fisher Exact Test (d)		P=0.190N	P=0.565	P=0.180
Pancreas: Acinar Cell Adenoma				
Overall Rates (e)	9/116 (8%)	19/248 (8%)	2/100 (2%)	
Adjusted Rates (b)	24.5%	27.2%	19.8%	
Terminal Rates (c)	1/8(13%)	7/41 (17%)	1/8 (13%)	
Week of First Observation	115	123	136	
Life Table Tests (d)		P=0.144N	P=0.098N	P=0.301N
Incidental Tumor Tests (d)		P=0.442N	P=0.092N	P=0.181N
Fisher Exact Test (d)		P=0.562N	P=0.051N	P=0.032N
Pancreas: Acinar Cell Adenoma or Carcinoma				
Overall Rates (e)	11/116 (9%)	20/248 (8%)	3/100 (3%)	
Adjusted Rates (b)	37.5%	28.2%	22.0%	
Terminal Rates (c)	2/8 (25%)	7/41 (17%)	1/8 (13%)	
Week of First Observation	115	123	124	
Life Table Tests (d)		P=0.050N	P=0.091N	P=0.461N
Incidental Tumor Tests (d)		P=0.252N	P=0.094N	P=0.276N
Fisher Exact Test (d)		P=0.394N	P=0.047N	P=0.063N
Small Intestine: Adenomatous Polyp, Adenocarcinoma in Adenomatous Polyp, or Mucinous Cystadenocarcinoma				
Overall Rates (a)	3/117 (3%)	1/250 (0%)	1/100 (1%)	
Adjusted Rates (b)	12.9%	0.5%	1.2%	
Terminal Rates (c)	0/8 (0%)	0/41 (0%)	0/8 (0%)	
Week of First Observation	100	108	101	
Life Table Tests (d)		P=0.045N	P=0.446N	
Incidental Tumor Tests (d)		P=0.094N	P=0.358N	
Fisher Exact Test (d)		P=0.097N	P=0.372N	

TABLE A3a. ANALYSIS OF PRIMARY TUMORS IN MALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS (Continued)

	Untreated Control	1% Amosite	1% Amosite + PW	1% Amosite vs. 1% Amosite + PW
Large Intestine: Adenomatous Polyp or Adenocarcinoma in Adenomatous Polyp				
Overall Rates (a)	0/117 (0%)	3/250 (1%)	2/100 (2%)	
Adjusted Rates (b)	0.0%	2.7%	13.4%	
Terminal Rates (c)	0/8 (0%)	0/41 (0%)	1/8 (13%)	
Week of First Observation		110	82	
Life Table Tests (d)		P=0.369	P=0.221	P=0.282
Incidental Tumor Tests (d)		P=0.306	P=0.258	P=0.461
Fisher Exact Test (d)		P=0.315	P=0.211	P=0.443
Pituitary Gland: Adenoma				
Overall Rates (e)	24/117 (21%)	41/248 (17%)	19/99 (19%)	
Adjusted Rates (b)	54.2%	42.9%	51.7%	
Terminal Rates (c)	1/8 (13%)	10/41 (24%)	1/8 (13%)	
Week of First Observation	96	58	86	
Life Table Test (d)		P=0.008N	P=0.414	P=0.007
Incidental Tumor Test (d)		P=0.129N	P=0.567	P=0.155
Fisher Exact Test (d)		P=0.216N	P=0.473N	P=0.328
Pituitary Gland: Carcinoma				
Overall Rates (e)	2/117 (2%)	4/248 (2%)	2/99 (2%)	
Adjusted Rates (b)	2.4%	4.0%	2.4%	
Terminal Rates (c)	0/8 (0%)	1/41 (2%)	0/8 (0%)	
Week of First Observation	114	110	88	
Life Table Test (d)		P=0.551N	P=0.584	P=0.456
Incidental Tumor Test (d)		P=0.586	P=0.671	P=0.627N
Fisher Exact Test (d)		P=0.625N	P=0.624	P=0.549
Pituitary Gland: Adenoma or Carcinoma				
Overall Rates (e)	26/117 (22%)	45/248 (18%)	21/99 (21%)	
Adjusted Rates (b)	55.3%	45.6%	52.9%	
Terminal Rates (c)	1/8 (13%)	11/41 (27%)	1/8 (13%)	
Week of First Observation	96	58	86	
Life Table Test (d)		P=0.008N	P=0.384	P=0.006
Incidental Tumor Test (d)		P=0.155N	P=0.556	P=0.177
Fisher Exact Test (d)		P=0.218N	P=0.496N	P=0.303
Adrenal Cortex: Cortical Adenoma				
Overall Rates (e)	0/117 (0%)	5/250 (2%)	2/100 (2%)	
Adjusted Rates (b)	0.0%	6.4%	3.7%	
Terminal Rates (c)	0/8 (0%)	0/41 (0%)	0/8 (0%)	
Week of First Observation		131	114	
Life Table Tests (d)		P=0.264	P=0.176	P=0.370
Incidental Tumor Tests (d)		P=0.215	P=0.187	P=0.523
Fisher Exact Test (d)		P=0.145	P=0.211	P=0.642
Adrenal Medulla: Pheochromocytoma				
Overall Rates (e)	39/117 (33%)	65/250 (26%)	21/100 (21%)	
Adjusted Rates (b)	84.1%	60.9%	73.3%	
Terminal Rates (c)	4/8 (50%)	14/41 (34%)	4/8 (50%)	
Week of First Observation	78	101	87	
Life Table Test (d)		P<0.001N	P=0.166N	P=0.057
Incidental Tumor Test (d)		P=0.021N	P=0.090N	P=0.479
Fisher Exact Test (d)		P=0.093N	P=0.030N	P=0.200N
Adrenal Medulla: Malignant Pheochromocytoma				
Overall Rates (e)	3/117 (3%)	5/250 (2%)	0/100 (0%)	
Adjusted Rates (b)	5.4%	2.6%	0.0%	
Terminal Rates (c)	0/8 (0%)	0/41 (0%)	0/8 (0%)	
Week of First Observation	117	89		
Life Table Test (d)		P=0.427N	P=0.198N	P=0.240N
Incidental Tumor Test (d)		P=0.610N	P=0.182N	P=0.106N
Fisher Exact Test (d)		P=0.497N	P=0.155N	P=0.184N

TABLE A3a. ANALYSIS OF PRIMARY TUMORS IN MALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS (Continued)

	Untreated Control	1% Amosite	1% Amosite + PW	1% Amosite vs. 1% Amosite + PW
Adrenal Medulla: Pheochromocytoma or Malignant Pheochromocytoma				
Overall Rates (e)	39/117 (33%)	68/249 (27%)	21/100 (21%)	
Adjusted Rates (b)	84.1%	61.4%	73.3%	
Terminal Rates (c)	4/8 (50%)	14/41 (34%)	4/8 (50%)	
Week of First Observation	78	89	87	
Life Table Test (d)		P<0.001N	P=0.166N	P=0.092
Incidental Tumor Test (d)		P=0.045N	P=0.090N	P=0.498N
Fisher Exact Test (d)		P=0.145N	P=0.030N	P=0.138N
Thyroid Gland: Follicular Cell Adenoma				
Overall Rates (e)	4/117 (3%)	13/246 (5%)	8/100 (8%)	
Adjusted Rates (b)	22.9%	16.6%	34.5%	
Terminal Rates (c)	1/8 (13%)	3/41 (7%)	2/8 (25%)	
Week of First Observation	128	120	107	
Life Table Test (d)		P=0.526N	P=0.076	P=0.015
Incidental Tumor Test (d)		P=0.453	P=0.076	P=0.115
Fisher Exact Test (d)		P=0.310	P=0.120	P=0.234
Thyroid Gland: Follicular Cell Carcinoma				
Overall Rates (e)	7/117 (6%)	10/246 (4%)	4/100 (4%)	
Adjusted Rates (b)	19.1%	16.2%	29.0%	
Terminal Rates (c)	0/8 (0%)	5/41 (12%)	2/8 (25%)	
Week of First Observation	98	96	119	
Life Table Test (d)		P=0.061N	P=0.475N	P=0.243
Incidental Tumor Test (d)		P=0.235N	P=0.475N	P=0.434
Fisher Exact Test (d)		P=0.287N	P=0.365N	P=0.621N
Thyroid Gland: Follicular Cell Adenoma or Carcinoma				
Overall Rates (e)	11/117 (9%)	23/246 (9%)	11/100 (11%)	
Adjusted Rates (b)	37.7%	30.9%	57.9%	
Terminal Rates (c)	1/8 (13%)	8/41 (20%)	4/8 (50%)	
Week of First Observation	98	96	107	
Life Table Test (d)		P=0.099N	P=0.292	P=0.019
Incidental Tumor Test (d)		P=0.402N	P=0.287	P=0.154
Fisher Exact Test (d)		P=0.563N	P=0.434	P=0.386
Thyroid Gland: C-Cell Adenoma				
Overall Rates (e)	16/117 (14%)	26/246 (11%)	11/100 (11%)	
Adjusted Rates (b)	53.6%	26.5%	34.1%	
Terminal Rates (c)	2/8 (25%)	3/41 (7%)	0/8 (0%)	
Week of First Observation	109	106	86	
Life Table Test (d)		P=0.020N	P=0.575N	P=0.048
Incidental Tumor Test (d)		P=0.162N	P=0.471N	P=0.366
Fisher Exact Test (d)		P=0.243N	P=0.350N	P=0.521
Thyroid Gland: C-Cell Carcinoma				
Overall Rates (e)	11/117 (9%)	50/246 (20%)	14/100 (14%)	
Adjusted Rates (b)	27.6%	48.7%	31.5%	
Terminal Rates (c)	0/8 (0%)	9/41 (22%)	0/8 (0%)	
Week of First Observation	95	65	106	
Life Table Test (d)		P=0.194	P=0.089	P=0.277
Incidental Tumor Test (d)		P=0.015	P=0.140	P=0.266N
Fisher Exact Test (d)		P=0.006	P=0.199	P=0.110N
Thyroid Gland: C-Cell Adenoma or Carcinoma				
Overall Rates (e)	27/117 (23%)	75/246 (30%)	25/100 (25%)	
Adjusted Rates (b)	66.5%	63.2%	54.9%	
Terminal Rates (c)	2/8 (25%)	12/41 (29%)	0/8 (0%)	
Week of First Observation	95	65	86	
Life Table Test (d)		P=0.265N	P=0.175	P=0.044
Incidental Tumor Test (d)		P=0.189	P=0.275	P=0.474N
Fisher Exact Test (d)		P=0.089	P=0.431	P=0.187N

TABLE A3a. ANALYSIS OF PRIMARY TUMORS IN MALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS (Continued)

	Untreated Control	1% Amosite	1% Amosite + PW	1% Amosite vs. 1% Amosite + PW
Parathyroid Gland: Adenoma				
Overall Rates (e)	4/110 (4%)	1/234 (<1%)	1/99 (1%)	
Adjusted Rates (b)	10.6%	0.7%	2.5%	
Terminal Rates (c)	0/8 (0%)	0/39 (0%)	0/8 (0%)	
Week of First Observation	114	126	123	
Life Table Test (d)		P=0.011N	P=0.320N	
Incidental Tumor Test (d)		P=0.039N	P=0.285N	
Fisher Exact Test (d)		P=0.038N	P=0.219N	
Pancreatic Islets: Islet Cell Adenoma				
Overall Rates (e)	14/116 (12%)	17/247 (7%)	4/100 (4%)	
Adjusted Rates (b)	33.8%	17.4%	10.4%	
Terminal Rates (c)	0/8 (0%)	3/41 (7%)	0/8 (0%)	
Week of First Observation	101	103	103	
Life Table Test (d)		P=0.007N	P=0.092N	P=0.580N
Incidental Tumor Test (d)		P=0.075N	P=0.057N	P=0.252N
Fisher Exact Test (d)		P=0.076N	P=0.027N	P=0.225N
Pancreatic Islets: Islet Cell Carcinoma				
Overall Rates (e)	3/116 (3%)	5/247 (2%)	4/100 (4%)	
Adjusted Rates (b)	20.0%	8.3%	28.5%	
Terminal Rates (c)	1/8 (13%)	2/41 (5%)	2/8 (25%)	
Week of First Observation	131	117	121	
Life Table Test (d)		P=0.220N	P=0.373	P=0.046
Incidental Tumor Test (d)		P=0.390N	P=0.301	P=0.123
Fisher Exact Test (d)		P=0.498N	P=0.418	P=0.242
Pancreatic Islets: Islet Cell Adenoma or Carcinoma				
Overall Rates (e)	17/116 (15%)	22/247 (9%)	8/100 (8%)	
Adjusted Rates (b)	47.0%	24.6%	36.0%	
Terminal Rates (c)	1/8 (13%)	5/41 (12%)	2/8 (25%)	
Week of First Observation	101	103	103	
Life Table Test (d)		P=0.003N	P=0.224N	P=0.202
Incidental Tumor Test (d)		P=0.052N	P=0.191N	P=0.566
Fisher Exact Test (d)		P=0.073N	P=0.094N	P=0.486N
Mammary Gland: Adenoma				
Overall Rates (a)	3/117 (3%)	4/250 (2%)	0/100 (0%)	
Adjusted Rates (b)	17.2%	5.3%	0.0%	
Terminal Rates (c)	0/8 (0%)	1/41 (2%)	0/8 (0%)	
Week of First Observation	133	126		
Life Table Test (d)		P=0.169N	P=0.203N	
Incidental Tumor Test (d)		P=0.302N	P=0.209N	
Fisher Exact Test (d)		P=0.396N	P=0.155N	
Mammary Gland: Fibroadenoma				
Overall Rates (a)	17/117 (15%)	27/250 (11%)	1/100 (1%)	
Adjusted Rates (b)	65.2%	38.4%	4.3%	
Terminal Rates (c)	4/8 (50%)	10/41 (24%)	0/8 (0%)	
Week of First Observation	107	117	129	
Life Table Test (d)		P=0.004N	P=0.002N	P=0.053N
Incidental Tumor Test (d)		P=0.078N	P=0.001N	P=0.016N
Fisher Exact Test (d)		P=0.196N	P<0.001N	P=0.001N
Testis: Interstitial Cell Tumor				
Overall Rates (e)	111/117 (95%)	240/249 (96%)	92/100 (92%)	
Adjusted Rates (b)	100.0%	100.0%	98.9%	
Terminal Rates (c)	8/8 (100%)	41/41 (100%)	7/8 (88%)	
Week of First Observation	78	80	80	
Life Table Test (d)		P<0.001N	P=0.180	P<0.001
Incidental Tumor Test (d)		P=0.284	P=0.552N	P=0.363N
Fisher Exact Test (d)		P=0.336	P=0.280N	P=0.078N

TABLE A3a. ANALYSIS OF PRIMARY TUMORS IN MALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS (Continued)

	Untreated Control	1% Amosite	1% Amosite + PW	1% Amosite vs. 1% Amosite + PW
Testis: Interstitial Cell Tumor or Interstitial Cell Tumor, Malignant				
Overall Rates (e)	111/117 (95%)	240/249 (96%)	93/100 (93%)	
Adjusted Rates (b)	100.0%	100.0%	100.0%	
Terminal Rates (c)	8/8 (100%)	41/41 (100%)	8/8 (100%)	
Week of First Observation	78	80	80	
Life Table Test (d)		P<0.001N	P=0.160	P<0.001
Incidental Tumor Test (d)		P=0.284	P=0.546	P=0.554N
Fisher Exact Test (d)		P=0.336	P=0.383N	P=0.140N
Preputial Gland: Carcinoma				
Overall Rates (e)	6/117 (5%)	9/250 (4%)	0/100 (0%)	
Adjusted Rates (b)	9.2%	9.7%	0.0%	
Terminal Rates (c)	0/8 (0%)	1/41 (2%)	0/8 (0%)	
Week of First Observation	90	106		
Life Table Tests (d)		P=0.166N	P=0.049N	P=0.163N
Incidental Tumor Tests (d)		P=0.368N	P=0.024N	P=0.079N
Fisher Exact Test (d)		P=0.333N	P=0.023N	P=0.046N
Preputial Gland: Carcinoma or Squamous Cell Papilloma				
Overall Rates (e)	6/117 (5%)	10/250 (4%)	0/100 (0%)	
Adjusted Rates (b)	9.2%	10.4%	0.0%	
Terminal Rates (c)	0/8 (0%)	1/41 (2%)	0/8 (0%)	
Week of First Observation	90	106		
Life Table Tests (d)		P=0.211N	P=0.049N	P=0.142N
Incidental Tumor Tests (d)		P=0.425N	P=0.024N	P=0.068N
Fisher Exact Test (d)		P=0.402N	P=0.023N	P=0.033N
Zymbal Gland: Carcinoma				
Overall Rates (e)	1/117 (1%)	7/250 (3%)	3/100 (3%)	
Adjusted Rates (b)	0.9%	4.6%	4.8%	
Terminal Rates (c)	0/8 (0%)	0/41 (0%)	0/8 (0%)	
Week of First Observation	94	113	80	
Life Table Tests (d)		P=0.290	P=0.232	P=0.387
Incidental Tumor Tests (d)		P=0.153	P=0.371	P=0.569N
Fisher Exact Test (d)		P=0.217	P=0.254	P=0.581
Zymbal Gland: Carcinoma or Squamous Cell Papilloma				
Overall Rates (e)	1/117 (1%)	9/250 (4%)	3/100 (3%)	
Adjusted Rates (b)	0.9%	5.8%	4.8%	
Terminal Rates (c)	0/8 (0%)	0/41 (0%)	0/8 (0%)	
Week of First Observation	94	108	80	
Life Table Tests (d)		P=0.190	P=0.232	P=0.505
Incidental Tumor Tests (d)		P=0.087	P=0.371	P=0.410N
Fisher Exact Test (d)		P=0.119	P=0.254	P=0.536N
All Sites: Malignant Mesothelioma				
Overall Rates (a)	2/117 (2%)	9/250 (4%)	3/100 (3%)	
Adjusted Rates (b)	2.2%	7.9%	8.3%	
Terminal Rates (c)	0/8 (0%)	1/41 (2%)	0/8 (0%)	
Week of First Observation	95	108	98	
Life Table Test (d)		P=0.395	P=0.373	P=0.489
Incidental Tumor Test (d)		P=0.207	P=0.443	P=0.494N
Fisher Exact Test (d)		P=0.263	P=0.426	P=0.536N
All Sites: Mesothelioma or Malignant Mesothelioma				
Overall Rates (a)	2/117 (2%)	10/250 (4%)	3/100 (3%)	
Adjusted Rates (b)	2.2%	8.4%	8.3%	
Terminal Rates (c)	0/8 (0%)	1/41 (2%)	0/8 (0%)	
Week of First Observation	95	108	98	
Life Table Test (d)		P=0.328	P=0.373	P=0.550
Incidental Tumor Test (d)		P=0.152	P=0.443	P=0.410N
Fisher Exact Test (d)		P=0.206	P=0.426	P=0.464N

TABLE A3a. ANALYSIS OF PRIMARY TUMORS IN MALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS (Continued)

	Untreated Control	1% Amosite	1% Amosite + PW	1% Amosite vs. 1% Amosite + PW
All Sites: Benign Tumors				
Overall Rates (a)	115/117 (98%)	244/250 (98%)	95/100 (95%)	
Adjusted Rates (b)	100.0%	100.0%	99.0%	
Terminal Rates (c)	8/8 (100%)	41/41 (100%)	7/8 (88%)	
Week of First Observation	78	58	80	
Life Table Test (d)		P<0.001N	P=0.182	P<0.001
Incidental Tumor Test (d)		P=0.500N	P=0.413N	P=0.495N
Fisher Exact Test (d)		P=0.503N	P=0.163N	P=0.177N
All Sites: Malignant Tumors				
Overall Rates (a)	82/117 (70%)	201/250 (80%)	84/100 (84%)	
Adjusted Rates (b)	94.5%	96.0%	100.0%	
Terminal Rates (c)	5/8 (63%)	34/41 (83%)	8/8 (100%)	
Week of First Observation	72	58	70	
Life Table Test (d)		P=0.054N	P=0.015	P<0.001
Incidental Tumor Test (d)		P=0.025	P=0.018	P=0.254
Fisher Exact Test (d)		P=0.021	P=0.012	P=0.267
All Sites: All Tumors				
Overall Rates (a)	116/117 (99%)	249/250 (100%)	99/100 (99%)	
Adjusted Rates (b)	100.0%	100.0%	100.0%	
Terminal Rates (c)	8/8 (100%)	41/41 (100%)	8/8 (100%)	
Week of First Observation	72	58	70	
Life Table Test (d)		P<0.001N	P=0.125	P<0.001
Incidental Tumor Test (d)		P=0.606	P=0.603	P=0.651N
Fisher Exact Test (d)		P=0.537	P=0.710N	P=0.490N

(a) Number of tumor-bearing animals/number of animals examined grossly at the site
(b) Kaplan-Meier estimated tumor incidences at the end of the study after adjusting for intercurrent mortality
(c) Observed tumor incidence in animals killed at the end of the study
(d) Beneath the dosed group incidence are the P values corresponding to pairwise comparisons between that dosed group and the controls. The life table analysis regards tumors in animals dying prior to terminal kill as being (directly or indirectly) the cause of death. The incidental tumor test regards these lesions as nonfatal. The Fisher exact test compares directly the overall incidence rates. A lower incidence in a dosed group than in controls is indicated by (N). The comparison of the 1% amosite and the 1% amosite + PW groups is presented in the last column for sites with an incidence of at least 2% in at least one of the groups.
(e) Number of tumor-bearing animals/number of animals examined microscopically at the site

TABLE A3b. ANALYSIS OF PRIMARY TUMORS IN MALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS AND DIMETHYLHYDRAZINE (DMH)

	Untreated Control	DMH	1% Amosite + DMH	DMH vs. 1% Amosite + DMH
Skin: Basal Cell Carcinoma				
Overall Rates (a)	3/117 (3%)	0/125 (0%)	1/175 (1%)	
Adjusted Rates (b)	3.8%	0.0%	2.6%	
Terminal Rates (c)	3/79 (4%)	0/15 (0%)	0/29 (0%)	
Week of First Observation	117		108	
Life Table Tests (d)		P=0.514N	P=0.676N	
Incidental Tumor Tests (d)		P=0.522N	P=0.518N	
Fisher Exact Test (d)		P=0.112N	P=0.178N	
Skin: Basal Cell Tumor or Carcinoma				
Overall Rates (a)	4/117 (3%)	0/125 (0%)	1/175 (1%)	
Adjusted Rates (b)	5.1%	0.0%	2.6%	
Terminal Rates (c)	4/79 (5%)	0/15 (0%)	0/29 (0%)	
Week of First Observation	117		108	
Life Table Tests (d)		P=0.424N	P=0.555N	
Incidental Tumor Tests (d)		P=0.432N	P=0.409N	
Fisher Exact Test (d)		P=0.053N	P=0.086N	
Skin: Trichoepithelioma, Basal Cell Tumor, or Basal Cell Carcinoma				
Overall Rates (a)	5/117 (4%)	0/125 (0%)	1/175 (1%)	
Adjusted Rates (b)	6.3%	0.0%	2.6%	
Terminal Rates (c)	5/79 (6%)	0/15 (0%)	0/29 (0%)	
Week of First Observation	117		108	
Life Table Tests (d)		P=0.355N	P=0.451N	
Incidental Tumor Tests (d)		P=0.364N	P=0.323N	
Fisher Exact Test (d)		P=0.025N	P=0.040N	
Skin: Keratoacanthoma				
Overall Rates (a)	4/117 (3%)	0/125 (0%)	5/175 (3%)	
Adjusted Rates (b)	5.1%	0.0%	8.8%	
Terminal Rates (c)	4/79 (5%)	0/15 (0%)	1/29 (3%)	
Week of First Observation	117		72	
Life Table Tests (d)		P=0.424N	P=0.140	P=0.118
Incidental Tumor Tests (d)		P=0.432N	P=0.426	P=0.084
Fisher Exact Test (d)		P=0.053N	P=0.520N	P=0.066
Subcutaneous Tissue: Fibroma				
Overall Rates (e)	18/117 (15%)	3/125 (2%)	6/175 (3%)	
Adjusted Rates (b)	20.1%	12.5%	18.6%	
Terminal Rates (c)	11/79 (14%)	1/15 (7%)	4/29 (14%)	
Week of First Observation	95	71	110	
Life Table Tests (d)		P=0.403N	P=0.443N	P=0.607
Incidental Tumor Tests (d)		P=0.061N	P=0.138N	P=0.549
Fisher Exact Test (d)		P<0.001N	P<0.001N	P=0.440
Subcutaneous Tissue: Neurofibroma				
Overall Rates (e)	3/117 (3%)	1/125 (1%)	1/175 (1%)	
Adjusted Rates (b)	3.8%	3.7%	0.7%	
Terminal Rates (c)	3/79 (4%)	0/15 (0%)	0/29 (0%)	
Week of First Observation	117	103	71	
Life Table Tests (d)		P=0.602	P=0.566N	
Incidental Tumor Tests (d)		P=0.719N	P=0.371N	
Fisher Exact Test (d)		P=0.286N	P=0.178N	
Skin: Fibroma or Neurofibroma				
Overall Rates (a)	21/117 (18%)	4/125 (3%)	7/175 (4%)	
Adjusted Rates (b)	23.7%	15.7%	19.2%	
Terminal Rates (c)	14/79 (18%)	1/15 (7%)	4/29 (13%)	
Week of First Observation	95	71	71	
Life Table Tests (d)		P=0.476N	P=0.386N	P=0.587N
Incidental Tumor Tests (d)		P=0.073N	P=0.083N	P=0.587
Fisher Exact Test (d)		P<0.001N	P<0.001N	P=0.486

TABLE A3b. ANALYSIS OF PRIMARY TUMORS IN MALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS AND DIMETHYLHYDRAZINE (DMH) (Continued)

	Untreated Control	DMH	1% Amosite + DMH	DMH vs. 1% Amosite + DMH
Subcutaneous Tissue: Fibrosarcoma				
Overall Rates (e)	7/117 (6%)	1/125 (1%)	3/175 (2%)	
Adjusted Rates (b)	7.8%	6.7%	6.0%	
Terminal Rates (c)	4/79 (5%)	1/15 (7%)	1/29 (3%)	
Week of First Observation	72	117	49	
Life Table Tests (d)		P=0.460N	P=0.514N	
Incidental Tumor Tests (d)		P=0.105N	P=0.086N	
Fisher Exact Test (d)		P=0.027N	P=0.052N	
Subcutaneous Tissue: Fibroma or Fibrosarcoma				
Overall Rates (e)	25/117 (21%)	4/125 (3%)	9/175 (5%)	
Adjusted Rates (b)	27.0%	18.7%	23.9%	
Terminal Rates (c)	15/79 (19%)	2/15 (13%)	5/29 (16%)	
Week of First Observation	72	71	49	
Life Table Tests (d)		P=0.303N	P=0.382N	P=0.489
Incidental Tumor Tests (d)		P=0.011N	P=0.027N	P=0.381
Fisher Exact Test (d)		P<0.001N	P<0.001N	P=0.304
Subcutaneous Tissue: Neurofibroma or Neurofibrosarcoma				
Overall Rates (e)	5/117 (4%)	1/125 (1%)	1/175 (1%)	
Adjusted Rates (b)	5.9%	3.7%	0.7%	
Terminal Rates (c)	4/79 (5%)	0/15 (0%)	0/29 (0%)	
Week of First Observation	78	103	71	
Life Table Tests (d)		P=0.620N	P=0.294N	
Incidental Tumor Tests (d)		P=0.242N	P=0.054N	
Fisher Exact Test (d)		P=0.092N	P=0.040N	
Subcutaneous Tissue: Sarcoma, Fibrosarcoma, or Neurofibrosarcoma				
Overall Rates (e)	13/117 (11%)	2/125 (2%)	4/175 (2%)	
Adjusted Rates (b)	14.2%	8.4%	8.3%	
Terminal Rates (c)	8/79 (10%)	1/15 (7%)	1/29 (3%)	
Week of First Observation	72	84	49	
Life Table Tests (d)		P=0.322N	P=0.256N	P=0.612
Incidental Tumor Tests (d)		P=0.007N	P=0.007N	P=0.499
Fisher Exact Test (d)		P=0.002N	P=0.002N	P=0.510
Subcutaneous Tissue: Fibroma, Neurofibroma, Sarcoma, Fibrosarcoma, or Neurofibrosarcoma				
Overall Rates (e)	33/117 (28%)	6/125 (5%)	11/175 (6%)	
Adjusted Rates (b)	35.0%	23.2%	26.3%	
Terminal Rates (c)	22/79 (28%)	2/15 (13%)	5/29 (16%)	
Week of First Observation	72	71	49	
Life Table Tests (d)		P=0.307N	P=0.227N	P=0.602
Incidental Tumor Tests (d)		P=0.001N	P=0.002N	P=0.467
Fisher Exact Test (d)		P<0.001N	P<0.001N	P=0.389
Integumentary System or Salivary Gland: Fibrosarcoma				
Overall Rates (a)	8/117 (7%)	1/125 (1%)	3/175 (2%)	
Adjusted Rates (b)	9.0%	6.7%	6.0%	
Terminal Rates (c)	5/79 (6%)	1/15 (7%)	1/29 (3%)	
Week of First Observation	72	117	49	
Life Table Tests (d)		P=0.408N	P=0.442N	
Incidental Tumor Tests (d)		P=0.091N	P=0.067N	
Fisher Exact Test (d)		P=0.014N	P=0.027N	

TABLE A3b. ANALYSIS OF PRIMARY TUMORS IN MALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS AND DIMETHYLHYDRAZINE (DMH) (Continued)

	Untreated Control	DMH	1% Amosite + DMH	DMH vs. 1% Amosite + DMH
Integumentary System or Salivary Glands: Sarcoma, Fibrosarcoma, or Neurofibrosarcoma				
Overall Rates (a)	14/117 (12%)	3/125 (2%)	4/175 (2%)	
Adjusted Rates (b)	15.4%	10.8%	8.3%	
Terminal Rates (c)	9/79 (11%)	1/15 (7%)	1/29 (3%)	
Week of First Observation	72	84	49	
Life Table Tests (d)		P=0.469N	P=0.217N	P=0.511N
Incidental Tumor Tests (d)		P=0.019N	P=0.006N	P=0.629N
Fisher Exact Test (d)		P=0.003N	P<0.001N	P=0.618N
Integumentary System or Salivary Gland: Fibroma, Neurofibroma, Sarcoma, Fibrosarcoma, or Neurofibrosarcoma				
Overall Rates (a)	34/117 (29%)	7/125 (6%)	11/175 (6%)	
Adjusted Rates (b)	36.1%	25.2%	26.3%	
Terminal Rates (c)	23/79 (29%)	2/15 (13%)	5/29 (16%)	
Week of First Observation	72	71	49	
Life Table Tests (d)		P=0.402N	P=0.200N	P=0.474N
Incidental Tumor Tests (d)		P=0.003N	P=0.002N	P=0.585
Fisher Exact Test (d)		P<0.001N	P<0.001N	P=0.505
Hematopoietic System: Leukemia				
Overall Rates (e)	38/117 (32%)	20/125 (16%)	40/175 (23%)	
Adjusted Rates (b)	42.4%	60.0%	72.8%	
Terminal Rates (c)	29/79 (37%)	5/15 (33%)	17/29 (59%)	
Week of First Observation	87	72	73	
Life Table Test (d)		P<0.001	P<0.001	P=0.423
Incidental Tumor Test (d)		P=0.509N	P=0.024	P=0.210
Fisher Exact Test (d)		P=0.002N	P=0.046N	P=0.093
Circulatory System: Hemangiosarcoma				
Overall Rates (e)	1/117 (1%)	0/125 (0%)	4/175 (2%)	
Adjusted Rates (b)	1.3%	0.0%	6.4%	
Terminal Rates (c)	1/79 (1%)	0/15 (0%)	1/29 (3%)	
Week of First Observation	132		70	
Life Table Test (d)		P=0.824N	P=0.075	P=0.170
Incidental Tumor Test (d)		P=0.829N	P=0.316	P=0.135
Fisher Exact Test (d)		P=0.483N	P=0.334	P=0.114
Circulatory System: Hemangioma or Hemangiosarcoma				
Overall Rates (e)	1/117 (1%)	0/125 (0%)	5/175 (3%)	
Adjusted Rates (b)	1.3%	0.0%	7.7%	
Terminal Rates (c)	1/79 (1%)	0/15 (0%)	1/29 (3%)	
Week of First Observation	132		70	
Life Table Test (d)		P=0.824N	P=0.035	P=0.117
Incidental Tumor Test (d)		P=0.829N	P=0.218	P=0.085
Fisher Exact Test (d)		P=0.483N	P=0.230	P=0.066
Liver: Neoplastic Nodule				
Overall Rates (a)	9/117 (8%)	18/125 (14%)	27/175 (15%)	
Adjusted Rates (b)	11.1%	63.2%	54.2%	
Terminal Rates (c)	8/79 (10%)	7/15 (47%)	13/29 (41%)	
Week of First Observation	108	75	69	
Life Table Tests (d)		P<0.001	P<0.001	P=0.285
Incidental Tumor Tests (d)		P<0.001	P<0.001	P=0.435
Fisher Exact Test (d)		P=0.072	P=0.035	P=0.470

TABLE A3b. ANALYSIS OF PRIMARY TUMORS IN MALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS AND DIMETHYLHYDRAZINE (DMH) (Continued)

	Untreated Control	DMH	1% Amosite + DMH	DMH vs. 1% Amosite + DMH
Liver: Hepatocellular Carcinoma				
Overall Rates (a)	1/117 (1%)	9/125 (7%)	7/175 (4%)	
Adjusted Rates (b)	1.3%	33.9%	15.7%	
Terminal Rates (c)	1/79 (1%)	2/15 (13%)	2/29 (9%)	
Week of First Observation	117	68	78	
Life Table Tests (d)		P<0.001	P=0.001	P=0.065N
Incidental Tumor Tests (d)		P=0.005	P=0.019	P=0.113N
Fisher Exact Test (d)		P=0.013	P=0.102	P=0.169N
Liver: Neoplastic Nodule or Hepatocellular Carcinoma				
Overall Rates (a)	9/117 (8%)	24/125 (19%)	31/175 (18%)	
Adjusted Rates (b)	11.1%	70.5%	59.0%	
Terminal Rates (c)	8/79 (10%)	7/15 (47%)	13/29 (45%)	
Week of First Observation	108	68	69	
Life Table Tests (d)		P<0.001	P<0.001	P=0.103N
Incidental Tumor Tests (d)		P<0.001	P<0.001	P=0.215N
Fisher Exact Test (d)		P=0.007	P=0.010	P=0.428N
Small Intestine: Adenocarcinoma				
Overall Rates (e)	0/117 (0%)	3/125 (2%)	9/175 (5%)	
Adjusted Rates (b)	0.0%	9.0%	15.0%	
Terminal Rates (c)	0/79 (0%)	1/15 (7%)	2/29 (6%)	
Week of First Observation		49	57	
Life Table Tests (d)		P=0.028	P<0.001	P=0.293
Incidental Tumor Tests (d)		P=0.175	P=0.024	P=0.171
Fisher Exact Test (d)		P=0.136	P=0.009	P=0.186
Small Intestine: Mucinous Cystadenocarcinoma				
Overall Rates (e)	2/117 (2%)	8/125 (6%)	7/175 (4%)	
Adjusted Rates (b)	2.2%	16.6%	9.0%	
Terminal Rates (c)	1/79 (1%)	1/15 (7%)	1/29 (3%)	
Week of First Observation	100	45	60	
Life Table Tests (d)		P=0.002	P=0.032	P=0.155N
Incidental Tumor Tests (d)		P=0.268	P=0.449	P=0.310N
Fisher Exact Test (d)		P=0.063	P=0.227	P=0.249N
Small Intestine: Adenocarcinoma or Mucinous Cystadenocarcinoma				
Overall Rates (e)	2/117 (2%)	11/125 (9%)	16/175 (9%)	
Adjusted Rates (b)	2.2%	24.5%	22.9%	
Terminal Rates (c)	1/79 (1%)	2/15 (13%)	3/29 (9%)	
Week of First Observation	100	45	57	
Life Table Tests (d)		P<0.001	P<0.001	P=0.422N
Incidental Tumor Tests (d)		P=0.086	P=0.033	P=0.474
Fisher Exact Test (d)		P=0.013	P=0.007	P=0.544
Small Intestine: Adenomatous Polyp, Adenocarcinoma, or Mucinous Cystadenocarcinoma				
Overall Rates (e)	3/117 (3%)	12/125 (10%)	17/175 (10%)	
Adjusted Rates (b)	3.5%	25.4%	23.4%	
Terminal Rates (c)	2/79 (2%)	2/15 (13%)	3/29 (9%)	
Week of First Observation	100	45	57	
Life Table Tests (d)		P<0.001	P<0.001	P=0.380N
Incidental Tumor Tests (d)		P=0.114	P=0.053	P=0.503
Fisher Exact Test (d)		P=0.021	P=0.013	P=0.569

TABLE A3b. ANALYSIS OF PRIMARY TUMORS IN MALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS AND DIMETHYLHYDRAZINE (DMH) (Continued)

	Untreated Control	DMH	1% Amosite + DMH	DMH vs. 1% Amosite + DMH
Small Intestine: Signet Ring Carcinoma				
Overall Rates (e)	0/117 (0%)	3/125 (2%)	0/175 (0%)	
Adjusted Rates (b)	0.0%	5.4%	0.0%	
Terminal Rates (c)	0/79 (0%)	0/15 (0%)	0/29 (0%)	
Week of First Observation		75		
Life Table Tests (d)		P=0.031	(f)	P=0.052N
Incidental Tumor Tests (d)		P=0.285	(f)	P=0.070N
Fisher Exact Test (d)		P=0.136	(f)	P=0.071N
Large Intestine: Signet Ring Carcinoma				
Overall Rates (e)	0/117 (0%)	6/125 (5%)	5/175 (3%)	
Adjusted Rates (b)	0.0%	9.1%	8.3%	
Terminal Rates (c)	0/79 (0%)	0/15 (0%)	1/29 (3%)	
Week of First Observation		31	74	
Life Table Tests (d)		P=0.003	P=0.011	P=0.182N
Incidental Tumor Tests (d)		P=0.267	P=0.168	P=0.337N
Fisher Exact Test (d)		P=0.018	P=0.076	P=0.281N
Large Intestine: Adenomatous Polyp				
Overall Rates (e)	0/117 (0%)	43/125 (34%)	61/175 (35%)	
Adjusted Rates (b)	0.0%	69.0%	60.7%	
Terminal Rates (c)	0/79 (0%)	6/15 (40%)	8/29 (28%)	
Week of First Observation		66	57	
Life Table Tests (d)		P<0.001	P<0.001	P=0.158
Incidental Tumor Tests (d)		P<0.001	P<0.001	P=0.440
Fisher Exact Test (d)		P<0.001	P<0.001	P=0.517
Large Intestine: Adenocarcinoma				
Overall Rates (e)	0/117 (0%)	9/125 (7%)	6/175 (3%)	
Adjusted Rates (b)	0.0%	9.8%	5.6%	
Terminal Rates (c)	0/79 (0%)	0/15 (0%)	0/29 (0%)	
Week of First Observation		44	39	
Life Table Tests (d)		P<0.001	P=0.019	P=0.064N
Incidental Tumor Tests (d)		P=0.490	P=0.481	P=0.143N
Fisher Exact Test (d)		P=0.002	P=0.045	P=0.114N
Large Intestine: Mucinous Cystadenocarcinoma				
Overall Rates (a)	0/117 (0%)	10/125 (8%)	18/175 (10%)	
Adjusted Rates (b)	0.0%	8.5%	17.6%	
Terminal Rates (c)	0/79 (0%)	0/15 (0%)	1/29 (3%)	
Week of First Observation		41	49	
Life Table Tests (d)		P=0.002	P<0.001	P=0.458
Incidental Tumor Tests (d)		P=0.693	P=0.058	P=0.139
Fisher Exact Test (d)		P=0.001	P<0.001	P=0.322
Large Intestine: Adenocarcinoma in Adenomatous Polyp				
Overall Rates (a)	0/117 (0%)	30/125 (24%)	45/175 (26%)	
Adjusted Rates (b)	0.0%	51.8%	50.9%	
Terminal Rates (c)	079 (0%)	2/15 (13%)	6/29 (21%)	
Week of First Observation		40	51	
Life Table Tests (d)		P<0.001	P<0.001	P=0.315N
Incidental Tumor Tests (d)		P<0.001	P<0.001	P=0.454
Fisher Exact Test (d)		P<0.001	P<0.001	P=0.421

TABLE A3b. ANALYSIS OF PRIMARY TUMORS IN MALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS AND DIMETHYLHYDRAZINE (DMH) (Continued)

	Untreated Control	DMH	1% Amosite + DMH	DMH vs. 1% Amosite + DMH
Large Intestine: Adenocarcinoma, Mucinous Cystadenocarcinoma, or Adenocarcinoma in Adenomatous Polyp				
Overall Rates (a)	0/117 (0%)	44/125 (35%)	65/175 (37%)	
Adjusted Rates (b)	0.0%	58.3%	60.5%	
Terminal Rates (c)	0/79 (0%)	2/15 (13%)	7/29 (24%)	
Week of First Observation		40	39	
Life Table Tests (d)		P<0.001	P<0.001	P=0.272N
Incidental Tumor Tests (d)		P<0.001	P<0.001	P=0.313
Fisher Exact Test (d)		P<0.001	P<0.001	P=0.412
Large Intestine: Adenomatous Polyp, Adenocarcinoma, Mucinous Cystadenocarcinoma, or Adenocarcinoma in Adenamatous Polyp				
Overall Rates (a)	0/117 (0%)	77/125 (62%)	106/175 (61%)	
Adjusted Rates (b)	0.0%	86.0%	81.1%	
Terminal Rates (c)	0/79 (0%)	8/15 (53%)	13/29 (45%)	
Week of First Observation		40	39	
Life Table Tests (d)		P<0.001	P<0.001	P=0.071N
Incidental Tumor Tests (d)		P<0.001	P<0.001	P=0.476N
Fisher Exact Test (d)		P<0.001	P<0.001	P=0.477N
Pancreas: Acinar Cell Adenoma				
Overall Rates (e)	9/116 (8%)	0/125 (0%)	5/175 (3%)	
Adjusted Rates (b)	11.2%	0.0%	14.5%	
Terminal Rates (c)	8/79 (10%)	0/15 (0%)	3/29 (10%)	
Week of First Observation	115		103	
Life Table Tests (d)		P=0.188N	P=0.344	P=0.121
Incidental Tumor Tests (d)		P=0.195N	P=0.513	P=0.104
Fisher Exact Test (d)		P=0.001N	P=0.055N	P=0.066
Pancreas: Acinar Cell Adenoma or Carcinoma				
Overall Rates (e)	11/117 (9%)	0/125 (0%)	5/175 (3%)	
Adjusted Rates (b)	13.7%	0.0%	14.5%	
Terminal Rates (c)	10/79 (13%)	0/15 (0%)	3/29 (10%)	
Week of First Observation	115		103	
Life Table Tests (d)		P=0.139N	P=0.474	P=0.121
Incidental Tumor Tests (d)		P=0.145N	P=0.599N	P=0.104
Fisher Exact Test (d)		P<0.001N	P=0.017N	P=0.066
Pituitary Gland: Adenoma				
Overall Rates (e)	24/117 (21%)	6/122 (5%)	12/169 (7%)	
Adjusted Rates (b)	27.7%	26.2%	24.5%	
Terminal Rates (c)	18/79 (23%)	3/14 (21%)	4/28 (14%)	
Week of First Observation	96	66	79	
Life Table Test (d)		P=0.483	P=0.376	P=0.525
Incidental Tumor Test (d)		P=0.258N	P=0.203N	P=0.421
Fisher Exact Test (d)		P<0.001N	P<0.001N	P=0.307
Pituitary Gland: Adenoma or Carcinoma				
Overall Rates (e)	26/117 (22%)	6/122 (5%)	12/169 (7%)	
Adjusted Rates (b)	29.8%	26.2%	24.5%	
Terminal Rates (c)	19/79 (24%)	3/14 (21%)	4/28 (14%)	
Week of First Observation	96	66	79	
Life Table Test (d)		P=0.545	P=0.457	P=0.525
Incidental Tumor Test (d)		P=0.214N	P=0.152N	P=0.421
Fisher Exact Test (d)		P<0.001N	P<0.001N	P=0.307

TABLE A3b. ANALYSIS OF PRIMARY TUMORS IN MALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS AND DIMETHYLHYDRAZINE (DMH) (Continued)

	Untreated Control	DMH	1% Amosite + DMH	DMH vs. 1% Amosite + DMH
Adrenal Medulla: Pheochromocytoma				
Overall Rates (e)	39/117 (33%)	16/125 (13%)	16/175 (9%)	
Adjusted Rates (b)	45.4%	62.2%	37.0%	
Terminal Rates (c)	33/79 (42%)	8/15 (53%)	8/29 (28%)	
Week of First Observation	78	76	73	
Life Table Tests (d)		P=0.012	P=0.565N	P=0.041N
Incidental Tumor Tests (d)		P=0.344	P=0.102N	P=0.074N
Fisher Exact Test (d)		P<0.001N	P<0.001N	P=0.205N
Adrenal Medulla: Malignant Pheochromocytoma				
Overall Rates (e)	3/117 (3%)	0/125 (0%)	2/175 (1%)	
Adjusted Rates (b)	3.8%	0.0%	5.7%	
Terminal Rates (c)	3/79 (4%)	0/15 (0%)	0/29 (0%)	
Week of First Observation	117		110	
Life Table Tests (d)		P=0.514N	P=0.447	
Incidental Tumor Tests (d)		P=0.522N	P=0.591	
Fisher Exact Test (d)		P=0.112N	P=0.322N	
Adrenal Medulla: Pheochromocytoma or Malignant Pheochromocytoma				
Overall Rates (e)	39/117 (33%)	16/125 (13%)	17/175 (10%)	
Adjusted Rates (b)	45.4%	62.2%	39.0%	
Terminal Rates (c)	33/79 (42%)	8/15 (53%)	8/29 (28%)	
Week of First Observation	78	76	73	
Life Table Tests (d)		P=0.012	P=0.473	P=0.058N
Incidental Tumor Tests (d)		P=0.344	P=0.160N	P=0.097N
Fisher Exact Test (d)		P<0.001N	P<0.001N	P=0.255N
Thyroid Gland: Follicular Cell Adenoma				
Overall Rates (e)	4/117 (3%)	4/124 (3%)	10/174 (6%)	
Adjusted Rates (b)	5.1%	14.5%	21.1%	
Terminal Rates (c)	4/79 (5%)	1/15 (7%)	4/29 (14%)	
Week of First Observation	117	80	74	
Life Table Tests (d)		P=0.044	P=0.002	P=0.385
Incidental Tumor Tests (d)		P=0.277	P=0.047	P=0.304
Fisher Exact Test (d)		P=0.606N	P=0.261	P=0.234
Thyroid Gland: Follicular Cell Carcinoma				
Overall Rates (e)	7/117 (6%)	3/124 (2%)	3/174 (2%)	
Adjusted Rates (b)	8.5%	20.0%	9.0%	
Terminal Rates (c)	6/79 (8%)	3/15 (20%)	2/29 (7%)	
Week of First Observation	98	117	106	
Life Table Tests (d)		P=0.239	P=0.595	P=0.343N
Incidental Tumor Tests (d)		P=0.324	P=0.512N	P=0.355N
Fisher Exact Test (d)		P=0.144N	P=0.053N	P=0.489N
Thyroid Gland: Follicular Cell Adenoma or Carcinoma				
Overall Rates (e)	11/117 (9%)	6/124 (5%)	13/174 (7%)	
Adjusted Rates (b)	13.5%	26.7%	29.1%	
Terminal Rates (c)	10/79 (13%)	3/15 (20%)	6/29 (21%)	
Week of First Observation	98	80	74	
Life Table Tests (d)		P=0.060	P=0.009	P=0.455
Incidental Tumor Tests (d)		P=0.292	P=0.149	P=0.371
Fisher Exact Test (d)		P=0.129N	P=0.352N	P=0.256
Thyroid Gland: C-Cell Adenoma				
Overall Rates (e)	16/117 (14%)	2/124 (2%)	9/174 (5%)	
Adjusted Rates (b)	19.3%	9.3%	26.0%	
Terminal Rates (c)	13/79 (16%)	0/15 (0%)	7/29 (24%)	
Week of First Observation	109	108	80	
Life Table Tests (d)		P=0.380N	P=0.243	P=0.188
Incidental Tumor Tests (d)		P=0.108N	P=0.512	P=0.162
Fisher Exact Test (d)		P<0.001N	P=0.011N	P=0.095

TABLE A3b. ANALYSIS OF PRIMARY TUMORS IN MALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS AND DIMETHYLHYDRAZINE (DMH) (Continued)

	Untreated Control	DMH	1% Amosite + DMH	DMH vs. 1% Amosite + DMH
Thyroid Gland: C-Cell Carcinoma				
Overall Rates (e)	11/117 (9%)	7/124 (6%)	10/174 (6%)	
Adjusted Rates (b)	13.1%	29.5%	24.7%	
Terminal Rates (c)	9/79 (11%)	2/15 (13%)	5/29 (14%)	
Week of First Observation	95	68	98	
Life Table Tests (d)		P=0.029	P=0.046	P=0.387N
Incidental Tumor Tests (d)		P=0.382	P=0.278	P=0.481N
Fisher Exact Test (d)		P=0.194N	P=0.171N	P=0.590
Thyroid Gland: C-Cell Adenoma or Carcinoma				
Overall Rates (e)	27/117 (23%)	8/124 (6%)	19/174 (11%)	
Adjusted Rates (b)	31.7%	32.7%	47.2%	
Terminal Rates (c)	22/79 (28%)	2/15 (13%)	11/29 (38%)	
Week of First Observation	95	68	80	
Life Table Tests (d)		P=0.271	P=0.025	P=0.343
Incidental Tumor Tests (d)		P=0.244N	P=0.272	P=0.253
Fisher Exact Test (d)		P<0.001N	P=0.005N	P=0.131
Parathyroid: Adenoma				
Overall Rates (e)	4/110 (4%)	1/119 (1%)	1/170 (1%)	
Adjusted Rates (b)	5.1%	1.0%	3.8%	
Terminal Rates (c)	3/79 (4%)	0/15 (0%)	1/29 (3%)	
Week of First Observation	114	67	117	
Life Table Tests (d)		P=0.671N	P=0.589N	
Incidental Tumor Tests (d)		P=0.462N	P=0.589N	
Fisher Exact Test (d)		P=0.161N	P=0.080N	
Pancreatic Islets: Islet Cell Adenoma				
Overall Rates (e)	14/116 (12%)	0/125 (0%)	3/175 (2%)	
Adjusted Rates (b)	17.0%	0.0%	6.8%	
Terminal Rates (c)	12/79 (15%)	0/15 (0%)	1/29 (3%)	
Week of First Observation	101		99	
Life Table Tests (d)		P=0.085N	P=0.228N	
Incidental Tumor Tests (d)		P=0.056N	P=0.101N	
Fisher Exact Test (d)		P<0.001N	P<0.001N	
Pancreatic Islets: Islet Cell Carcinoma				
Overall Rates (e)	3/116 (3%)	0/125 (0%)	3/175 (2%)	
Adjusted Rates (b)	3.8%	0.0%	7.4%	
Terminal Rates (c)	3/79 (3%)	0/15 (0%)	1/29 (3%)	
Week of First Observation	117		103	
Life Table Tests (d)		P=0.514N	P=0.243	
Incidental Tumor Tests (d)		P=0.522N	P=0.464	
Fisher Exact Test (d)		P=0.110N	P=0.453N	
Pancreatic Islets: Islet Cell Adenoma or Carcinoma				
Overall Rates (e)	17/116 (15%)	0/125 (0%)	6/175 (3%)	
Adjusted Rates (b)	20.7%	0.0%	13.8%	
Terminal Rates (c)	15/79 (19%)	0/15 (0%)	2/29 (7%)	
Week of First Observation	101		99	
Life Table Tests (d)		P=0.054N	P=0.488N	P=0.083
Incidental Tumor Tests (d)		P=0.036N	P=0.207N	P=0.059
Fisher Exact Test (d)		P<0.001	P<0.001N	P=0.038
Mammary Gland: Adenoma				
Overall Rates (a)	3/117 (3%)	0/125 (0%)	0/175 (0%)	
Adjusted Rates (b)	3.8%	0.0%	0.0%	
Terminal Rates (c)	3/79 (4%)	0/15 (0%)	0/29 (0%)	
Week of First Observation	133			
Life Table Test (d)		P=0.514N	P=0.344N	
Incidental Tumor Test (d)		P=0.522N	P=0.344N	
Fisher Exact Test (d)		P=0.112N	P=0.063N	

TABLE A3b. ANALYSIS OF PRIMARY TUMORS IN MALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS AND DIMETHYLHYDRAZINE (DMH) (Continued)

	Untreated Control	DMH	1% Amosite + DMH	DMH vs. 1% Amosite + DMH
Mammary Gland: Fibroadenoma				
Overall Rates (a)	17/117 (15%)	1/125 (1%)	5/175 (3%)	
Adjusted Rates (b)	20.8%	6.7%	16.1%	
Terminal Rates (c)	15/79 (19%)	1/15 (7%)	4/29 (14%)	
Week of First Observation	107	117	108	
Life Table Test (d)		P=0.166N	P=0.406N	P=0.305
Incidental Tumor Test (d)		P=0.120N	P=0.270N	P=0.302
Fisher Exact Test (d)		P<0.001N	P<0.001N	P=0.206
Preputial Gland: Carcinoma				
Overall Rates (e)	6/117 (5%)	5/125 (4%)	4/175 (2%)	
Adjusted Rates (b)	6.7%	22.5%	8.2%	
Terminal Rates (c)	3/79 (4%)	3/15 (20%)	1/29 (3%)	
Week of First Observation	90	67	97	
Life Table Test (d)		P=0.051	P=0.411	P=0.182N
Incidental Tumor Test (d)		P=0.399	P=0.364N	P=0.221N
Fisher Exact Test (d)		P=0.454N	P=0.163N	P=0.296N
Testis: Interstitial Cell Tumor				
Overall Rates (e)	111/117 (95%)	79/123 (64%)	125/174 (72%)	
Adjusted Rates (b)	98.2%	100.0%	100.0%	
Terminal Rates (c)	77/79 (97%)	15/15 (100%)	29/29 (100%)	
Week of First Observation	78	66	70	
Life Table Tests (d)		P<0.001	P<0.001	P=0.182N
Incidental Tumor Tests (d)		P=0.547	P=0.456	P=0.473
Fisher Exact Test (d)		P<0.001N	P<0.001N	P=0.103
Zymbal Gland: Keratoacanthoma				
Overall Rates (e)	0/117 (0%)	3/125 (2%)	3/175 (2%)	
Adjusted Rates (b)	0.0%	3.1%	2.3%	
Terminal Rates (c)	0/79 (0%)	0/15 (0%)	0/29 (4%)	
Week of First Observation		66	67	
Life Table Tests (d)		P=0.093	P=0.145	P=0.422N
Incidental Tumor Tests (d)		P=0.768	P=0.844	P=0.489N
Fisher Exact Test (d)		P=0.136	P=0.214	P=0.140
Zymbal Gland: Squamous Cell Papilloma				
Overall Rates (e)	0/117 (0%)	7/125 (6%)	17/175 (10%)	
Adjusted Rates (b)	0.0%	25.3%	29.6%	
Terminal Rates (c)	0/79 (0%)	2/15 (13%)	4/29 (14%)	
Week of First Observation		67	59	
Life Table Tests (d)		P<0.001	P<0.001	P=0.324
Incidental Tumor Tests (d)		P=0.006	P<0.001	P=0.185
Fisher Exact Test (d)		P=0.009	P<0.001	P=0.140
Zymbal Gland: Carcinoma				
Overall Rates (e)	1/117 (1%)	23/125 (18%)	35/175 (20%)	
Adjusted Rates (b)	0.9%	56.7%	42.0%	
Terminal Rates (c)	0/79 (0%)	6/15 (40%)	5/29 (17%)	
Week of First Observation	94	46	57	
Life Table Tests (d)		P<0.001	P<0.001	P=0.340N
Incidental Tumor Tests (d)		P<0.001	P<0.001	P=0.439
Fisher Exact Test (d)		P<0.001	P<0.001	P=0.424
Zymbal Gland: Carcinoma or Squamous Cell Papilloma				
Overall Rates (e)	1/117 (1%)	30/125 (24%)	52/175 (30%)	
Adjusted Rates (b)	0.9%	71.0%	60.6%	
Terminal Rates (c)	0/79 (0%)	8/15 (53%)	9/29 (31%)	
Week of First Observation	94	46	57	
Life Table Tests (d)		P<0.001	P<0.001	P=0.508N
Incidental Tumor Tests (d)		P<0.001	P<0.001	P=0.207
Fisher Exact Test (d)		P<0.001	P<0.001	P=0.168

TABLE A3b. ANALYSIS OF PRIMARY TUMORS IN MALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS AND DIMETHYL HYDRAZINE (DMH) (Continued)

	Untreated Control	DMH	1% Amosite + DMH	DMH vs. 1% Amosite + DMH
All Sites: Mesothelioma				
Overall Rates (a)	2/117 (2%)	4/125 (3%)	6/175 (3%)	
Adjusted Rates (b)	2.2%	15.9%	6.9%	
Terminal Rates (c)	1/79 (1%)	1/15 (7%)	0/29 (0%)	
Week of First Observation	95	93	72	
Life Table Test (d)		P=0.013	P=0.059	P=0.526N
Incidental Tumor Test (d)		P=0.206	P=0.588	P=0.612
Fisher Exact Test (d)		P=0.374	P=0.311	P=0.592
All Sites: Benign Tumors				
Overall Rates (a)	115/117 (98%)	93/125 (74%)	150/175 (86%)	
Adjusted Rates (b)	100.0%	100.0%	100.0%	
Terminal Rates (c)	79/79 (100%)	15/15 (100%)	29/29 (100%)	
Week of First Observation	78	66	49	
Life Table Test (d)		P<0.001	P<0.001	P=0.237N
Incidental Tumor Test (d)		P=0.637	P=0.490	P=0.088
Fisher Exact Test (d)		P<0.001N	P<0.001N	P=0.011
All Sites: Malignant Tumors				
Overall Rates (a)	82/117 (70%)	110/125 (88%)	149/175 (85%)	
Adjusted Rates (b)	76.8%	99.0%	97.8%	
Terminal Rates (c)	55/79 (70%)	14/15 (93%)	26/29 (90%)	
Week of First Observation	72	31	39	
Life Table Test (d)		P<0.001	P<0.001	P=0.018N
Incidental Tumor Test (d)		P=0.008	P=0.004	P=0.330N
Fisher Exact Test (d)		P<0.001	P=0.002	P=0.297N
All Sites: All Tumors				
Overall Rates (a)	116/117 (99%)	125/125 (100%)	173/175 (99%)	
Adjusted Rates (b)	100.0%	100.0%	100.0%	
Terminal Rates (c)	79/79 (100%)	15/15 (100%)	29/29 (100%)	
Week of First Observation	72	31	39	
Life Table Test (d)		P<0.001	P<0.001	P=0.021N
Incidental Tumor Test (d)		P=0.038	P=0.156	P=0.321N
Fisher Exact Test (d)		P=0.483	P=0.648N	P=0.339N

(a) Number of tumor-bearing animals/number of animals examined grossly at the site
(b) Kaplan-Meier estimated tumor incidences at the end of the study after adjusting for intercurrent mortality
(c) Observed tumor incidence in animals killed at the end of the study
(d) Beneath the dosed group incidence are the P values corresponding to pairwise comparisons between that dosed group and the controls. The life table analysis regards tumors in animals dying prior to terminal kill as being (directly or indirectly) the cause of death. The incidental tumor test regards these lesions as nonfatal. The Fisher exact test compares directly the overall incidence rates. A lower incidence in a dosed group than in controls is indicated by (N). The P values for the comparision of the DMH group with the 1% amosite + DMH group are presented in the last column for those sites where there was an incidence of at least 2% in at least one group.
(e) Number of tumor-bearing animals/number of animals examined microscopically at the site

TABLE A3c. ANALYSIS OF PRIMARY TUMORS IN MALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS: AMOSITE vs. AMOSITE + DIMETHYLHYDRAZINE (DMH)

	1% Amosite	1% Amosite + DMH
Skin: Squamous Cell Papilloma		
Overall Rates (a)	6/250 (2%)	1/175 (1%)
Adjusted Rates (b)	3.1%	3.4%
Terminal Rates (c)	5/188 (3%)	1/29 (3%)
Week of First Observation	110	117
Life Table Tests (d)		P=0.693
Incidental Tumor Tests (d)		P=0.548N
Fisher Exact Test (d)		P=0.142N
Skin: Squamous Cell Papilloma or Carcinoma		
Overall Rates (a)	10/250 (4%)	1/175 (1%)
Adjusted Rates (b)	5.1%	3.4%
Terminal Rates (c)	8/188 (4%)	1/29 (3%)
Week of First Observation	80	117
Life Table Tests (d)		P=0.449N
Incidental Tumor Tests (d)		P=0.156N
Fisher Exact Test (d)		P=0.024N
Skin: Basal Cell Carcinoma		
Overall Rates (a)	7/250 (3%)	1/175 (1%)
Adjusted Rates (b)	3.6%	2.6%
Terminal Rates (c)	6/188 (3%)	0/29 (0%)
Week of First Observation	104	108
Life Table Tests (d)		P=0.650N
Incidental Tumor Tests (d)		P=0.346N
Fisher Exact Test (d)		P=0.092N
Skin: Basal Cell Tumor or Carcinoma		
Overall Rates (a)	8/250 (3%)	1/175 (1%)
Adjusted Rates (b)	4.2%	2.6%
Terminal Rates (c)	7/188 (4%)	0/29 (0%)
Week of First Observation	104	108
Life Table Tests (d)		P=0.593N
Incidental Tumor Tests (d)		P=0.309N
Fisher Exact Test (d)		P=0.060N
Skin: Keratoacanthoma		
Overall Rates (a)	17/250 (7%)	5/175 (3%)
Adjusted Rates (b)	9.0%	8.8%
Terminal Rates (c)	17/188 (9%)	1/29 (3%)
Week of First Observation	117	72
Life Table Tests (d)		P=0.254
Incidental Tumor Tests (d)		P=0.609N
Fisher Exact Test (d)		P=0.054N
Subcutaneous Tissue: Fibroma		
Overall Rates (a)	33/250 (13%)	6/175 (3%)
Adjusted Rates (b)	17.2%	18.6%
Terminal Rates (c)	31/188(16%)	4/29 (14%)
Week of First Observation	96	110
Life Table Tests (d)		P=0.471
Incidental Tumor Tests (d)		P=0.398N
Fisher Exact Test (d)		P<0.001N
Subcutaneous Tissue: Neurofibroma		
Overall Rates (a)	5/250 (2%)	1/175 (1%)
Adjusted Rates (b)	2.7%	0.7%
Terminal Rates (c)	5/188 (3%)	0/29 (0%)
Week of First Observation	117	71
Life Table Tests (d)		P=0.701N
Incidental Tumor Tests (d)		P=0.459N
Fisher Exact Test (d)		P=0.214N

TABLE A3c. ANALYSIS OF PRIMARY TUMORS IN MALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS: AMOSITE vs. AMOSITE + DIMETHYLHYDRAZINE (DMH) (Continued)

	1% Amosite	1% Amosite + DMH
Subcutaneous Tissue: Fibroma or Neurofibroma		
Overall Rates (a)	36/250 (14%)	7/175 (4%)
Adjusted Rates (b)	18.8%	19.2%
Terminal Rates (c)	34/188 (18%)	4/29 (14%)
Week of First Observation	96	71
Life Table Tests (d)		P=0.428
Incidental Tumor Tests (d)		P=0.348N
Fisher Exact Test (d)		P<0.001N
Subcutaneous Tissue: Fibrosarcoma		
Overall Rates (a)	9/250 (4%)	3/175 (2%)
Adjusted Rates (b)	4.4%	6.0%
Terminal Rates (c)	5/188 (3%)	1/29 (3%)
Week of First Observation	80	49
Life Table Tests (d)		P=0.392
Incidental Tumor Tests (d)		P=0.238N
Fisher Exact Test (d)		P=0.198N
Subcutaneous Tissue: Fibroma or Fibrosarcoma		
Overall Rates (a)	41/250 (16%)	9/175 (5%)
Adjusted Rates (b)	20.8%	23.9%
Terminal Rates (c)	35/188 (19%)	5/29 (17%)
Week of First Observation	80	49
Life Table Tests (d)		P=0.312
Incidental Tumor Tests (d)		P=0.223N
Fisher Exact Test (d)		P<0.001N
Subcutaneous Tissue: Sarcoma or Fibrosarcoma		
Overall Rates (a)	11/250 (4%)	4/175 (2%)
Adjusted Rates (b)	5.4%	8.3%
Terminal Rates (c)	6/188 (3%)	1/29 (3%)
Week of First Observation	80	49
Life Table Tests (d)		P=0.261
Incidental Tumor Tests (d)		P=0.219N
Fisher Exact Test (d)		P=0.186N
Subcutaneous Tissue: Fibroma, Neurofibroma, Sarcoma, or Fibrosarcoma		
Overall Rates (a)	46/250 (18%)	11/175 (6%)
Adjusted Rates (b)	23.2%	26.3%
Terminal Rates (c)	39/188 (21%)	5/29 (17%)
Week of First Observation	80	49
Life Table Tests (d)		P=0.218
Incidental Tumor Tests (d)		P=0.177N
Fisher Exact Test (d)		P<0.001N
Integumentary System or Salivary Gland: Sarcoma or Fibrosarcoma		
Overall Rates (a)	15/250 (6%)	4/175 (2%)
Adjusted Rates (b)	7.5%	8.3%
Terminal Rates (c)	10/188(5%)	1/29 (3%)
Week of First Observation	80	49
Life Table Tests (d)		P=0.405
Incidental Tumor Tests (d)		P=0.148N
Fisher Exact Test (d)		P=0.053N
Integumentary System or Salivary Gland: Fibroma, Neurofibroma, Sarcoma, or Fibrosarcoma		
Overall Rates (a)	48/250 (19%)	11/175 (6%)
Adjusted Rates (b)	24.3%	26.3%
Terminal Rates (c)	41/188 (22%)	5/29(17%)
Week of First Observation	80	49
Life Table Tests (d)		P=0.253
Incidental Tumor Tests (d)		P=0.153N
Fisher Exact Test (d)		P<0.001N

TABLE A3c. ANALYSIS OF PRIMARY TUMORS IN MALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS: AMOSITE vs. AMOSITE + DIMETHYLHYDRAZINE (DMH) (Continued)

	1% Amosite	1% Amosite + DMH
Lung: Alveolar/Bronchiolar Carcinoma		
Overall Rates (e)	6/250 (2%)	2/175 (1%)
Adjusted Rates (b)	3.2%	6.9%
Terminal Rates (c)	6/188 (3%)	2/29 (7%)
Week of First Observation	117	117
Life Table Tests (d)		P=0.325
Incidental Tumor Tests (d)		P=0.342
Fisher Exact Test (d)		P=0.289N
Lung: Alveolar/Bronchiolar Adenoma or Carcinoma		
Overall Rates (e)	8/250 (3%)	3/175 (2%)
Adjusted Rates (b)	4.3%	7.5%
Terminal Rates (c)	8/188 (4%)	2/29 (7%)
Week of First Observation	117	70
Life Table Tests (d)		P=0.248
Incidental Tumor Tests (d)		P=0.421
Fisher Exact Test (d)		P=0.266N
Hematopoietic System: Leukemia		
Overall Rates (a)	107/250 (43%)	40/175 (23%)
Adjusted Rates (b)	50.0%	72.8%
Terminal Rates (c)	83/188 (44%)	17/29 (59%)
Week of First Observation	80	73
Life Table Tests (d)		P<0.001
Incidental Tumor Tests (d)		P=0.344
Fisher Exact Test (d)		P<0.001N
Liver: Neoplastic Nodule		
Overall Rates (e)	9/250 (4%)	27/175 (15%)
Adjusted Rates (b)	4.7%	54.2%
Terminal Rates (c)	8/188 (4%)	12/29 (41%)
Week of First Observation	101	69
Life Table Tests (d)		P<0.001
Incidental Tumor Tests (d)		P<0.001
Fisher Exact Test (d)		P<0.001
Liver: Hepatocellular Carcinoma		
Overall Rates (e)	3/250 (1%)	7/175 (4%)
Adjusted Rates (b)	1.6%	15.7%
Terminal Rates (c)	3/188 (2%)	2/29 (7%)
Week of First Observation	117	78
Life Table Tests (d)		P<0.001
Incidental Tumor Tests (d)		P=0.006
Fisher Exact Test (d)		P=0.062
Liver: Neoplastic Nodule or Hepatocellular Carcinoma		
Overall Rates (e)	12/250 (5%)	31/175 (18%)
Adjusted Rates (b)	6.3%	59.0%
Terminal Rates (c)	11/188 (6%)	13/29 (45%)
Week of First Observation	101	69
Life Table Tests (d)		P<0.001
Incidental Tumor Tests (d)		P<0.001
Fisher Exact Test (d)		P<0.001
Small Intestine: Adenocarcinoma		
Overall Rates (a)	0/250 (0%)	9/175 (5%)
Adjusted Rates (b)	0.0%	15.0%
Terminal Rates (c)	0/188 (0%)	2/29 (7%)
Week of First Observation		57
Life Table Tests (d)		P<0.001
Incidental Tumor Tests (d)		P=0.005
Fisher Exact Test (d)		P<0.001

TABLE A3c. ANALYSIS OF PRIMARY TUMORS IN MALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS: AMOSITE vs. AMOSITE + DIMETHYLHYDRAZINE (DMH) (Continued)

	1% Amosite	1% Amosite + DMH
Small Intestine: Mucinous Cystadenocarcinoma		
Overall Rates (a)	0/250 (0%)	7/175 (4%)
Adjusted Rates (b)	0.0%	9.0%
Terminal Rates (c)	0/188 (0%)	1/29 (3%)
Week of First Observation		60
Life Table Tests (d)		P<0.001
Incidental Tumor Tests (d)		P=0.045
Fisher Exact Test (d)		P=0.002
Small Intestine: Adenocarcinoma, Adenocarcinoma in Adenomatous Polyp, or Mucinous Cystadenocarcinoma		
Overall Rates (a)	1/250 (0%)	16/175 (9%)
Adjusted Rates (b)	0.5%	22.9%
Terminal Rates (c)	0/188 (0%)	3/29 (10%)
Week of First Observation	108	57
Life Table Tests (d)		P<0.001
Incidental Tumor Tests (d)		P=0.002
Fisher Exact Test (d)		P<0.001
Small Intestine: Adenomatous Polyp, Adenocarcinoma, Adenocarcinoma in Adenomatous Polyp, or Mucinous Cystadenocarcinoma		
Overall Rates (a)	1/250 (0%)	17/175 (10%)
Adjusted Rates (b)	0.5%	23.4%
Terminal Rates (c)	0/188 (0%)	3/29 (10%)
Week of First Observation	108	57
Life Table Tests (d)		P<0.001
Incidental Tumor Tests (d)		P=0.002
Fisher Exact Test (d)		P<0.001
Large Intestine: Signet Ring Carcinoma		
Overall Rates (a)	0/250 (0%)	5/175 (3%)
Adjusted Rates (b)	0.0%	8.3%
Terminal Rates (c)	0/188 (0%)	1/29 (3%)
Week of First Observation		74
Life Table Tests (d)		P<0.001
Incidental Tumor Tests (d)		P=0.080
Fisher Exact Test (d)		P=0.011
Large Intestine: Adenomatous Polyp		
Overall Rates (a)	3/250 (1%)	61/175 (35%)
Adjusted Rates (b)	1.5%	60.7%
Terminal Rates (c)	2/188 (1%)	8/29 (28%)
Week of First Observation	110	57
Life Table Tests (d)		P<0.001
Incidental Tumor Tests (d)		P<0.001
Fisher Exact Test (d)		P<0.001
Large Intestine: Adenocarcinoma		
Overall Rates (a)	0/250 (0%)	6/175 (3%)
Adjusted Rates (b)	0.0%	5.6%
Terminal Rates (c)	0/188 (0%)	0/29 (0%)
Week of First Observation		39
Life Table Tests (d)		P<0.001
Incidental Tumor Tests (d)		P=0.289
Fisher Exact Test (d)		P=0.005

TABLE A3c. ANALYSIS OF PRIMARY TUMORS IN MALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS: AMOSITE vs. AMOSITE + DIMETHYLHYDRAZINE (DMH) (Continued)

	1% Amosite	1% Amosite + DMH
Large Intestine: Adenocarcinoma in Adenomatous Polyp		
Overall Rates (a)	0/250 (0%)	45/175 (26%)
Adjusted Rates (b)	0.0%	50.9%
Terminal Rates (c)	0/188 (0%)	6/29 (21%)
Week of First Observation		51
Life Table Tests (d)		P<0.001
Incidental Tumor Tests (d)		P<0.001
Fisher Exact Test (d)		P<0.001
Large Intestine: Mucinous Cystadenocarcinoma		
Overall Rates (a)	0/250 (0%)	18/175 (10%)
Adjusted Rates (b)	0.0%	17.6%
Terminal Rates (c)	0/188 (0%)	1/29 (3%)
Week of First Observation		49
Life Table Tests (d)		P<0.001
Incidental Tumor Tests (d)		P=0.013
Fisher Exact Test (d)		P<0.001
Large Intestine: Adenocarcinoma, Adenocarcinoma in Adenomatous Polyp, or Mucinous Cystadenocarcinoma		
Overall Rates (a)	0/250 (0%)	65/175 (37%)
Adjusted Rates (b)	0.0%	60.5%
Terminal Rates (c)	0/188 (0%)	7/29 (24%)
Week of First Observation		39
Life Table Tests (d)		P<0.001
Incidental Tumor Tests (d)		P<0.001
Fisher Exact Test (d)		P<0.001
Large Intestine: Adenomatous Polyp, Adenocarcinoma, Mucinous Cystadenocarcinoma, and Adenocarcinoma in Adenomatous Polyp		
Overall Rates (a)	3/250 (1%)	106/175 (61%)
Adjusted Rates (b)	1.5%	81.1%
Terminal Rates (c)	2/188 (1%)	13/29 (45%)
Week of First Observation	110	39
Life Table Tests (d)		P<0.001
Incidental Tumor Tests (d)		P<0.001
Fisher Exact Test (d)		P<0.001
Pancreas: Acinar Cell Adenoma		
Overall Rates (a)	19/248 (8%)	5/175 (3%)
Adjusted Rates (b)	10.1%	14.5%
Terminal Rates (c)	19/188 (10%)	3/29 (10%)
Week of First Observation	117	103
Life Table Tests (d)		P=0.222
Incidental Tumor Tests (d)		P=0.424
Fisher Exact Test (d)		P=0.026N
Pancreas: Acinar Cell Adenoma or Carcinoma		
Overall Rates (a)	20/248 (8%)	5/175 (3%)
Adjusted Rates (b)	10.6%	14.5%
Terminal Rates (c)	20/188 (11%)	3/29 (10%)
Week of First Observation	117	103
Life Table Tests (d)		P=0.251
Incidental Tumor Tests (d)		P=0.457
Fisher Exact Test (d)		P=0.018N

TABLE A3c. ANALYSIS OF PRIMARY TUMORS IN MALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS: AMOSITE vs. AMOSITE + DIMETHYLHYDRAZINE (DMH) (Continued)

	1% Amosite	1% Amosite + DMH
Pituitary Gland: Adenoma		
Overall Rates (a)	41/249 (16%)	12/171 (7%)
Adjusted Rates (b)	20.9%	24.5%
Terminal Rates (c)	34/188 (18%)	4/29 (14%)
Week of First Observation	58	79
Life Table Tests (d)		P=0.080
Incidental Tumor Tests (d)		P=0.306N
Fisher Exact Test (d)		P=0.003N
Pituitary Gland: Adenoma or Carcinoma		
Overall Rates (a)	45/249 (18%)	12/171 (7%)
Adjusted Rates (b)	22.8%	24.5%
Terminal Rates (c)	37/188 (20%)	4/29 (14%)
Week of First Observation	58	79
Life Table Tests (d)		P=0.125
Incidental Tumor Tests (d)		P=0.195N
Fisher Exact Test (d)		P=0.001N
Adrenal Cortex: Cortical Adenoma		
Overall Rates (a)	5/250 (2%)	0/175 (0%)
Adjusted Rates (b)	2.7%	0.0%
Terminal Rates (c)	5/188 (3%)	0/29 (0%)
Week of First Observation	117	
Life Table Tests (d)		P=0.412N
Incidental Tumor Tests (d)		P=0.401N
Fisher Exact Test (d)		P=0.069N
Adrenal Medulla: Pheochromocytoma		
Overall Rates (a)	65/250 (26%)	16/175 (9%)
Adjusted Rates (b)	33.9%	37.0%
Terminal Rates (c)	62/188 (33%)	8/29 (28%)
Week of First Observation	101	73
Life Table Tests (d)		P=0.076
Incidental Tumor Tests (d)		P=0.509N
Fisher Exact Test (d)		P<0.001N
Adrenal Medulla: Malignant Pheochromocytoma		
Overall Rates (a)	5/250 (2%)	2/175 (1%)
Adjusted Rates (b)	2.3%	5.7%
Terminal Rates (c)	1/188 (1%)	0/29 (0%)
Week of First Observation	89	110
Life Table Tests (d)		P=0.352
Incidental Tumor Tests (d)		P=0.459N
Fisher Exact Test (d)		P=0.393N
Adrenal Medulla: Pheochromocytoma or Malignant Pheochromocytoma		
Overall Rates (a)	68/250 (27%)	17/175 (10%)
Adjusted Rates (b)	34.8%	39.0%
Terminal Rates (c)	62/188 (33%)	8/29 (28%)
Week of First Observation	89	73
Life Table Tests (d)		P=0.067
Incidental Tumor Tests (d)		P=0.457N
Fisher Exact Test (d)		P<0.001N
Thyroid Gland: Follicular Cell Adenoma		
Overall Rates (a)	13/246 (5%)	10/174 (6%)
Adjusted Rates (b)	7.0%	21.1%
Terminal Rates (c)	13/188 (7%)	4/29 (14%)
Week of First Observation	117	74
Life Table Tests (d)		P<0.001
Incidental Tumor Tests (d)		P=0.053
Fisher Exact Test (d)		P=0.500

TABLE A3c. ANALYSIS OF PRIMARY TUMORS IN MALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS: AMOSITE vs. AMOSITE + DIMETHYLHYDRAZINE (DMH) (Continued)

	1% Amosite	1% Amosite + DMH
Thyroid Gland: Follicular Cell Carcinoma		
Overall Rates (a)	10/246 (4%)	3/174 (2%)
Adjusted Rates (b)	5.2%	9.0%
Terminal Rates (c)	9/188 (5%)	2/29 (7%)
Week of First Observation	96	106
Life Table Tests (d)		P=0.303
Incidental Tumor Tests (d)		P=0.551
Fisher Exact Test (d)		P=0.140N
Thyroid Gland: Follicular Cell Adenoma or Carcinoma		
Overall Rates (a)	23/246 (9%)	13/174 (7%)
Adjusted Rates (b)	12.1%	29.1%
Terminal Rates (c)	22/188 (12%)	6/29 (21%)
Week of First Observation	96	74
Life Table Tests (d)		P<0.001
Incidental Tumor Tests (d)		P=0.071
Fisher Exact Test (d)		P=0.311N
Thyroid Gland: C-Cell Adenoma		
Overall Rates (a)	26/246 (11%)	9/174 (5%)
Adjusted Rates (b)	13.6%	26.0%
Terminal Rates (c)	23/188 (12%)	7/29 (24%)
Week of First Observation	106	80
Life Table Tests (d)		P=0.035
Incidental Tumor Tests (d)		P=0.153
Fisher Exact Test (d)		P=0.034N
Thyroid Gland: C-Cell Carcinoma		
Overall Rates (a)	50/246 (20%)	10/174 (6%)
Adjusted Rates (b)	25.7%	24.7%
Terminal Rates (c)	44/188 (23%)	4/29 (14%)
Week of First Observation	65	98
Life Table Tests (d)		P=0.361
Incidental Tumor Tests (d)		P=0.214N
Fisher Exact Test (d)		P<0.001N
Thyroid Gland: C-Cell Adenoma or Carcinoma		
Overall Rates (a)	75/246 (30%)	19/174 (11%)
Adjusted Rates (b)	38.2%	47.2%
Terminal Rates (c)	67/188 (36%)	11/29 (38%)
Week of First Observation	65	80
Life Table Tests (d)		P=0.039
Incidental Tumor Tests (d)		P=0.552
Fisher Exact Test (d)		P<0.001N
Pancreatic Islets: Islet Cell Adenoma		
Overall Rates (a)	17/248 (7%)	3/175 (2%)
Adjusted Rates (b)	8.8%	6.8%
Terminal Rates (c)	14/188 (7%)	1/29 (3%)
Week of First Observation	103	99
Life Table Tests (d)		P=0.602
Incidental Tumor Tests (d)		P=0.279N
Fisher Exact Test (d)		P=0.010N
Pancreatic Islets: Islet Cell Carcinoma		
Overall Rates (a)	5/248 (2%)	3/175 (2%)
Adjusted Rates (b)	2.7%	7.4%
Terminal Rates (c)	5/188 (3%)	1/29 (3%)
Week of First Observation	117	103
Life Table Tests (d)		P=0.087
Incidental Tumor Tests (d)		P=0.309
Fisher Exact Test (d)		P=0.562N

TABLE A3c. ANALYSIS OF PRIMARY TUMORS IN MALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS: AMOSITE vs. AMOSITE + DIMETHYLHYDRAZINE (DMH) (Continued)

	1% Amosite	1% Amosite + DMH
Pancreatic Islets: Islet Cell Adenoma or Carcinoma		
Overall Rates (a)	22/248 (9%)	6/175 (3%)
Adjusted Rates (b)	11.4%	13.8%
Terminal Rates (c)	19/188 (10%)	2/29 (7%)
Week of First Observation	103	99
Life Table Tests (d)		P=0.211
Incidental Tumor Tests (d)		P=0.515N
Fisher Exact Test (d)		P=0.019N
Mammary Gland: Fibroadenoma		
Overall Rates (e)	27/250 (11%)	5/175 (3%)
Adjusted Rates (b)	14.4%	16.1%
Terminal Rates (c)	27/188 (14%)	4/29 (14%)
Week of First Observation	117	108
Life Table Tests (d)		P=0.454
Incidental Tumor Tests (d)		P=0.574
Fisher Exact Test (d)		P=0.001N
Preputial Gland: Carcinoma		
Overall Rates (a)	9/250 (4%)	4/175 (2%)
Adjusted Rates (b)	4.6%	8.2%
Terminal Rates (c)	7/188 (4%)	1/29 (3%)
Week of First Observation	106	97
Life Table Tests (d)		P=0.122
Incidental Tumor Tests (d)		P=0.598
Fisher Exact Test (d)		P=0.318N
Preputial Gland: Carcinoma or Squamous Cell Papilloma		
Overall Rates (a)	10/250 (4%)	4/175 (2%)
Adjusted Rates (b)	5.2%	8.2%
Terminal Rates (c)	8/188 (4%)	1/29 (3%)
Week of First Observation	106	97
Life Table Tests (d)		P=0.152
Incidental Tumor Tests (d)		P=0.631
Fisher Exact Test (d)		P=0.246N
Testis: Interstitial Cell Tumor		
Overall Rates (a)	240/250 (96%)	125/174 (72%)
Adjusted Rates (b)	99.2%	100.0%
Terminal Rates (c)	186/188 (99%)	29/29 (100%)
Week of First Observation	80	70
Life Table Tests (d)		P<0.001
Incidental Tumor Tests (d)		P=0.475
Fisher Exact Test (d)		P<0.001N
Zymbal Gland: Squamous Cell Papilloma		
Overall Rates (a)	2/250 (1%)	17/175 (10%)
Adjusted Rates (b)	1.0%	29.6%
Terminal Rates (c)	1/188 (1%)	4/29 (14%)
Week of First Observation	108	59
Life Table Tests (d)		P<0.001
Incidental Tumor Tests (d)		P<0.001
Fisher Exact Test (d)		P<0.001
Zymbal Gland: Carcinoma		
Overall Rates (a)	7/250 (3%)	35/175 (20%)
Adjusted Rates (b)	3.7%	42.0%
Terminal Rates (c)	6/188 (3%)	5/29 (17%)
Week of First Observation	113	57
Life Table Tests (d)		P<0.001
Incidental Tumor Tests (d)		P<0.001
Fisher Exact Test (d)		P<0.001

TABLE A3c. ANALYSIS OF PRIMARY TUMORS IN MALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS: AMOSITE vs. AMOSITE + DIMETHYLHYDRAZINE (DMH) (Continued)

	1% Amosite	1% Amosite + DMH
Zymbal Gland: Carcinoma or Squamous Cell Papilloma		
Overall Rates (a)	9/250 (4%)	52/175 (30%)
Adjusted Rates (b)	4.7%	60.6%
Terminal Rates (c)	7/188 (4%)	9/29 (31%)
Week of First Observation	108	57
Life Table Tests (d)		P<0.001
Incidental Tumor Tests (d)		P<0.001
Fisher Exact Test (d)		P<0.001
All Sites: Mesothelioma		
Overall Rates (e)	10/250 (4%)	6/175 (3%)
Adjusted Rates (b)	5.2%	6.9%
Terminal Rates (c)	8/188 (4%)	0/29 (0%)
Week of First Observation	108	72
Life Table Tests (d)		P=0.054
Incidental Tumor Tests (d)		P=0.490N
Fisher Exact Test (d)		P=0.488N
All Sites: Benign Tumors		
Overall Rates (a)	244/250 (98%)	150/175 (86%)
Adjusted Rates (b)	100.0%	100%
Terminal Rates (c)	187/188 (99%)	29/29 (100%)
Week of First Observation	58	49
Life Table Tests (d)		P<0.001
Incidental Tumor Tests (d)		P=0.442
Fisher Exact Test (d)		P<0.001N
All Sites: Malignant Tumors		
Overall Rates (e)	201/250 (80%)	149/175 (85%)
Adjusted Rates (b)	96.0%	97.8%
Terminal Rates (c)	150/188 (80%)	26/29 (90%)
Week of First Observation	588	39
Life Table Tests (d)		P<0.001
Incidental Tumor Tests (d)		P=0.022
Fisher Exact Test (d)		P<0.128
All Sites: All Tumors		
Overall Rates (e)	249/250 (>99%)	173/175 (99%)
Adjusted Rates (b)	100.0%	100.0%
Terminal Rates (c)	188/188 (100%)	29/29 (100%)
Week of First Observation	58	39
Life Table Tests (d)		P<0.001
Incidental Tumor Tests (d)		P=0.774N
Fisher Exact Test (d)		P<0.369N

(a) Number of tumor-bearing animals/number of animals examined grossly at the site
(b) Kaplan-Meier estimated tumor incidences at the end of the study after adjusting for intercurrent mortality
(c) Observed tumor incidence in animals killed at the end of the study
(d) Beneath the 1% amosite + DMH group incidence are the P values corresponding to pairwise comparisons between that dosed group and the 1% amosite group. The life table analysis regards tumors in animals dying prior to terminal kill as being (directly or indirectly) the cause of death. The incidental tumor test regards these lesions as nonfatal. The Fisher exact test compares directly the overall incidence rates. A lower incidence in a dosed group than in controls is indicated by (N).
(e) Number of tumor-bearing animals/number of animals examined microscopically at the site

TABLE A4a. INCIDENCE OF EPITHELIAL TUMORS OF THE LARGE INTESTINE IN MALE F344/N RATS RECEIVING NO TREATMENT IN LIFETIME STUDIES

Asbestos Studies	Incidence	Diagnosis
SR Chrysotile	0/87 (0.0%)	
IR Chrysotile	0/85 (0.0%)	
Tremolite	1/118 (0.8%)	Adenomatous polyp, NOS
Crocidolite (a)	1/117 (0.8%)	Adenomatous polyp, NOS
	1/117 (0.8%)	Carcinoma, NOS
Amosite	0/117 (0.0%)	
TOTAL	2/524 (0.4%)	
SD (b)	0.47%	

(a) Both tumors occurred in the same animal
(b) Standard deviation

TABLE A4b. INCIDENCE OF EPITHELIAL TUMORS OF THE SMALL INTESTINE IN MALE F344/N RATS RECEIVING NO TREATMENT IN LIFETIME STUDIES

Asbestos Studies	Incidence	Diagnosis
SR Chrysotile	1/88 (0.6%)	Mucinous cystadenocarcinoma
IR Chrysotile	0/85 (0.0%)	
Tremolite	0/118 (0.0%)	
Crocidolite	1/117 (0.9%)	Adenocarcinoma, NOS
Amosite	1/117 (0.9%)	Adenomatous polyp
	2/117 (1.7%)	Mucinous cystadenocarcinoma
TOTAL	5/524 (1.0%)	
SD (a)	1.05%	

(a) Standard deviation

TABLE A4c. INCIDENCE OF THYROID GLAND C-CELL TUMORS IN MALE F344/N RATS RECEIVING NO TREATMENT IN LIFETIME STUDIES

Asbestos Studies	Adenoma	Carcinoma	Adenoma or Carcinoma
SR Chrysotile	13/86 (15%)	11/86 (13%)	24/86 (28%)
IR Chrysotile	13/84 (15%)	19/84 (23%)	30/84 (36%)
Tremolite	11/117 (9%)	16/117 (14%)	27/117 (23%)
Crocidolite	13/116 (11%)	19/116 (16%)	32/116 (28%)
Amosite	16/117 (14%)	11/117 (9%)	27/117 (23%)
TOTAL	66/520 (12.7%)	76/520 (14.6%)	140/520 (26.9%)
SD (a)	2.61%	4.95%	5.17%

(a) Standard deviation

TABLE A4d. INCIDENCE OF LEUKEMIA IN MALE F344/N RATS RECEIVING NO TREATMENT IN LIFETIME STUDIES

Asbestos Studies	Leukemia
SR Chrysotile	37/88 (42%)
IR Chrysotile	31/88 (35%)
Tremolite	43/118 (36%)
Crocidolite	43/118 (36%)
Amosite	38/117 (32%)
TOTAL	192/529 (36.3%)
SD (a)	3.48%

(a) Standard deviation

TABLE A4e. INCIDENCE OF ADRENAL MEDULLA TUMORS IN MALE F344/N RATS RECEIVING NO TREATMENT IN LIFETIME STUDIES

Asbestos Studies	Pheochromocytoma	Malignant Pheochromocytoma	Pheochromocytoma or Malignant Pheochromocytoma
SR Chrysotile	25/88 (28%)	1/88 (1%)	26/88 (30%)
IR Chrysotile	16/85 (19%)	1/85 (1%)	17/85 (20%)
Tremolite	38/118 (32%)	3/118 (3%)	41/118 (35%)
Crocidolite	33/117 (28%)	2/117 (2%)	35/117 (30%)
Amosite	39/117 (33%)	3/117 (3%)	39/117 (33%)
TOTAL	151/525 (28.8%)	10/525 (1.9%)	158/525 (30.1%)
SD (a)	5.71%	0.70%	5.76%

(a) Standard deviation

TABLE A4f. INCIDENCE OF THYROID GLAND FOLLICULAR CELL TUMORS IN MALE F344/N RATS RECEIVING NO TREATMENT IN LIFETIME STUDIES

Asbestos Studies	Adenoma	Carcinoma	Adenoma or Carcinoma
SR Chrysotile	4/86 (5%)	2/86 (2%)	6/86 (7%)
IR Chrysotile	1/84 (1%)	5/84 (6%)	6/84 (7%)
Tremolite	5/117 (4%)	6/117 (5%)	11/117 (9%)
Crocidolite	7/116 (6%)	3/116 (3%)	10/116 (9%)
Amosite	4/117 (3%)	7/117 (6%)	11/117 (9%)
TOTAL	21/520 (4.0%)	23/520 (4.4%)	44/520 (8.5%)
SD (a)	1.79%	1.81%	1.19%

(a) Standard deviation

TABLE A4g. INCIDENCE OF PREPUTIAL GLAND TUMORS IN MALE F344/N RATS RECEIVING NO TREATMENT IN LIFETIME STUDIES

Asbestos Studies	Adenoma	Carcinoma	Adenoma or Carcinoma
SR Chrysotile	0/88 (0%)	6/88 (7%)	6/88 (7%)
IR Chrysotile	1/88 (1%)	3/88 (3%)	4/88 (5%)
Tremolite	0/118 (0%)	7/118 (6%)	7/118 (6%)
Crocidolite	0/118 (0%)	3/118 (3%)	3/118 (3%)
Amosite	0/117 (0%)	6/117 (5%)	6/117 (5%)
TOTAL	1/529 (0.2%)	25/529 (4.7%)	26/529 (4.9%)
SD (a)	0.51%	1.77%	1.62%

(a) Standard deviation

TABLE A4h. INCIDENCE OF LIVER TUMORS IN MALE F344/N RATS RECEIVING NO TREATMENT IN LIFETIME STUDIES

Asbestos Studies	Neoplastic Nodule	Hepatocellular Carcinoma	Neoplastic Nodule or Hepatocellular Carcinoma
SR Chrysotile	12/88 (14%)	3/88 (3%)	15/88 (17%)
IR Chrysotile	6/85 (7%)	2/85 (2%)	8/85 (9%)
Tremolite	10/118 (8%)	6/118 (5%)	16/118 (14%)
Crocidolite	8/117 (7%)	4/117 (3%)	11/117 (9%)
Amosite	9/117 (8%)	1/117 (1%)	9/117 (8%)
TOTAL	45/525 (8.6%)	16/525 (3.0%)	59/525 (11.2%)
SD (a)	2.81%	1.56%	3.82%

(a) Standard deviation

TABLE A4i. INCIDENCE OF KIDNEY SARCOMAS AND MIXED TUMORS IN MALE F344/N RATS RECEIVING NO TREATMENT IN LIFETIME STUDIES

0/525

TABLE A4j. INCIDENCE OF ZYMBAL GLAND CARCINOMAS IN MALE F344/N RATS RECEIVING NO TREATMENT IN LIFETIME STUDIES

Asbestos Studies	Carcinomas
SR Chrysotile	4/88 (5%)
IR Chrysotile	2/88 (2%)
Tremolite	4/118 (3%)
Crocidolite	(a) 5/118 (4%)
Amosite	1/117 (1%)
TOTAL	16/529 (3.0%)
SD (b)	1.52%

(a) Includesan squamous cell carcinoma of the ear canal
(b) Standard deviation

TABLE A5a. SUMMARY OF THE INCIDENCE OF NONNEOPLASTIC LESIONS IN MALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS AND DMH: UNTREATED CONTROL, DMH, 1% AMOSITE (a)

	Untreated Control	DMH	1% Amosite
Animals initially in study	117	125	250
Animals necropsied	117	125	250
Animals examined histopathologically	117	125	(249)
INTEGUMENTARY SYSTEM			
*Skin	(117)	(125)	(250)
Epidermal inclusion cyst	4 (3%)	6 (5%)	9 (4%)
Cystic ducts			1 (0%)
Effusion, serosanguineous			1 (0%)
Inflammation, acute focal	1 (1%)		
Abscess, NOS	1 (1%)		1 (0%)
Inflammation, chronic		1 (1%)	
Inflammation, chronic focal			2 (1%)
Fibrosis, focal			3 (1%)
Necrosis, focal			1 (0%)
Hyperplasia, NOS		1 (1%)	
Hyperkeratosis	5 (4%)	1 (1%)	8 (3%)
Acanthosis	5 (4%)		7 (3%)
*Subcut tissue	(117)	(125)	(250)
Abscess, NOS		1 (1%)	
Granuloma, NOS	1 (1%)		
Hyperkeratosis		1 (1%)	
RESPIRATORY SYSTEM			
#Trachea	(117)	(125)	(248)
Metaplasia, squamous			1 (0%)
#Lung/bronchus	(117)	(125)	(249)
Bronchiectasis	1 (1%)		2 (1%)
#Lung	(117)	(125)	(249)
Congestion, NOS	5 (4%)		6 (2%)
Edema, NOS	1 (1%)		
Hemorrhage	2 (2%)	2 (2%)	2 (1%)
Inflammation, interstitial	1 (1%)		1 (0%)
Pneumonia, aspiration			1 (0%)
Inflammation, acute focal			2 (1%)
Pneumonia, chronic murine		1 (1%)	
Inflammation, chronic	86 (74%)	108 (86%)	214 (86%)
Granuloma, NOS	3 (3%)	3 (2%)	5 (2%)
Pigmentation, NOS			5 (2%)
Hyperplasia, alveolar epithelium	3 (3%)	2 (2%)	9 (4%)
Metaplasia, osseous			1 (0%)
Histiocytosis			1 (0%)
#Lung/alveoli	(117)	(125)	(249)
Histiocytosis	2 (2%)		4 (2%)
HEMATOPOIETIC SYSTEM			
#Bone marrow	(117)	(110)	(249)
Congestion, NOS			1 (0%)
Hemorrhage			1 (0%)
Necrosis, focal			1 (0%)
Hypoplasia, NOS	1 (1%)		6 (2%)
Hyperplasia, NOS	2 (2%)	2 (2%)	7 (3%)
Myelofibrosis	1 (1%)		1 (0%)
#Spleen	(117)	(124)	(249)
Congestion, NOS			1 (0%)
Hemorrhage	1 (1%)	3 (2%)	3 (1%)
Fibrosis, focal	9 (8%)	1 (1%)	25 (10%)
Fibrosis, multifocal		1 (1%)	7 (3%)
Fibrosis, diffuse			1 (0%)

TABLE A5a. SUMMARY OF THE INCIDENCE OF NONNEOPLASTIC LESIONS IN MALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS AND DMH: UNTREATED CONTROL, DMH, 1% AMOSITE (Continued)

	Untreated Control	DMH	1% Amosite
HEMATOPOIETIC SYSTEM			
Spleen (Continued)	(117)	(124)	(249)
Necrosis, NOS	1 (1%)	2 (2%)	
Necrosis, focal	1 (1%)	4 (3%)	4 (2%)
Amyloidosis			1 (0%)
Hemosiderosis	17 (15%)		45 (18%)
Hyperplasia, NOS	1 (1%)		
Hyperplasia, reticulum cell			2 (1%)
Hyperplasia, lymphoid	1 (1%)		
Hematopoiesis	22 (19%)	13 (10%)	26 (10%)
#Splenic capsule	(117)	(124)	(249)
Fibrosis, diffuse			1 (0%)
#Splenic follicles	(117)	(124)	(249)
Atrophy, NOS	3 (3%)	1 (1%)	6 (2%)
Atrophy, focal	1 (1%)		1 (0%)
#Mandibular l. node	(117)	(125)	(249)
Congestion, NOS	1 (1%)		
Hemorrhage	1 (1%)	1 (1%)	1 (0%)
Inflammation, acute	1 (1%)		
Pigmentation, NOS			1 (0%)
Hyperplasia, NOS	1 (1%)		
Angiectasis	1 (1%)		
Hyperplasia, lymphoid	18 (15%)	22 (18%)	21 (8%)
#Cervical lymph node	(117)	(125)	(249)
Congestion, NOS		1 (1%)	
Hemorrhage	1 (1%)		1 (0%)
Pigmentation, NOS			1 (0%)
#Mediastinal l. node	(117)	(125)	(249)
Congestion, NOS	2 (2%)	1 (1%)	
Hemorrhage	1 (1%)	5 (4%)	17 (7%)
Pigmentation, NOS	7 (6%)	3 (2%)	27 (11%)
Atrophy, NOS			1 (0%)
Erythrophagocytosis	3 (3%)		4 (2%)
Hyperplasia, reticulum cell	1 (1%)		1 (0%)
Hyperplasia, lymphoid		1 (1%)	4 (2%)
#Pancreatic lymph node	(117)	(125)	(249)
Hemorrhage			1 (0%)
Pigmentation, NOS	4 (3%)	1 (1%)	21 (8%)
Hyperplasia, reticulum cell	7 (6%)	5 (4%)	4 (2%)
Hyperplasia, lymphoid			1 (0%)
#Mesenteric lymph node	(117)	(125)	(249)
Hemorrhage	1 (1%)		4 (2%)
Pigmentation, NOS	3 (3%)		4 (2%)
Atrophy, NOS		1 (1%)	
Erythrophagocytosis	1 (1%)		2 (1%)
Hyperplasia, reticulum cell	43 (37%)	23 (18%)	67 (27%)
Hyperplasia, lymphoid	3 (3%)	3 (2%)	7 (3%)
#Ileocolic lymph node	(117)	(125)	(249)
Atrophy, NOS	1 (1%)		
Hyperplasia, reticulum cell		1 (1%)	1 (0%)
Hyperplasia, lymphoid	2 (2%)	2 (2%)	1 (0%)
#Renal lymph node	(117)	(125)	(249)
Pigmentation, NOS	2 (2%)	1 (1%)	1 (0%)
Hyperplasia, reticulum cell	1 (1%)		
#Iliac lymph node	(117)	(125)	(249)
Hyperplasia, lymphoid	1 (1%)		
#Inguinal lymph node	(117)	(125)	(249)
Hyperplasia, lymphoid			1 (0%)
#Liver	(117)	(125)	(249)
Leukocytosis, NOS	1 (1%)		7 (3%)
#Pancreas	(116)	(125)	(247)
Hyperplasia, reticulum cell		1 (1%)	

TABLE A5a. SUMMARY OF THE INCIDENCE OF NONNEOPLASTIC LESIONS IN MALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS AND DMH: UNTREATED CONTROL, DMH, 1% AMOSITE (Continued)

	Untreated Control	DMH	1% Amosite
HEMATOPOIETIC SYSTEM (Continued)			
#Peyer's patch	(117)	(125)	(250)
Hyperplasia, lymphoid		1 (1%)	
#Thymus	(80)	(83)	(171)
Cyst, NOS			2 (1%)
Congestion, NOS		2 (2%)	
Hemorrhage		3 (4%)	
CIRCULATORY SYSTEM			
*Multiple organs	(117)	(125)	(250)
Lymphangiectasis	1 (1%)		
*Mediastinum	(117)	(125)	(250)
Periarteritis			1 (0%)
#Mandibular l. node	(117)	(125)	(249)
Lymphangiectasis	3 (3%)	12 (10%)	8 (3%)
#Mediastinal l. node	(117)	(125)	(249)
Lymphangiectasis			2 (1%)
#Pancreatic lymph node	(117)	(125)	(249)
Lymphangiectasis			2 (1%)
#Mesenteric lymph node	(117)	(125)	(249)
Lymphangiectasis	3 (3%)	2 (2%)	13 (5%)
#Ileocolic lymph node	(117)	(125)	(249)
Lymphangiectasis	7 (6%)	5 (4%)	12 (5%)
#Renal lymph node	(117)	(125)	(249)
Lymphangiectasis	1 (1%)		
#Iliac lymph node	(117)	(125)	(249)
Lymphangiectasis	1 (1%)		1 (0%)
#Lung	(117)	(125)	(249)
Thrombosis, NOS		3 (2%)	1 (0%)
#Heart	(117)	(125)	(249)
Thrombosis, NOS			1 (0%)
Inflammation, chronic focal	2 (2%)		
#Heart/atrium	(117)	(125)	(249)
Thrombosis, NOS	4 (3%)		3 (1%)
#Myocardium	(117)	(125)	(249)
Mineralization	2 (2%)	1 (1%)	2 (1%)
Inflammation, chronic		1 (1%)	
Inflammation, chronic focal	47 (40%)	42 (34%)	117 (47%)
Inflammation, chronic diffuse	35 (30%)	18 (14%)	67 (27%)
Fibrosis, focal	2 (2%)		3 (1%)
Fibrosis, multifocal	1 (1%)	3 (2%)	
Degeneration, NOS	3 (3%)	3 (2%)	2 (1%)
#Endocardium	(117)	(125)	(249)
Inflammation, chronic		1 (1%)	
#Cardiac valve	(117)	(125)	(249)
Inflammation, chronic	1 (1%)	1 (1%)	1 (0%)
Inflammation, chronic focal	1 (1%)	1 (1%)	
*Aorta	(117)	(125)	(250)
Mineralization	5 (4%)		1 (0%)
*Abdominal aorta	(117)	(125)	(250)
Mineralization	1 (1%)		1 (0%)
*Coronary artery	(117)	(125)	(250)
Calcification, focal			1 (0%)
*Pancreatic artery	(117)	(125)	(250)
Thrombosis, NOS	1 (1%)		
Periarteritis	1 (1%)		1 (0%)
*Mesenteric artery	(117)	(125)	(250)
Inflammation, chronic			1 (0%)
Periarteritis			1 (0%)
#Liver	(117)	(125)	(249)
Thrombosis, NOS	1 (1%)		1 (0%)

TABLE A5a. SUMMARY OF THE INCIDENCE OF NONNEOPLASTIC LESIONS IN MALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS AND DMH: UNTREATED CONTROL, DMH, 1% AMOSITE (Continued)

	Untreated Control	DMH	1% Amosite
CIRCULATORY SYSTEM (Continued)			
#Pancreas	(116)	(125)	(247)
Periarteritis	2 (2%)		3 (1%)
*Mesentery	(117)	(125)	(250)
Periarteritis	2 (2%)		2 (1%)
#Prostate	(117)	(123)	(249)
Periarteritis			1 (0%)
#Testis	(117)	(123)	(249)
Periarteritis	4 (3%)		4 (2%)
#Adrenal	(117)	(125)	(249)
Thrombosis, NOS	1 (1%)		
DIGESTIVE SYSTEM			
*Oral mucous membrane	(117)	(125)	(250)
Fibrous osteodystrophy	1 (1%)		
Hyperkeratosis	1 (1%)		
Acanthosis	1 (1%)		
*Hard palate	(117)	(125)	(250)
Acanthosis			1 (0%)
#Salivary gland	(117)	(124)	(245)
Inflammation, acute diffuse	1 (1%)		
Abscess, NOS		1 (1%)	
Granuloma, NOS	1 (1%)		
Atrophy, focal			1 (0%)
#Parotid gland	(117)	(124)	(245)
Atrophy, focal			1 (0%)
#Submaxillary gland	(117)	(124)	(245)
Inflammation, chronic diffuse			1 (0%)
#Liver	(117)	(125)	(249)
Congestion, NOS			2 (1%)
Hemorrhage		1 (1%)	4 (2%)
Inflammation, acute focal			1 (0%)
Abscess, NOS		1 (1%)	
Inflammation, chronic			1 (0%)
Granuloma, NOS	9 (8%)	6 (5%)	11 (4%)
Hepatitis, toxic	15 (13%)	13 (10%)	41 (16%)
Degeneration, NOS	15 (13%)	9 (7%)	26 (10%)
Necrosis, NOS		4 (3%)	
Necrosis, focal	10 (9%)	22 (18%)	27 (11%)
Metamorphosis fatty	26 (22%)	36 (29%)	30 (12%)
Pigmentation, NOS	14 (12%)	3 (2%)	45 (18%)
Focal cellular change	44 (38%)	53 (42%)	67 (27%)
Angiectasis	4 (3%)	6 (5%)	2 (1%)
#Hepatic capsule	(117)	(125)	(249)
Granuloma, foreign body			1 (0%)
#Bile duct	(117)	(125)	(249)
Dilatation, NOS			3 (1%)
Cyst, NOS	1 (1%)		
Inflammation, chronic	24 (21%)	31 (25%)	32 (13%)
Fibrosis	17 (15%)	4 (3%)	1 (0%)
Hyperplasia, NOS	52 (44%)	63 (50%)	70 (28%)
Hyperplasia, focal	1 (1%)		
#Pancreas	(116)	(125)	(247)
Ectopia	5 (4%)	2 (2%)	12 (5%)
Inflammation, chronic focal			3 (1%)
Inflammation, chronic diffuse	1 (1%)		
Atrophy, NOS	1 (1%)	1 (1%)	
Atrophy, focal	10 (9%)	8 (6%)	48 (19%)
Atrophy, diffuse	6 (5%)	3 (2%)	5 (2%)
#Pancreatic acinus	(116)	(125)	(247)
Hyperplasia, focal	3 (3%)		13 (5%)

TABLE A5a. SUMMARY OF THE INCIDENCE OF NONNEOPLASTIC LESIONS IN MALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS AND DMH: UNTREATED CONTROL, DMH, 1% AMOSITE (Continued)

	Untreated Control	DMH	1% Amosite
DIGESTIVE SYSTEM (Continued)			
#Esophagus	(115)	(124)	(248)
Inflammation, acute	1 (1%)		
Inflammation, chronic		1 (1%)	
Necrosis, diffuse	1 (1%)		
Hyperplasia, NOS		1 (1%)	
Hyperkeratosis	12 (10%)	11 (9%)	4 (2%)
Acanthosis		2 (2%)	
#Stomach	(117)	(125)	(249)
Mineralization	9 (8%)		2 (1%)
Edema, NOS	2 (2%)	1 (1%)	4 (2%)
Hemorrhage	3 (3%)		2 (1%)
Inflammation, acute focal			5 (2%)
Inflammation, chronic	6 (5%)	2 (2%)	4 (2%)
Inflammation, chronic focal	9 (8%)	5 (4%)	15 (6%)
Inflammation, chronic diffuse	5 (4%)	3 (2%)	38 (15%)
Granuloma, foreign body			1 (0%)
Ulcer, perforated	13 (11%)		25 (10%)
Fibrosis, diffuse			2 (1%)
Degeneration, NOS			1 (0%)
Necrosis, NOS	1 (1%)		
Necrosis, focal	22 (19%)	6 (5%)	41 (16%)
Hyperplasia, epithelial			1 (0%)
Hyperplasia, focal		1 (1%)	
Hyperkeratosis	22 (19%)	16 (13%)	41 (16%)
Acanthosis	31 (26%)	20 (16%)	62 (25%)
#Gastric mucosa	(117)	(125)	(249)
Hyperplasia, focal			1 (0%)
#Gastric submucosa	(117)	(125)	(249)
Edema, NOS		1 (1%)	3 (1%)
#Gastric muscularis	(117)	(125)	(249)
Degeneration, NOS	8 (7%)		3 (1%)
#Gastric fundus	(117)	(125)	(249)
Mineralization	1 (1%)		
Hyperplasia, epithelial	1 (1%)		
Hyperplasia, diffuse	6 (5%)		
#Small intestine	(117)	(125)	(249)
Parasitism			1 (0%)
#Duodenum	(117)	(125)	(249)
Hemorrhage	1 (1%)		
Inflammation, acute		1 (1%)	
Inflammation, acute focal	1 (1%)		
Inflammation, chronic focal			1 (0%)
Ulcer, perforated			1 (0%)
Necrosis, NOS		1 (1%)	
Necrosis, focal	1 (1%)		3 (1%)
Hyperplasia, cystic		1 (1%)	
Metaplasia, osseous		1 (1%)	
#Jejunum	(117)	(125)	(249)
Necrosis, NOS		1 (1%)	
#Ileum	(117)	(125)	(249)
Diverticulum			1 (0%)
Abscess, NOS			1 (0%)
Inflammation, acute/chronic		1 (1%)	
Necrosis, NOS		1 (1%)	
Necrosis, focal		1 (1%)	
Metaplasia, osseous			1 (0%)
#Ileal mucosa	(117)	(125)	(249)
Hyperplasia, focal	1 (1%)		
#Large intestine	(117)	(125)	(249)
Inflammation, acute		1 (1%)	1 (0%)
Parasitism			2 (1%)

TABLE A5a. SUMMARY OF THE INCIDENCE OF NONNEOPLASTIC LESIONS IN MALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS AND DMH: UNTREATED CONTROL, DMH, 1% AMOSITE (Continued)

	Untreated Control	DMH	1% Amosite
DIGESTIVE SYSTEM (Continued)			
#Colon	(117)	(125)	(249)
Inflammation, acute focal	2 (2%)		1 (0%)
Inflammation, acute diffuse			1 (0%)
Inflammation, chronic focal		1 (1%)	1 (0%)
Inflammation, chronic diffuse		1 (1%)	
Parasitism	4 (3%)	6 (5%)	17 (7%)
Necrosis, focal	1 (1%)		2 (1%)
Hyperplasia, epithelial			1 (0%)
Hyperplasia, focal		2 (2%)	
Hyperplasia, papillary	1 (1%)		
#Colonic mucosa	(117)	(125)	(250)
Hyperplasia, focal		1 (1%)	
#Colonic submucosa	(117)	(125)	(250)
Granuloma, NOS		1 (1%)	
#Colonic muscularis p	(117)	(125)	(249)
Degeneration, NOS	2 (2%)		
#Cecum	(117)	(125)	(249)
Edema, NOS			1 (0%)
Hemorrhage			2 (1%)
Inflammation, acute		1 (1%)	
Inflammation, acute focal	1 (1%)	1 (1%)	1 (0%)
Inflammation, chronic focal	1 (1%)	1 (1%)	
Inflammation, chronic diffuse	1 (1%)	1 (1%)	1 (0%)
Fibrosis, diffuse		1 (1%)	
Parasitism		1 (1%)	2 (1%)
Necrosis, focal	3 (3%)	5 (4%)	2 (1%)
Necrosis, diffuse			1 (0%)
Hyperplasia, focal		3 (2%)	
#Ascending colon	(117)	(125)	(250)
Parasitism		2 (2%)	
#Transverse colon	(117)	(125)	(250)
Cyst, NOS		1 (1%)	
#Descending colon	(117)	(125)	(249)
Parasitism		4 (3%)	
Hyperplasia, epithelial			1 (0%)
*Rectum	(117)	(125)	(250)
Granuloma, pyogenic	1 (1%)		
Parasitism			1 (0%)
*Anus	(117)	(125)	(250)
Acanthosis			1 (0%)
*Intramuscular anal gland	(117)	(125)	(250)
Cystic ducts			1 (0%)
*Perianal tissue	(117)	(125)	(250)
Inflammation, chronic			1 (0%)
URINARY SYSTEM			
#Kidney	(117)	(125)	(248)
Hamartoma			1 (0%)
Mineralization			2 (1%)
Hydronephrosis	1 (1%)		1 (0%)
Inflammation, chronic	101 (86%)	95 (76%)	238 (96%)
Inflammation, chronic focal		2 (2%)	
Fibrosis, diffuse			1 (0%)
Infarct, NOS			1 (0%)
Metamorphosis fatty			2 (1%)
Pigmentation, NOS		1 (1%)	1 (0%)
Hyperplasia, tubular cell		1 (1%)	1 (0%)
#Kidney/cortex	(117)	(125)	(248)
Cyst, NOS	14 (12%)	1 (1%)	16 (6%)

TABLE A5a. SUMMARY OF THE INCIDENCE OF NONNEOPLASTIC LESIONS IN MALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS AND DMH: UNTREATED CONTROL, DMH, 1% AMOSITE (Continued)

	Untreated Control	DMH	1% Amosite
URINARY SYSTEM (Continued)			
#Kidney/medulla	(117)	(125)	(248)
Inflammation, acute focal			1 (0%)
Necrosis, focal			1 (0%)
#Kidney/tubule	(117)	(125)	(248)
Cyst, NOS			2 (1%)
Necrosis, focal		1 (1%)	
Pigmentation, NOS	27 (23%)	17 (14%)	86 (35%)
Hyperplasia, focal			1 (0%)
#Urinary bladder	(116)	(124)	(249)
Hemorrhage	1 (1%)		5 (2%)
Inflammation, acute focal			1 (0%)
Inflammation, acute diffuse			4 (2%)
Inflammation, chronic focal			3 (1%)
Inflammation, chronic diffuse	2 (2%)		5 (2%)
Hyperplasia, epithelial	1 (1%)		4 (2%)
Hyperplasia, diffuse	1 (1%)		4 (2%)
Hyperplasia, papillary			1 (0%)
*Urethra	(117)	(125)	(250)
Metaplasia, squamous	1 (1%)		
*Urethral gland	(117)	(125)	(250)
Hyperplasia, NOS	1 (1%)		
ENDOCRINE SYSTEM			
#Pituitary	(117)	(122)	(248)
Embryonal rest	1 (1%)		
Cyst, NOS	2 (2%)	2 (2%)	3 (1%)
Hemorrhage	1 (1%)		1 (0%)
Hemorrhagic cyst	2 (2%)		
Abscess, NOS			1 (0%)
Necrosis, focal			1 (0%)
Hyperplasia, focal	2 (2%)	1 (1%)	6 (2%)
Angiectasis	7 (6%)	2 (2%)	11 (4%)
#Adrenal	(117)	(125)	(249)
Mineralization	1 (1%)		
Congestion, NOS			3 (1%)
Hemorrhage	1 (1%)		
Necrosis, focal	1 (1%)		1 (0%)
Metamorphosis fatty	1 (1%)	1 (1%)	1 (0%)
Hyperplasia, focal	1 (1%)		
Angiectasis	1 (1%)		1 (0%)
#Adrenal cortex	(117)	(125)	(249)
Congestion, NOS		1 (1%)	
Degeneration, NOS	1 (1%)		
Necrosis, NOS		1 (1%)	
Necrosis, diffuse	2 (2%)		
Metamorphosis fatty	43 (37%)	21 (17%)	61 (24%)
Hyperplasia, focal	2 (2%)	2 (2%)	15 (6%)
Angiectasis	3 (3%)	4 (3%)	2 (1%)
#Adrenal medulla	(117)	(125)	(249)
Hyperplasia, focal	43 (37%)	23 (18%)	92 (37%)
#Thyroid	(117)	(124)	(246)
Cystic follicles	1 (1%)		2 (1%)
Follicular cyst, NOS	4 (3%)	5 (4%)	16 (7%)
Pigmentation, NOS			1 (0%)
Hyperplasia, C-cell	21 (18%)	15 (12%)	58 (24%)
Hyperplasia, follicular cell			1 (0%)
#Parathyroid	(110)	(119)	(234)
Hyperplasia, NOS	36 (33%)	7 (6%)	28 (12%)

TABLE A5a. SUMMARY OF THE INCIDENCE OF NONNEOPLASTIC LESIONS IN MALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS AND DMH: UNTREATED CONTROL, DMH, 1% AMOSITE (Continued)

	Untreated Control	DMH	1% Amosite
ENDOCRINE SYSTEM (Continued)			
#Pancreatic islets	(116)	(125)	(247)
Hyperplasia, focal	5 (4%)		5 (2%)
REPRODUCTIVE SYSTEM			
*Mammary gland	(117)	(125)	(250)
Galactocele	3 (3%)	1 (1%)	1 (0%)
Cystic ducts	9 (8%)	2 (2%)	8 (3%)
Hyperplasia, NOS	2 (2%)	1 (1%)	6 (2%)
Hyperplasia, diffuse	6 (5%)		12 (5%)
*Prepuce	(117)	(125)	(250)
Hyperkeratosis	1 (1%)		
*Preputial gland	(117)	(125)	(250)
Cystic ducts	3 (3%)	1 (1%)	10 (4%)
Inflammation, acute			1 (0%)
Abscess, NOS	1 (1%)		1 (0%)
Inflammation, chronic			1 (0%)
Atrophy, NOS			1 (0%)
Hyperplasia, NOS		1 (1%)	3 (1%)
Hyperplasia, focal	1 (1%)		
Hyperplasia, diffuse	1 (1%)		
Hyperkeratosis			4 (2%)
#Prostate	(117)	(123)	(249)
Cyst, NOS			1 (0%)
Hemorrhage			1 (0%)
Inflammation, acute focal		1 (1%)	3 (1%)
Inflammation, acute diffuse			6 (2%)
Abscess, NOS	6 (5%)		21 (8%)
Inflammation, acute/chronic			5 (2%)
Inflammation, chronic			3 (1%)
Inflammation, chronic focal	29 (25%)	20 (16%)	73 (29%)
Inflammation, chronic diffuse	12 (10%)		11 (4%)
Hyperplasia, focal	5 (4%)	3 (2%)	13 (5%)
#Prostatic gland	(117)	(123)	(249)
Cyst, NOS	1 (1%)		
*Seminal vesicle	(117)	(125)	(250)
Cyst, NOS	5 (4%)	2 (2%)	12 (5%)
Cystic ducts			2 (1%)
Edema, NOS			1 (0%)
Inflammation, acute diffuse			2 (1%)
Abscess, NOS			2 (1%)
Inflammation, chronic focal			1 (0%)
Inflammation, chronic diffuse			1 (0%)
Hyperplasia, epithelial			1 (0%)
Hyperplasia, focal		1 (1%)	2 (1%)
Hyperplasia, diffuse			6 (2%)
*Coagulating gland	(117)	(125)	(250)
Cyst, NOS	1 (1%)		
Cystic ducts			1 (0%)
#Testis	(117)	(123)	(249)
Hemorrhage		1 (1%)	1 (0%)
Degeneration, NOS	12 (10%)	16 (13%)	22 (9%)
Hyperplasia, interstitial cell	46 (39%)	68 (55%)	97 (39%)
*Epididymis	(117)	(125)	(250)
Inflammation, chronic			1 (0%)
Inflammation, chronic diffuse	1 (1%)		
Granuloma, spermatic		1 (1%)	2 (1%)
Fibrosis, focal			1 (0%)
Fibrosis, diffuse	1 (1%)		
Necrosis, fat	5 (4%)	2 (2%)	10 (4%)

TABLE A5a. SUMMARY OF THE INCIDENCE OF NONNEOPLASTIC LESIONS IN MALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS AND DMH: UNTREATED CONTROL, DMH, 1% AMOSITE (Continued)

	Untreated Control	DMH	1% Amosite
NERVOUS SYSTEM			
#Brain/meninges	(117)	(125)	(250)
Inflammation, acute		1 (1%)	
#Lateral ventricle	(117)	(125)	(249)
Dilatation, NOS			1 (0%)
#Cerebrum	(117)	(125)	(249)
Gliosis		1 (1%)	
Necrosis, focal			1 (0%)
Angiectasis			1 (0%)
#Brain	(117)	(125)	(249)
Hemorrhage	1 (1%)		
#Cerebellum	(117)	(125)	(249)
Hemorrhage			1 (0%)
Abscess, NOS		1 (1%)	
#Medulla oblongata	(117)	(125)	(249)
Necrosis, focal			1 (0%)
*Spinal cord	(117)	(125)	(250)
Malacia			1 (0%)
SPECIAL SENSE ORGANS			
*Eye	(117)	(125)	(250)
Hemorrhage	6 (5%)		10 (4%)
Synechia, posterior	5 (4%)		7 (3%)
Cataract	25 (21%)		36 (14%)
Phthisis bulbi	2 (2%)		2 (1%)
*Eye anterior chamber	(117)	(125)	(250)
Empyema	1 (1%)		1 (0%)
*Vitreous body	(117)	(125)	(250)
Vascularization	1 (1%)		4 (2%)
*Eye/cornea	(117)	(125)	(250)
Mineralization	2 (2%)		
Inflammation, acute focal		1 (1%)	
Inflammation, chronic focal	9 (8%)		5 (2%)
Inflammation, chronic diffuse	2 (2%)		1 (0%)
Necrosis, focal	4 (3%)	1 (1%)	
*Eye/iris	(117)	(125)	(250)
Hemorrhage	1 (1%)		
*Eye/retina	(117)	(125)	(250)
Degeneration, NOS	42 (36%)	5 (4%)	76 (30%)
*Eye/crystalline lens	(117)	(125)	(250)
Rupture	1 (1%)		5 (2%)
*Ear canal	(117)	(125)	(250)
Hemorrhage		1 (1%)	
*Zymbal gland	(117)	(125)	(250)
Cystic ducts	34 (29%)	8 (6%)	42 (17%)
Inflammation, acute		1 (1%)	
Abscess, NOS		1 (1%)	2 (1%)
Inflammation, chronic focal	1 (1%)		
Hyperplasia, NOS		1 (1%)	1 (0%)
Hyperplasia, focal			1 (0%)
Hyperkeratosis		2 (2%)	1 (0%)
Acanthosis			1 (0%)

TABLE A5a. SUMMARY OF THE INCIDENCE OF NONNEOPLASTIC LESIONS IN MALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS AND DMH: UNTREATED CONTROL, DMH, 1% AMOSITE (Continued)

	Untreated Control	DMH	1% Amosite
MUSCULOSKELETAL SYSTEM			
*Bone	(117)	(125)	(250)
Fibrous osteodystrophy	1 (1%)		
*Skull	(117)	(125)	(250)
Osteopetrosis	4 (3%)		2 (1%)
Fibrous osteodystrophy	3 (3%)		
*Maxilla	(117)	(125)	(250)
Osteopetrosis	1 (1%)		
Fibrous osteodystrophy	1 (1%)		
*Sternum	(117)	(125)	(250)
Osteopetrosis	1 (1%)		
Fibrous osteodystrophy	3 (3%)		
BODY CAVITIES			
*Mediastinum	(117)	(125)	(250)
Ectopia	1 (1%)		
*Abdominal cavity	(117)	(125)	(250)
Hemorrhage			1 (0%)
Steatitis	1 (1%)	1 (1%)	
Necrosis, fat	6 (5%)		5 (2%)
*Peritoneum	(117)	(125)	(250)
Inflammation, acute		1 (1%)	
*Pericardium	(117)	(125)	(250)
Pigmentation, NOS	1 (1%)		
*Mesentery	(117)	(125)	(250)
Inflammation, chronic			1 (0%)
Inflammation, chronic focal	2 (2%)	1 (1%)	7 (3%)
Granuloma, NOS			1 (0%)
Necrosis, fat			1 (0%)
ALL OTHER SYSTEMS			
*Multiple organs	(117)	(125)	(250)
Mineralization	3 (3%)		1 (0%)
Inflammation, chronic	15 (13%)	3 (2%)	8 (3%)
Inflammation, chronic focal	1 (1%)	1 (1%)	
Degeneration, NOS	1 (1%)		
Pigmentation, NOS			1 (0%)
Hyperplasia, NOS	1 (1%)		
Diaphragm			
Hernia, NOS	1		4
Adipose tissue			
Hemorrhage	1		
Mesentery of colon			
Hemorrhage	1		
Inflammation, chronic diffuse	1		
SPECIAL MORPHOLOGY SUMMARY			
Auto/necropsy/histo perf			1

(a) DMH indicates a group receiving five doses of 7.5 mg/kg 1,2-dimethylhydrazine dihydrochloride by gavage in pH 5 acetate buffer

* Number of animals receiving complete necropsy examination; all gross lesions including masses examined microscopically

Number of animals examined microscopically at this site

TABLE A5b. SUMMARY OF THE INCIDENCE OF NONNEOPLASTIC LESIONS IN MALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS AND DMH: 1% AMOSITE + PW, 1% AMOSITE + DMH (a)

	1% Amosite + PW	1% Amosite + DMH
Animals initially in study	100	175
Animals necropsied	100	175
Animals examined histopathologically	100	174
INTEGUMENTARY SYSTEM		
*Skin	(100)	(175)
Epidermal inclusion cyst	6 (6%)	13 (7%)
Abscess, NOS	1 (1%)	2 (1%)
Inflammation, chronic focal		1 (1%)
Hyperkeratosis	2 (2%)	3 (2%)
Acanthosis	3 (3%)	3 (2%)
*Subcut tissue	(100)	(175)
Hemorrhagic cyst		1 (1%)
Abscess, NOS	1 (1%)	4 (2%)
Granuloma, NOS	1 (1%)	
RESPIRATORY SYSTEM		
*Nasal cavity	(100)	(175)
Inflammation, chronic		1 (1%)
*Nasal turbinate	(100)	(175)
Inflammation, chronic		1 (1%)
#Lung/bronchus	(100)	(173)
Bronchiectasis	1 (1%)	
#Lung	(100)	(173)
Congestion, NOS	4 (4%)	
Edema, NOS	1 (1%)	
Hemorrhage	2 (2%)	1 (1%)
Pneumonia, aspiration	2 (2%)	
Inflammation, acute focal	1 (1%)	2 (1%)
Abscess, NOS	1 (1%)	
Inflammation, chronic	94 (94%)	150 (86%)
Granuloma, NOS	5 (5%)	
Granuloma, foreign body	1 (1%)	
Necrosis, focal	1 (1%)	1 (1%)
Pigmentation, NOS	1 (1%)	
Hyperplasia, alveolar epithelium	2 (2%)	2 (1%)
Metaplasia, osseous		1 (1%)
#Lung/alveoli	(100)	(173)
Histiocytosis	1 (1%)	
HEMATOPOIETIC SYSTEM		
#Bone marrow	(100)	(171)
Hyperplasia, NOS	5 (5%)	2 (1%)
#Spleen	(100)	(172)
Congestion, NOS	1 (1%)	
Hemorrhage		1 (1%)
Inflammation, chronic	1 (1%)	
Inflammation, chronic focal		1 (1%)
Fibrosis, focal	10 (10%)	4 (2%)
Fibrosis, diffuse		1 (1%)
Necrosis, NOS	1 (1%)	1 (1%)
Necrosis, focal		2 (1%)
Hemosiderosis	8 (8%)	1 (1%)
Metaplasia, osseous	1 (1%)	
Hematopoiesis	11 (11%)	20 (11%)
#Splenic follicles	(100)	(172)
Atrophy, NOS	1 (1%)	1 (1%)

TABLE A5b. SUMMARY OF THE INCIDENCE OF NONNEOPLASTIC LESIONS IN MALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS AND DMH: 1% AMOSITE + PW, 1% AMOSITE + DMH (Continued)

	1% Amosite + PW	1% Amosite + DMH
HEMATOPOIETIC SYSTEM (Continued)		
#Mandibular l. node	(100)	(173)
Congestion, NOS	1 (1%)	
Hemorrhage		1 (1%)
Inflammation, chronic		1 (1%)
Hyperplasia, lymphoid	22 (22%)	33 (19%)
#Cervical lymph node	(100)	(173)
Necrosis, focal		1 (1%)
Hyperplasia, lymphoid		3 (2%)
#Mediastinal l. node	(100)	(173)
Hemorrhage	9 (9%)	3 (2%)
Pigmentation, NOS	22 (22%)	6 (3%)
Erythrophagocytosis	2 (2%)	
Hyperplasia, lymphoid	1 (1%)	6 (3%)
#Celiac lymph node	(100)	(173)
Hyperplasia, lymphoid		1 (1%)
#Hepatic lymph node	(100)	(173)
Hemorrhage		1 (1%)
Hyperplasia, lymphoid		1 (1%)
#Pancreatic lymph node	(100)	(173)
Necrosis, focal		1 (1%)
Pigmentation, NOS	4 (4%)	3 (2%)
Hyperplasia, reticulum cell		4 (2%)
Hyperplasia, lymphoid	2 (2%)	3 (2%)
#Mesenteric lymph node	(100)	(173)
Hemorrhage	2 (2%)	2 (1%)
Pigmentation, NOS	2 (2%)	2 (1%)
Atrophy, NOS		1 (1%)
Hyperplasia, reticulum cell	26 (26%)	14 (8%)
Hyperplasia, lymphoid	3 (3%)	4 (2%)
#Ileocolic lymph node	(100)	(173)
Hyperplasia, lymphoid		2 (1%)
#Renal lymph node	(100)	(173)
Pigmentation, NOS		2 (1%)
Hyperplasia, reticulum cell		1 (1%)
#Liver	(100)	(173)
Leukocytosis, NOS	3 (3%)	1 (1%)
#Peyer's patch	(100)	(173)
Hyperplasia, lymphoid		1 (1%)
#Ascending colon	(100)	(173)
Hyperplasia, lymphoid		1 (1%)
#Thymus	(78)	(134)
Cyst, NOS	2 (3%)	
Congestion, NOS	1 (1%)	
CIRCULATORY SYSTEM		
#Spleen	(100)	(172)
Thrombosis, NOS		1 (1%)
#Mandibular l. node	(100)	(173)
Lymphangiectasis	5 (5%)	4 (2%)
#Mediastinal l. node	(100)	(173)
Lymphangiectasis	1 (1%)	4 (2%)
#Celiac lymph node	(100)	(173)
Lymphangiectasis		1 (1%)
#Pancreatic lymph node	(100)	(173)
Lymphangiectasis		1 (1%)
#Mesenteric lymph node	(100)	(173)
Lymphangiectasis	1 (1%)	4 (2%)
#Ileocolic lymph node	(100)	(173)
Lymphangiectasis	3 (3%)	4 (2%)

TABLE A5b. SUMMARY OF THE INCIDENCE OF NONNEOPLASTIC LESIONS IN MALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS AND DMH: 1% AMOSITE + PW, 1% AMOSITE + DMH (Continued)

	1% Amosite + PW	1% Amosite + DMH
CIRCULATORY SYSTEM (Continued)		
#Heart	(100)	(172)
Inflammation, chronic focal	1 (1%)	1 (1%)
#Heart/atrium	(100)	(172)
Thrombosis, NOS	2 (2%)	
#Myocardium	(100)	(172)
Mineralization	2 (2%)	
Inflammation, chronic		4 (2%)
Inflammation, chronic focal	60 (60%)	61 (35%)
Inflammation, chronic diffuse	22 (22%)	21 (12%)
Fibrosis, focal	1 (1%)	3 (2%)
Fibrosis, multifocal		2 (1%)
Fibrosis, diffuse	2 (2%)	
Degeneration, NOS		5 (3%)
#Cardiac valve	(100)	(172)
Inflammation, chronic focal		4 (2%)
*Aorta	(100)	(175)
Mineralization	1 (1%)	
*Mesenteric artery	(100)	(175)
Inflammation, chronic	1 (1%)	
Periarteritis	1 (1%)	
#Liver	(100)	(173)
Thrombosis, NOS	1 (1%)	1 (1%)
#Pancreas	(100)	(173)
Periarteritis	1 (1%)	2 (1%)
#Testis	(100)	(172)
Periarteritis	1 (1%)	2 (1%)
#Adrenal	(100)	(173)
Thrombosis, NOS	1 (1%)	
DIGESTIVE SYSTEM		
#Salivary gland	(100)	(171)
Cystic ducts	1 (1%)	
Abscess, NOS		1 (1%)
Inflammation, chronic	1 (1%)	1 (1%)
Atrophy, NOS		1 (1%)
Metaplasia, squamous		1 (1%)
#Liver	(100)	(173)
Cyst, NOS		1 (1%)
Congestion, NOS	1 (1%)	
Hemorrhage	1 (1%)	3 (2%)
Abscess, NOS		1 (1%)
Granuloma, NOS	5 (5%)	12 (7%)
Fibrosis, focal		1 (1%)
Adhesion, NOS	1 (1%)	
Hepatitis, toxic	15 (15%)	14 (8%)
Degeneration, NOS	5 (5%)	16 (9%)
Degeneration, cystic		5 (3%)
Necrosis, NOS		1 (1%)
Necrosis, focal	11 (11%)	28 (16%)
Metamorphosis fatty	4 (4%)	32 (18%)
Pigmentation, NOS	13 (13%)	6 (3%)
Focal cellular change	25 (25%)	67 (38%)
Hepatocytomegaly		1 (1%)
Angiectasis	3 (3%)	6 (3%)
#Bile duct	(100)	(173)
Cyst, NOS		1 (1%)
Multilocular cyst		1 (1%)
Inflammation, chronic	22 (22%)	24 (14%)
Fibrosis	3 (3%)	3 (2%)
Hyperplasia, NOS	41 (41%)	51 (29%)

TABLE A5b. SUMMARY OF THE INCIDENCE OF NONNEOPLASTIC LESIONS IN MALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS AND DMH: 1% AMOSITE + PW, 1% AMOSITE + DMH (Continued)

	1% Amosite + PW	1% Amosite + DMH
DIGESTIVE SYSTEM (Continued)		
#Pancreas	(100)	(173)
Ectopia	5 (5%)	3 (2%)
Abscess, NOS	1 (1%)	
Inflammation, chronic focal	1 (1%)	2 (1%)
Inflammation, chronic diffuse	1 (1%)	
Atrophy, focal	15 (15%)	14 (8%)
Atrophy, diffuse	1 (1%)	2 (1%)
Hyperplasia, focal		1 (1%)
#Pancreatic acinus	(100)	(173)
Hyperplasia, focal	1 (1%)	
*Pharynx	(100)	(175)
Abscess, NOS		1 (1%)
#Esophagus	(100)	(173)
Hyperkeratosis	12 (12%)	9 (5%)
#Stomach	(100)	(173)
Mineralization	1 (1%)	
Cyst, NOS	1 (1%)	1 (1%)
Edema, NOS		2 (1%)
Abscess, NOS		1 (1%)
Inflammation, chronic	2 (2%)	4 (2%)
Inflammation, chronic focal	4 (4%)	1 (1%)
Inflammation, chronic diffuse	11 (11%)	3 (2%)
Ulcer, perforated	7 (7%)	1 (1%)
Parasitism	1 (1%)	
Necrosis, NOS		1 (1%)
Necrosis, focal	15 (15%)	8 (5%)
Hyperkeratosis	16 (16%)	13 (7%)
Acanthosis	21 (21%)	20 (11%)
#Gastric mucosa	(100)	(173)
Cyst, NOS		1 (1%)
Edema, NOS	1 (1%)	
#Duodenum	(100)	(173)
Inflammation, chronic focal	1 (1%)	1 (1%)
Hyperplasia, epithelial	1 (1%)	
Metaplasia, osseous	1 (1%)	
#Duodenal mucosa	(100)	(173)
Hyperplasia, diffuse	1 (1%)	
#Jejunum	(100)	(173)
Inflammation, chronic focal	1 (1%)	
#Ileum	(100)	(173)
Necrosis, focal		1 (1%)
#Colon	(100)	(173)
Mineralization	1 (1%)	
Inflammation, acute diffuse	1 (1%)	
Inflammation, chronic diffuse	1 (1%)	1 (1%)
Parasitism	4 (4%)	5 (3%)
Necrosis, focal	2 (2%)	1 (1%)
Necrosis, diffuse		1 (1%)
Hyperplasia, epithelial		1 (1%)
#Cecum	(100)	(173)
Edema, NOS	1 (1%)	
Hemorrhage	2 (2%)	2 (1%)
Inflammation, acute focal	1 (1%)	
Inflammation, chronic focal	2 (2%)	1 (1%)
Inflammation, chronic diffuse	1 (1%)	
Parasitism	1 (1%)	2 (1%)
Necrosis, focal	3 (3%)	2 (1%)
Hyperplasia, focal	1 (1%)	
#Ascending colon	(100)	(173)
Cyst, NOS		1 (1%)

TABLE A5b. SUMMARY OF THE INCIDENCE OF NONNEOPLASTIC LESIONS IN MALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS AND DMH: 1% AMOSITE + PW, 1% AMOSITE + DMH (Continued)

	1% Amosite + PW	1% Amosite + DMH
DIGESTIVE SYSTEM (Continued)		
#Transverse colon	(100)	(173)
Parasitism		1 (1%)
Hyperplasia, epithelial		1 (1%)
#Descending colon	(100)	(173)
Parasitism		1 (1%)
URINARY SYSTEM		
#Kidney	(100)	(173)
Mineralization	3 (3%)	
Hydronephrosis		1 (1%)
Congestion, NOS	1 (1%)	
Inflammation, acute focal	1 (1%)	
Inflammation, chronic	97 (97%)	152 (87%)
Granuloma, NOS		1 (1%)
Fibrosis, diffuse		1 (1%)
Necrosis, focal	1 (1%)	
Infarct, NOS	1 (1%)	
Metamorphosis fatty	1 (1%)	
#Kidney/cortex	(100)	(173)
Cyst, NOS	5 (5%)	2 (1%)
#Kidney/tubule	(100)	(173)
Cyst, NOS		1 (1%)
Pigmentation, NOS	33 (33%)	34 (19%)
Hyperplasia, focal	1 (1%)	1 (1%)
#Urinary bladder	(100)	(172)
Hemorrhage	3 (3%)	
Inflammation, acute diffuse	1 (1%)	
Inflammation, chronic focal	2 (2%)	
Necrosis, focal	1 (1%)	
Necrosis, diffuse	1 (1%)	
Hyperplasia, epithelial	1 (1%)	
Hyperplasia, diffuse	1 (1%)	
*Urethra	(100)	(175)
Abscess, NOS	1 (1%)	
Hyperplasia, epithelial	1 (1%)	
ENDOCRINE SYSTEM		
#Pituitary	(99)	(169)
Cyst, NOS	3 (3%)	3 (2%)
Hemorrhage	2 (2%)	
Pigmentation, NOS	1 (1%)	
Hyperplasia, focal	5 (5%)	4 (2%)
Angiectasis	6 (6%)	1 (1%)
#Adrenal	(100)	(173)
Hemorrhage	1 (1%)	
Metamorphosis fatty	1 (1%)	1 (1%)
Pigmentation, NOS		1 (1%)
#Adrenal/capsule	(100)	(173)
Inflammation, chronic focal		1 (1%)
#Adrenal cortex	(100)	(173)
Congestion, NOS	1 (1%)	
Degeneration, NOS	1 (1%)	
Metamorphosis fatty	24 (24%)	16 (9%)
Hyperplasia, focal	3 (3%)	2 (1%)
#Adrenal medulla	(100)	(173)
Hyperplasia, focal	19 (19%)	29 (17%)

TABLE A5b. SUMMARY OF THE INCIDENCE OF NONNEOPLASTIC LESIONS IN MALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS AND DMH: 1% AMOSITE + PW, 1% AMOSITE + DMH (Continued)

	1% Amosite + PW	1% Amosite + DMH
ENDOCRINE SYSTEM (Continued)		
#Thyroid	(100)	(172)
Cystic follicles		1 (1%)
Follicular cyst, NOS	1 (1%)	7 (4%)
Hyperplasia, C-cell	23 (23%)	33 (19%)
#Parathyroid	(99)	(168)
Hyperplasia, NOS	12 (12%)	1 (1%)
REPRODUCTIVE SYSTEM		
*Mammary gland	(100)	(175)
Galactocele		1 (1%)
Cystic ducts	9 (9%)	4 (2%)
Hemorrhagic cyst	1 (1%)	
Hyperplasia, NOS	4 (4%)	2 (1%)
*Penis	(100)	(175)
Epidermal inclusion cyst	1 (1%)	
*Prepuce	(100)	(175)
Epidermal inclusion cyst		1 (1%)
*Preputial gland	(100)	(175)
Cystic ducts	2 (2%)	2 (1%)
Hyperplasia, NOS		1 (1%)
#Prostate	(100)	(172)
Inflammation, acute focal		1 (1%)
Abscess, NOS	4 (4%)	1 (1%)
Inflammation, chronic focal	44 (44%)	43 (25%)
Inflammation, chronic diffuse	4 (4%)	1 (1%)
Hyperplasia, focal	1 (1%)	
*Seminal vesicle	(100)	(175)
Cyst, NOS	5 (5%)	4 (2%)
Abscess, NOS	1 (1%)	
Hyperplasia, epithelial	1 (1%)	
Hyperplasia, diffuse	3 (3%)	
*Coagulating gland	(100)	(175)
Inflammation, chronic focal	1 (1%)	
Hyperplasia, focal		1 (1%)
#Testis	(100)	(172)
Degeneration, NOS	7 (7%)	26 (15%)
Hyperplasia, interstitial cell	53 (53%)	117 (67%)
Hyperplasia, C-cell	1 (1%)	
*Epididymis	(100)	(175)
Granuloma, spermatic		1 (1%)
Necrosis, fat	4 (4%)	2 (1%)
NERVOUS SYSTEM		
#Cerebrum	(100)	(171)
Necrosis, focal	1 (1%)	
#Brain	(100)	(171)
Hydrocephalus, NOS	1 (1%)	
Hemorrhage	1 (1%)	
#Cerebellum	(100)	(171)
Abscess, NOS		1 (1%)
SPECIAL SENSE ORGANS		
*Eye	(100)	(175)
Hemorrhage	2 (2%)	
Inflammation, chronic	1 (1%)	
Synechia, posterior	1 (1%)	
Cataract	13 (13%)	6 (3%)

TABLE A5b. SUMMARY OF THE INCIDENCE OF NONNEOPLASTIC LESIONS IN MALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS AND DMH: 1% AMOSITE + PW, 1% AMOSITE + DMH (Continued)

	1% Amosite + PW	1% Amosite + DMH
SPECIAL SENSE ORGANS (Continued)		
*Vitreous body	(100)	(175)
Vascularization	1 (1%)	
*Eye/cornea	(100)	(175)
Inflammation, acute focal	1 (1%)	
Inflammation, chronic		1 (1%)
Necrosis, focal		1 (1%)
*Eye/retina	(100)	(175)
Degeneration, NOS	35 (35%)	10 (6%)
*Eye/crystalline lens	(100)	(175)
Rupture	1 (1%)	
*Ear canal	(100)	(175)
Inflammation, chronic focal		1 (1%)
Hyperkeratosis		1 (1%)
Acanthosis		2 (1%)
*Zymbal's gland	(100)	(175)
Cystic ducts	11 (11%)	8 (5%)
Abscess, NOS		1 (1%)
Inflammation, chronic		1 (1%)
Hyperkeratosis		2 (1%)
MUSCULOSKELETAL SYSTEM		
*Skull	(100)	(175)
Osteopetrosis	1 (1%)	
*Rib	(100)	(175)
Degeneration, NOS	2 (2%)	
BODY CAVITIES		
*Mediastinum	(100)	(175)
Necrosis, focal		1 (1%)
*Abdominal cavity	(100)	(175)
Steatitis		1 (1%)
Necrosis, fat	1 (1%)	5 (3%)
*Mesentery	(100)	(175)
Hemorrhage	2 (2%)	
Inflammation, acute focal	1 (1%)	
Inflammation, chronic focal	3 (3%)	
ALL OTHER SYSTEMS		
*Multiple organs	(100)	(175)
Inflammation, acute	1 (1%)	
Inflammation, chronic	3 (3%)	2 (1%)
Diaphragm		
Hernia, NOS		2
Adipose tissue		
Hemorrhage	2	
SPECIAL MORPHOLOGY SUMMARY		
Auto/necropsy/histo perf		1

(a) DMH indicates a group receiving five doses of 7.5 mg/kg 1,2-dimethylhydrazine dihydrochloride by gavage in pH 5 acetate buffer; PW indicates a group administered 0.47 mg/g chrysotile asbestos daily by gavage for 3 weeks beginning at birth
* Number of animals receiving complete necropsy examination; all gross lesions including masses examined microscopically
# Number of animals examined microscopically at this site

APPENDIX B

SUMMARY OF LESIONS IN FEMALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS

TABLE B1a. SUMMARY OF THE INCIDENCE OF NEOPLASMS IN FEMALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS AND DMH: UNTREATED CONTROL, DMH, 1% AMOSITE (a)

	Untreated Control	DMH	1% Amosite
Animals initially in study	117	125	250
Animals necropsied	117	125	250
Animals examined histolopathologically	117	124	250
INTEGUMENTARY SYSTEM			
*Skin	(117)	(125)	(250)
Squamous cell papilloma	2 (2%)		3 (1%)
Squamous cell carcinoma	1 (1%)		1 (0%)
Basal cell tumor	1 (1%)		3 (1%)
Basal cell carcinoma	1 (1%)		
Keratoacanthoma			2 (1%)
Fibroma	1 (1%)		
Fibrosarcoma	2 (2%)	1 (1%)	1 (0%)
Osteosarcoma			1 (0%)
*Subcut tissue	(117)	(125)	(250)
Sarcoma, NOS			6 (2%)
Sarcoma, NOS, invasive	1 (1%)		
Fibroma	6 (5%)		8 (3%)
Fibrosarcoma	1 (1%)	1 (1%)	4 (2%)
Lipoma	3 (3%)		2 (1%)
Fibroadenoma	1 (1%)		
Neurofibroma			1 (0%)
Neurofibrosarcoma			1 (0%)
RESPIRATORY SYSTEM			
#Trachea	(116)	(122)	(249)
Follicular cell carcinoma, invas	1 (1%)		
#Lung	(116)	(124)	(250)
Carcinoma, NOS, metastatic		1 (1%)	
Squamous cell carcinoma	1 (1%)		
Squamous cell carcinoma, metasta			1 (0%)
Alveolar/bronchiolar adenoma	1 (1%)		
Alveolar/bronchiolar carcinoma			1 (0%)
Cortical carcinoma, metastatic			1 (0%)
C-cell carcinoma, metastatic	1 (1%)		2 (1%)
Pheochromocytoma, metastatic	1 (1%)		
Sarcoma, NOS, metastatic		1 (1%)	1 (0%)
Liposarcoma, metastatic			1 (0%)
Osteosarcoma, metastatic			1 (0%)
HEMATOPOIETIC SYSTEM			
*Multiple organs	(117)	(125)	(250)
Malig. lymphoma, histiocytic type	1 (1%)		
Myelomonocytic leukemia			1 (0%)
Monocytic leukemia	39 (33%)	34 (27%)	78 (31%)
#Spleen	(117)	(124)	(249)
Osteosarcoma	1 (1%)		
#Mandibular l. node	(117)	(124)	(250)
Adenocarcinoma, NOS, metastatic			1 (0%)
#Cervical lymph node	(117)	(124)	(250)
C-cell carcinoma, metastatic	2 (2%)		3 (1%)
#Mediastinal l. node	(117)	(124)	(250)
C-cell carcinoma, metastatic			1 (0%)
#Liver	(117)	(124)	(250)
Malig. lymphoma, histiocytic type			1 (0%)
Kupffer cell sarcoma			1 (0%)
Monocytic leukemia	1 (1%)	5 (4%)	4 (2%)
#Thymus	(79)	(96)	(210)
Adenocarcinoma, NOS			1 (0%)

TABLE B1a. SUMMARY OF THE INCIDENCE OF NEOPLASMS IN FEMALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS AND DMH: UNTREATED CONTROL, DMH, 1% AMOSITE (Continued)

	Untreated Control	DMH	1% Amosite
CIRCULATORY SYSTEM			
#Endocardium	(116)	(122)	(250)
Sarcoma, NOS			1 (0%)
Neurilemoma, malignant			1 (0%)
*Aorta	(117)	(125)	(250)
Nonchromaffin paraganglioma			1 (0%)
#Uterus	(117)	(124)	(250)
Hemangiosarcoma	1 (1%)		
DIGESTIVE SYSTEM			
*Oral mucous membrane	(117)	(125)	(250)
Squamous cell carcinoma			1 (0%)
*Hard palate	(117)	(125)	(250)
Squamous cell papilloma	1 (1%)		1 (0%)
Squamous cell carcinoma			1 (0%)
*Tongue	(117)	(125)	(250)
Squamous cell papilloma			1 (0%)
#Salivary gland	(116)	(123)	(246)
Sarcoma, NOS	2 (2%)		1 (0%)
#Liver	(117)	(124)	(250)
Neoplastic nodule	4 (3%)	29 (23%)	10 (4%)
Hepatocellular carcinoma	1 (1%)	10 (8%)	
Sarcoma, NOS, metastatic		2 (2%)	
#Pancreas	(116)	(124)	(249)
Islet cell carcinoma			1 (0%)
Acinar cell adenoma	2 (2%)		
Sarcoma, NOS, invasive		1 (1%)	
Mixed tumor, benign			1 (0%)
#Stomach	(117)	(124)	(250)
Carcinoma, NOS	1 (1%)		
Squamous cell carcinoma			1 (0%)
Adenocarcinoma, NOS		2 (2%)	
Adenocarcinoma, NOS, invasive		1 (1%)	
Signet ring carcinoma		1 (1%)	
Leiomyosarcoma			1 (0%)
#Duodenum	(117)	(124)	(249)
Adenocarcinoma, NOS		1 (1%)	
Mucinous cystadenocarcinoma		1 (1%)	1 (0%)
Signet ring carcinoma		1 (1%)	
Leiomyosarcoma	1 (1%)		
#Jejunum	(117)	(124)	(249)
Adenoma, NOS			1 (0%)
Adenocarcinoma, NOS		3 (2%)	
Adenomatous polyp, NOS			1 (0%)
Mucinous cystadenocarcinoma		6 (5%)	
Signet ring carcinoma		2 (2%)	
Leiomyosarcoma			1 (0%)
#Colon	(117)	(124)	(250)
Adenocarcinoma, NOS		3 (2%)	
Adenomatous polyp, NOS		1 (1%)	
Signet ring carcinoma		1 (1%)	
Leiomyosarcoma			1 (0%)
Neurofibroma			1 (0%)
#Cecum	(117)	(124)	(250)
Adenocarcinoma, NOS		2 (2%)	
Mucinous cystadenocarcinoma		3 (2%)	
Signet ring carcinoma		2 (2%)	

TABLE B1a. SUMMARY OF THE INCIDENCE OF NEOPLASMS IN FEMALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS AND DMH: UNTREATED CONTROL, DMH, 1% AMOSITE (Continued)

	Untreated Control	DMH	1% Amosite
DIGESTIVE SYSTEM (Continued)			
#Ascending colon	(117)	(124)	(250)
Adenocarcinoma, NOS		2 (2%)	
Adenomatous polyp, NOS		7 (6%)	
Adenocarcinoma in adenomatous polyp		4 (3%)	
Mucinous cystadenocarcinoma		3 (2%)	
Mucinous adenocarcinoma		1 (1%)	
Signet ring carcinoma		4 (3%)	
#Transverse colon	(117)	(124)	(250)
Adenomatous polyp, NOS		6 (5%)	
Adenocarcinoma in adenomatous polyp		9 (7%)	
#Descending colon	(117)	(124)	(250)
Adenomatous polyp, NOS	1 (1%)	27 (22%)	
Adenocarcinoma in adenomatous polyp		15 (12%)	
Mucinous cystadenocarcinoma		1 (1%)	
Lipoma			1 (0%)
URINARY SYSTEM			
#Kidney	(117)	(124)	(250)
Neoplasm, NOS, malignant		1 (1%)	
Tubular cell adenocarcinoma	1 (1%)	3 (2%)	
Sarcoma, NOS		23 (18%)	1 (0%)
Fibrosarcoma		4 (3%)	
Mixed tumor, benign			1 (0%)
Mixed tumor, malignant		9 (7%)	1 (0%)
#Perirenal tissue	(117)	(124)	(250)
Pheochromocytoma, invasive	1 (1%)		
#Urinary bladder	(117)	(121)	(248)
Transitional cell papilloma	1 (1%)		1 (0%)
Transitional cell carcinoma		1 (1%)	2 (1%)
ENDOCRINE SYSTEM			
#Pituitary	(117)	(123)	(249)
Carcinoma, NOS	2 (2%)		11 (4%)
Adenoma, NOS	50 (43%)	16 (13%)	07 (43%)
#Adrenal	(117)	(124)	(249)
Cortical adenoma	3 (3%)	2 (2%)	13 (5%)
Cortical carcinoma	1 (1%)		1 (0%)
Pheochromocytoma	17 (15%)		27 (11%)
Pheochromocytoma, malignant	1 (1%)		3 (1%)
Sarcoma, NOS, invasive		1 (1%)	
#Thyroid	(116)	(123)	(247)
Follicular cell adenoma	2 (2%)	4 (3%)	10 (4%)
Follicular cell carcinoma	7 (6%)	2 (2%)	3 (1%)
C-cell adenoma	14 (12%)	4 (3%)	37 (15%)
C-cell carcinoma	10 (9%)	1 (1%)	29 (12%)
#Parathyroid	(109)	(118)	(240)
Adenoma, NOS	1 (1%)		
#Pancreatic islets	(116)	(124)	(249)
Islet cell adenoma	2 (2%)		7 (3%)
Islet cell carcinoma	3 (3%)		6 (2%)

TABLE B1a. SUMMARY OF THE INCIDENCE OF NEOPLASMS IN FEMALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS AND DMH: UNTREATED CONTROL, DMH, 1% AMOSITE (Continued)

	Untreated Control	DMH	1% Amosite
REPRODUCTIVE SYSTEM			
*Mammary gland	(117)	(125)	(250)
Carcinoma in-situ, NOS	1 (1%)		
Carcinoma, NOS	1 (1%)		
Adenoma, NOS	7 (6%)		13 (5%)
Adenocarcinoma, NOS	4 (3%)	3 (2%)	23 (9%)
Papillary adenocarcinoma			2 (1%)
Papillary cystadenoma, NOS	1 (1%)	1 (1%)	1 (0%)
Sarcoma, NOS, invasive	1 (1%)		
Fibroadenoma	72 (62%)	13 (10%)	35 (54%)
*Preputial gland	(117)	(125)	(250)
Carcinoma, NOS	6 (5%)	1 (1%)	14 (6%)
Adenoma, NOS			1 (0%)
Keratoacanthoma			1 (0%)
Sarcoma, NOS	1 (1%)		
Sarcoma, NOS, invasive			2 (1%)
*Vagina	(117)	(125)	(250)
Leiomyosarcoma, invasive	1 (1%)		
Endometrial stromal sarcoma, inv		1 (1%)	
#Uterus	(117)	(124)	(250)
Carcinoma, NOS			1 (0%)
Adenocarcinoma, NOS			1 (0%)
Papillary adenocarcinoma			1 (0%)
Leiomyoma			1 (0%)
Leiomyosarcoma			1 (0%)
Leiomyosarcoma, invasive	1 (1%)		
Endometrial stromal polyp	13 (11%)	10 (8%)	31 (12%)
Endometrial stromal sarcoma	5 (4%)	4 (3%)	4 (2%)
Mixed tumor, metastatic		1 (1%)	
#Cervix uteri	(117)	(124)	(250)
Leiomyosarcoma	1 (1%)	1 (1%)	
Endometrial stromal sarcoma, inv	2 (2%)	2 (2%)	2 (1%)
#Uterus/endometrium	(117)	(124)	(250)
Carcinoma, NOS			1 (0%)
Papillary adenoma			1 (0%)
#Ovary	(117)	(124)	(250)
Papillary cystadenoma, NOS			1 (0%)
Thecoma			1 (0%)
Granulosa cell tumor	1 (1%)		3 (1%)
Sertoli cell tumor	1 (1%)		
Mixed tumor, metastatic		1 (1%)	
Mesothelioma, NOS	1 (1%)		
NERVOUS SYSTEM			
#Cerebrum	(117)	(124)	(250)
Carcinoma, NOS, invasive	1 (1%)		5 (2%)
Granular cell tumor, NOS			1 (0%)
Glioma, NOS			1 (0%)
Astrocytoma	2 (2%)	1 (1%)	4 (2%)
#Cerebellum	(117)	(124)	(250)
Carcinoma, NOS, invasive			3 (1%)
Astrocytoma	2 (2%)		
Astrocytoma, invasive			1 (0%)
#Medulla oblongata	(117)	(124)	(250)
Astrocytoma, invasive			1 (0%)
*Trigeminal nerve	(117)	(125)	(250)
Squamous cell carcinoma, metasta			1 (0%)

TABLE B1a. SUMMARY OF THE INCIDENCE OF NEOPLASMS IN FEMALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS AND DMH: UNTREATED CONTROL, DMH, 1% AMOSITE (Continued)

	Untreated Control	DMH	1% Amosite
SPECIAL SENSE ORGANS			
*Zymbal gland	(117)	(125)	(250)
Carcinoma, NOS	3 (3%)	20 (16%)	4 (2%)
Squamous cell papilloma		12 (10%)	3 (1%)
Keratoacanthoma	1 (1%)	2 (2%)	
MUSCULOSKELETAL SYSTEM			
*Skull	(117)	(125)	(250)
Osteosarcoma			1 (0%)
*Rib	(117)	(125)	(250)
Osteosarcoma			1 (0%)
*Femur	(117)	(125)	(250)
Osteosarcoma	1 (1%)		
BODY CAVITIES			
*Mediastinum	(117)	(125)	(250)
Squamous cell carcinoma, metasta	1 (1%)		
*Abdominal cavity	(117)	(125)	(250)
Mucinous cystadenoca, metastatic		1 (1%)	
Pheochromocytoma, invasive			1 (0%)
Sarcoma, NOS, invasive		1 (1%)	
Sarcoma, NOS, metastatic			1 (0%)
Endometrial stromal sarcoma, inv	1 (1%)		
*Abdominal wall	(117)	(125)	(250)
Endometrial stromal sarcoma, inv			1 (0%)
*Peritoneum	(117)	(125)	(250)
Fibrosarcoma			1 (0%)
*Mesentery	(117)	(125)	(250)
Mucinous cystadenoca, metastatic		1 (1%)	
Leiomyosarcoma, invasive			1 (0%)
Mesothelioma, malignant			1 (0%)
ALL OTHER SYSTEMS			
*Multiple organs	(117)	(125)	(250)
Carcinoma, NOS, invasive			1 (0%)
Squamous cell carcinoma, metasta			1 (0%)
Adenocarcinoma, NOS, metastatic		11 (9%)	
Mucinous cystadenocarcinoma, metastatic		6 (5%)	
Mucinous adenocarcinoma, metasta		1 (1%)	
Signet ring carcinoma, metastati		9 (7%)	
Sarcoma, NOS, invasive			2 (1%)
Sarcoma, NOS, metastatic			1 (0%)
Liposarcoma, metastatic			1 (0%)
Endometrial stromal sarcoma, met	1 (1%)	1 (1%)	
Mesothelioma, invasive			1 (0%)
Adipose tissue			
Sarcoma, NOS, invasive		1	

TABLE B1a. SUMMARY OF THE INCIDENCE OF NEOPLASMS IN FEMALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS AND DMH: UNTREATED CONTROL, DMH, 1% AMOSITE (Continued)

	Untreated Control	DMH	1% Amosite
ANIMAL DISPOSITION SUMMARY			
Animals initially in study	117	125	250
Natural death	16	22	24
Moribund sacrifice	91	90	195
Terminal sacrifice	10	13	27
Accidentally killed, nda			4
TUMOR SUMMARY			
Total animals with primary tumors**	113	121	240
Total primary tumors	316	326	663
Total animals with benign tumors	99	74	213
Total benign tumors	204	105	419
Total animals with malignant tumors	74	111	166
Total malignant tumors	106	192	230
Total animals with secondary tumors##	11	39	31
Total secondary tumors	16	44	38

(a) DMH indicates a group receiving five doses of 15 mg/kg 1,2-dimethylhydrazine dihydrochloride by gavage in pH 5 acetate buffer

* Number of animals receiving complete necropsy examinations; all gross lesions including masses examined microscopically

** Primary tumors: all tumors except secondary tumors

Number of animals examined microscopically at this site

Secondary tumors: metastatic tumors or tumors invasive into an adjacent organ

TABLE B1b. SUMMARY OF THE INCIDENCE OF NEOPLASMS IN FEMALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS AND DMH: 1% AMOSITE + PW, AND 1% AMOSITE + DMH (a)

	1% Amosite + PW	1% Amosite + DMH
Animals initially in study	100	175
Animals necropsied	100	175
Animals examined histopathologically	100	175
INTEGUMENTARY SYSTEM		
*Skin	(100)	(175)
Squamous cell papilloma		1 (1%)
Basal cell tumor	1 (1%)	
Basal cell carcinoma	1 (1%)	1 (1%)
Fibroma	1 (1%)	
Fibrosarcoma		1 (1%)
Carcinosarcoma		1 (1%)
*Subcut tissue	(100)	(175)
Carcinoma, NOS, invasive		1 (1%)
Sarcoma, NOS	1 (1%)	
Fibroma	2 (2%)	
Fibrosarcoma	1 (1%)	
RESPIRATORY SYSTEM		
#Trachea	(100)	(175)
C-cell carcinoma, invasive	2 (2%)	
#Lung	(100)	(175)
Carcinoma, NOS, metastatic	1 (1%)	
Alveolar/bronchiolar adenoma		1 (1%)
Alveolar/bronchiolar carcinoma	1 (1%)	1 (1%)
C-cell carcinoma, metastatic	1 (1%)	
Pheochromocytoma, metastatic		1 (1%)
Sarcoma, NOS, metastatic	1 (1%)	
Liposarcoma, metastatic		1 (1%)
Mixed tumor, metastatic		1 (1%)
Carcinosarcoma, metastatic		1 (1%)
HEMATOPOIETIC SYSTEM		
*Multiple organs	(100)	(175)
Myelomonocytic leukemia	1 (1%)	
Monocytic leukemia	33 (33%)	54 (31%)
#Spleen	(100)	(175)
Lipoma	1 (1%)	
#Celiac lymph node	(100)	(175)
Adenocarcinoma in adenomatous polyp, met		1 (1%)
#Mesenteric lymph node	(100)	(175)
Adenocarcinoma in adenomatous polyp, met		1 (1%)
Signet ring carcinoma, metastati		3 (2%)
#Ileocolic lymph node	(100)	(175)
Adenocarcinoma, NOS, metastatic		2 (1%)
Mucinous cystadenocarcinoma, metastatic		1 (1%)
Signet ring carcinoma, metastati		1 (1%)
#Liver	(100)	(175)
Monocytic leukemia	1 (1%)	7 (4%)
#Thymus	(81)	(139)
Carcinoma, NOS	1 (1%)	
#Thymic lymphocytes	(81)	(139)
Thymoma	1 (1%)	

TABLE B1b. SUMMARY OF THE INCIDENCE OF NEOPLASMS IN FEMALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS AND DMH: 1% AMOSITE + PW, AND 1% AMOSITE + DMH (Continued)

	1% Amosite + PW	1% Amosite + DMH
CIRCULATORY SYSTEM		
#Heart	(100)	(175)
Sarcoma, NOS	1 (1%)	
Mixed tumor, metastatic		1 (1%)
#Kidney	(100)	(175)
Hemangioma		1 (1%)
#Cervix uteri	(100)	(175)
Angioma		1 (1%)
DIGESTIVE SYSTEM		
*Tongue	(100)	(175)
Squamous cell papilloma		1 (1%)
#Salivary gland	(100)	(174)
Sarcoma, NOS	1 (1%)	
#Liver	(100)	(175)
Neoplastic nodule	4 (4%)	32 (18%)
Hepatocellular carcinoma		8 (5%)
Neurofibrosarcoma		1 (1%)
#Pancreas	(100)	(175)
Mixed tumor, invasive		1 (1%)
#Stomach	(100)	(175)
Squamous cell papilloma		1 (1%)
Signet ring carcinoma, metastati		1 (1%)
Mixed tumor, invasive		1 (1%)
#Peyer's patch	(100)	(175)
Adenocarcinoma in adenomatous polyp, met		1 (1%)
#Duodenum	(100)	(175)
Adenocarcinoma, NOS		11 (6%)
Mucinous cystadenocarcinoma		1 (1%)
Signet ring carcinoma		7 (4%)
#Jejunum	(100)	(175)
Adenocarcinoma in adenomatous polyp		1 (1%)
Mucinous cystadenocarcinoma	1 (1%)	1 (1%)
Signet ring carcinoma		1 (1%)
#Ileum	(100)	(175)
Adenocarcinoma in adenomatous polyp		1 (1%)
Sarcoma, NOS	1 (1%)	
#Colon	(100)	(175)
Carcinoma in-situ, NOS		1 (1%)
Adenocarcinoma, NOS		2 (1%)
Mucinous cystadenocarcinoma, metastatic		1 (1%)
Signet ring carcinoma, metastati		1 (1%)
#Cecum	(100)	(175)
Adenocarcinoma, NOS		2 (1%)
Mucinous cystadenocarcinoma		2 (1%)
Signet ring carcinoma		2 (1%)
#Ascending colon	(100)	(175)
Adenocarcinoma, NOS		3 (2%)
Adenomatous polyp, NOS		8 (5%)
Adenocarcinoma in adenomatous polyp		7 (4%)
Mucinous cystadenocarcinoma		5 (3%)
Signet ring carcinoma		6 (3%)
Signet ring carcinoma, metastati		1 (1%)
#Transverse colon	(100)	(175)
Carcinoma, NOS	1 (1%)	
Adenocarcinoma, NOS		2 (1%)
Adenomatous polyp, NOS		22 (13%)
Adenocarcinoma in adenomatous polyp		20 (11%)

TABLE B1b. SUMMARY OF THE INCIDENCE OF NEOPLASMS IN FEMALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS AND DMH: 1% AMOSITE + PW, AND 1% AMOSITE + DMH (Continued)

	1% Amosite + PW	1% Amosite + DMH
DIGESTIVE SYSTEM (Continued)		
#Descending colon	(100)	(175)
Carcinoma in-situ, NOS		1 (1%)
Adenomatous polyp, NOS	1 (1%)	31 (18%)
Adenocarcinoma in adenomatous polyp		22 (13%)
Signet ring carcinoma		1 (1%)
*Rectum	(100)	(175)
Adenomatous polyp, NOS		1 (1%)
URINARY SYSTEM		
#Kidney	(100)	(175)
Tubular cell adenoma		1 (1%)
Tubular cell adenocarcinoma		2 (1%)
Sarcoma, NOS		19 (11%)
Mixed tumor, malignant	1 (1%)	35 (20%)
#Urinary bladder	(99)	(173)
Transitional cell papilloma	1 (1%)	
Endometrial stromal sarcoma, inv		1 (1%)
ENDOCRINE SYSTEM		
#Pituitary	(100)	(175)
Carcinoma, NOS	3 (3%)	1 (1%)
Adenoma, NOS	39 (39%)	19 (11%)
Ganglioneuroma	1 (1%)	
#Adrenal	(100)	(175)
Cortical adenoma	4 (4%)	4 (2%)
Pheochromocytoma	6 (6%)	3 (2%)
Pheochromocytoma, malignant		1 (1%)
Sarcoma, NOS, invasive		1 (1%)
Mixed tumor, invasive	1 (1%)	3 (2%)
Ganglioneuroma		1 (1%)
#Thyroid	(100)	(174)
Follicular cell adenoma	3 (3%)	6 (3%)
Follicular cell carcinoma	2 (2%)	1 (1%)
C-cell adenoma	15 (15%)	8 (5%)
C-cell carcinoma	14 (14%)	6 (3%)
#Pancreatic islets	(100)	(175)
Islet cell adenoma	1 (1%)	2 (1%)
REPRODUCTIVE SYSTEM		
*Mammary gland	(100)	(175)
Carcinoma, NOS	1 (1%)	
Adenoma, NOS	5 (5%)	2 (1%)
Adenocarcinoma, NOS	7 (7%)	
Papillary adenocarcinoma		1 (1%)
Fibrosarcoma	1 (1%)	
Fibroadenoma	52 (52%)	18 (10%)
*Preputial gland	(100)	(175)
Carcinoma, NOS	7 (7%)	3 (2%)
Keratoacanthoma		1 (1%)
#Uterus	(100)	(175)
Leiomyoma		1 (1%)
Endometrial stromal polyp	14 (14%)	19 (11%)
Endometrial stromal sarcoma		2 (1%)
#Cervix uteri	(100)	(175)
Squamous cell papilloma	1 (1%)	
Fibrosarcoma		1 (1%)
Endometrial stromal sarcoma, inv		2 (1%)

TABLE B1b. SUMMARY OF THE INCIDENCE OF NEOPLASMS IN FEMALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS AND DMH: 1% AMOSITE + PW, AND 1% AMOSITE + DMH (Continued)

	1% Amosite + PW	1% Amosite + DMH
REPRODUCTIVE SYSTEM (Continued)		
#Ovary	(99)	(175)
Papillary cystadenocarcinoma, NOS		1 (1%)
Granulosa cell tumor	2 (2%)	
Granulosa cell carcinoma	1 (1%)	
Sertoli cell tumor	1 (1%)	
NERVOUS SYSTEM		
#Cerebrum	(100)	(175)
Carcinoma, NOS, invasive	1 (1%)	
Astrocytoma	2 (2%)	
#Cerebellum	(100)	(175)
Carcinoma, NOS, invasive	1 (1%)	
#Medulla oblongata	(100)	(175)
Carcinoma, NOS, invasive	1 (1%)	
SPECIAL SENSE ORGANS		
*Eye/ciliary body	(100)	(175)
Leiomyosarcoma	1 (1%)	
*Ear canal	(100)	(175)
Squamous cell papilloma		2 (1%)
Squamous cell carcinoma		2 (1%)
*Zymbal gland	(100)	(175)
Carcinoma, NOS	3 (3%)	23 (13%)
Squamous cell papilloma		14 (8%)
Keratoacanthoma	1 (1%)	2 (1%)
MUSCULOSKELETAL SYSTEM		
*Mandible	(100)	(175)
Carcinoma, NOS, invasive		1 (1%)
*Vertebra	(100)	(175)
Osteosarcoma	1 (1%)	
BODY CAVITIES		
*Mediastinum	(100)	(175)
Signet ring carcinoma, metastati		1 (1%)
Sarcoma, NOS, metastatic	1 (1%)	
*Abdominal cavity	(100)	(175)
Sarcoma, NOS, invasive		1 (1%)
Lipoma	1 (1%)	1 (1%)
Mixed tumor, invasive		1 (1%)
*Epicardium	(100)	(175)
Mesothelioma, NOS		1 (1%)
*Mesentery	(100)	(175)
Adenocarcinoma, NOS, metastatic		1 (1%)
Sarcoma, NOS, invasive		1 (1%)

TABLE B1b. SUMMARY OF THE INCIDENCE OF NEOPLASMS IN FEMALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS AND DMH: 1% AMOSITE + PW, AND 1% AMOSITE + DMH (Continued)

	1% Amosite + PW	1% Amosite + DMH
ALL OTHER SYSTEMS		
*Multiple organs	(100)	(175)
Adenocarcinoma, NOS, metastatic		10 (6%)
C-cell carcinoma, metastatic	2 (2%)	
Mucinous cystadenoca, metastatic		5 (3%)
Signet ring carcinoma, metastati		7 (4%)
Sarcoma, NOS, invasive	1 (1%)	
Fibrosarcoma, invasive	1 (1%)	
Osteosarcoma, metastatic	1 (1%)	
Orbital region		
Sarcoma, NOS		1
ANIMAL DISPOSITION SUMMARY		
Animals initially in study	100	175
Natural death	14	30
Moribund sacrifice	77	117
Terminal sacrifice	9	28
TUMOR SUMMARY		
Total animals with primary tumors**	98	175
Total primary tumors	247	477
Total animals with benign tumors	79	102
Total benign tumors	152	172
Total animals with malignant tumors	68	164
Total malignant tumors	89	272
Total animals with secondary tumors##	10	46
Total secondary tumors	15	57
Total animals with tumors uncertain-- benign or malignant	6	33
Total uncertain tumors	6	33

(a) DMH indicates a group receiving five doses of 15 mg/kg 1,2-dimethylhydrazine dihydrochloride in pH 5 acetate buffer; PW indicates a group administered 0.47 mg/g chrysotile asbestos daily by gavage for 3 weeks beginning at birth

* Number of animals receiving complete necropsy examination; all gross lesions including masses examined microscopically

Number of animals examined microscopically at this site

** Primary tumors: all tumors except secondary tumors

* Number of animals receiving complete necropsy examination; all gross lesions including masses examined microscopically

Number of animals examined microscopically at this site

TABLE B2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF FEMALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS: CONTROL

ANIMAL NUMBER	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333
WEEKS ON STUDY	125	145	084	145	101	108	101	109	145	092	131	140	144	110	145	114	143	107	142	112	108	123	127	133	095
INTEGUMENTARY SYSTEM																									
Skin	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Squamous cell papilloma																									
Squamous cell carcinoma																									
Basal cell tumor									X																
Basal cell carcinoma																									
Fibroma									X																
Fibrosarcoma																									
Subcutaneous tissue	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Sarcoma, NOS, invasive																									
Fibroma																								X	
Fibrosarcoma																									
Lipoma		X	X																						
Fibroadenoma																									
RESPIRATORY SYSTEM																									
Lungs and bronchi	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Squamous cell carcinoma								X																	
Alveolar/bronchiolar adenoma																									
C cell carcinoma, metastatic																									
Pheochromocytoma, metastatic																									
Trachea	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Follicular cell carcinoma, invasive																									
HEMATOPOIETIC SYSTEM																									
Bone marrow	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Spleen	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Osteosarcoma																									X
Lymph nodes	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
C-cell carcinoma, metastatic																									
Thymus	+	+	–	–	–	+	+	+	+	+	–	+	+	–	+	+	–	–	–	+	+	–	+	+	+
CIRCULATORY SYSTEM																									
Heart	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
DIGESTIVE SYSTEM																									
Oral cavity	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Squamous cell papilloma											X														
Salivary gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Sarcoma, NOS									X																
Liver	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Neoplastic nodule					X							X													
Hepatocellular carcinoma																									
Monocytic leukemia																									
Bile duct	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Gallbladder & common bile duct	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Pancreas	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Acinar cell adenoma																									
Esophagus	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Stomach	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS									X																
Small intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Leiomyosarcoma																									
Large intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenomatous polyp, NOS																									
URINARY SYSTEM																									
Kidney	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Tubular cell adenocarcinoma																									
Pheochromocytoma, invasive																									
Urinary bladder	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Transitional cell papilloma																									

+ Tissue examined microscopically
– Required tissue not examined microscopically
X Tumor incidence
N Necropsy, no autolysis, no microscopic examination
S Animal missexed
No tissue information submitted
C Necropsy, no histology due to protocol
A Autolysis
M Animal missing
B No necropsy performed

TABLE B2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF FEMALE RATS: CONTROL (Continued)

ANIMAL NUMBER	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358
WEEKS ON STUDY	129	109	090	134	138	117	123	137	122	131	108	119	106	144	142	127	122	127	119	128	123	107	103	116	099
INTEGUMENTARY SYSTEM																									
Skin	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Squamous cell papilloma																									
Squamous cell carcinoma																									
Basal cell tumor																									
Basal cell carcinoma																									
Fibroma																									
Fibrosarcoma											X														
Subcutaneous tissue	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Sarcoma, NOS, invasive																		X							
Fibroma																				X					
Fibrosarcoma																									
Lipoma																									
Fibroadenoma												X													
RESPIRATORY SYSTEM																									
Lungs and bronchi	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Squamous cell carcinoma																									
Alveolar/bronchiolar adenoma																									
C-cell carcinoma, metastatic																									
Pheochromocytoma, metastatic																									
Trachea	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Follicular cell carcinoma, invasive								X																	
HEMATOPOIETIC SYSTEM																									
Bone marrow	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Spleen	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Osteosarcoma																									
Lymph nodes	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
C cell carcinoma, metastatic																									
Thymus	+	–	+	+	+	+	–	–	+	+	+	–	+	+	+	+	–	+	+	+	+	+	–	+	+
CIRCULATORY SYSTEM																									
Heart	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
DIGESTIVE SYSTEM																									
Oral cavity	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Squamous cell papilloma																									
Salivary gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Sarcoma, NOS																		X							
Liver	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Neoplastic nodule																									
Hepatocellular carcinoma																									
Monocytic leukemia											X														
Bile duct	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Gallbladder & common bile duct	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Pancreas	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Acinar cell adenoma								X																	
Esophagus	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Stomach	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS																									
Small intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Leiomyosarcoma																									
Large intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenomatous polyp, NOS																									
URINARY SYSTEM																									
Kidney	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Tubular cell adenocarcinoma																		X							
Pheochromocytoma, invasive																									
Urinary bladder	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Transitional cell papilloma																									

TABLE B2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF FEMALE RATS: CONTROL (Continued)

ANIMAL NUMBER	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377	378	379	380	381	382	383
WEEKS ON STUDY	138	113	145	138	111	128	105	088	129	117	118	123	135	136	087	103	145	131	145	099	087	138	106	120	133
INTEGUMENTARY SYSTEM																									
Skin	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Squamous cell papilloma																									
Squamous cell carcinoma																									
Basal cell tumor																									
Basal cell carcinoma											X														
Fibroma																									
Fibrosarcoma																									
Subcutaneous tissue	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Sarcoma, NOS, invasive																									
Fibroma																									
Fibrosarcoma							X																		
Lipoma																									
Fibroadenoma																									
RESPIRATORY SYSTEM																									
Lungs and bronchi	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Squamous cell carcinoma																									
Alveolar/bronchiolar adenoma																									
C-cell carcinoma, metastatic				X																					
Pheochromocytoma, metastatic																				X					
Trachea	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Follicular cell carcinoma, invasive																									
HEMATOPOIETIC SYSTEM																									
Bone marrow	+	+	+	+	+	+	+	+	+	–	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Spleen	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Osteosarcoma																									
Lymph nodes	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
C-cell carcinoma, metastatic				X																					
Thymus	+	–	+	+	–	+	+	–	–	+	–	+	–	+	+	+	+	+	–	+	+	+	–	–	–
CIRCULATORY SYSTEM																									
Heart	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
DIGESTIVE SYSTEM																									
Oral cavity	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Squamous cell papilloma																									
Salivary gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Sarcoma, NOS																									
Liver	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Neoplastic nodule																									
Hepatocellular carcinoma																									X
Monocytic leukemia																									
Bile duct	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Gallbladder & common bile duct	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	+	N	N	N	N	N
Pancreas	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Acinar cell adenoma																						X			
Esophagus	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Stomach	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS																									
Small intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Leiomyosarcoma																									
Large intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenomatous polyp, NOS																									
URINARY SYSTEM																									
Kidney	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Tubular cell adenocarcinoma																									
Pheochromocytoma, invasive																				X					
Urinary bladder	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Transitional cell papilloma	X																								

TABLE B2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF FEMALE RATS: CONTROL (Continued)

ANIMAL NUMBER	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400	401	402	403	404	405	406	407	408
WEEKS ON STUDY	071	071	133	096	130	135	136	135	110	075	145	140	096	088	123	110	117	145	059	141	124	116	109	101	109
INTEGUMENTARY SYSTEM																									
Skin	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Squamous cell papilloma							X											X							
Squamous cell carcinoma																									
Basal cell tumor																									
Basal cell carcinoma																									
Fibroma																									
Fibrosarcoma																				X					
Subcutaneous tissue	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Sarcoma, NOS, invasive																									
Fibroma			X								X		X												
Fibrosarcoma																									
Lipoma																		X							
Fibroadenoma																									
RESPIRATORY SYSTEM																									
Lungs and bronchi	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	−	+
Squamous cell carcinoma																									
Alveolar/bronchiolar adenoma																									
C-cell carcinoma, metastatic																									
Pheochromocytoma, metastatic																									
Trachea	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	−	+
Follicular cell carcinoma, invasive																									
HEMATOPOIETIC SYSTEM																									
Bone marrow	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Spleen	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Osteosarcoma																									
Lymph nodes	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
C-cell carcinoma, metastatic											X														
Thymus	+	+	+	+	+	−	−	+	−	−	+	+	+	+	+	−	−	+	+	+	+	+	+	−	+
CIRCULATORY SYSTEM																									
Heart	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	−	+
DIGESTIVE SYSTEM																									
Oral cavity	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Squamous cell papilloma																									
Salivary gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	−	+
Sarcoma, NOS																									
Liver	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Neoplastic nodule						X											X								
Hepatocellular carcinoma																									
Monocytic leukemia																									
Bile duct	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Gallbladder & common bile duct	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Pancreas	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	−	+
Acinar cell adenoma																									
Esophagus	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Stomach	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS																									
Small intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Leiomyosarcoma							X																		
Large intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenomatous polyp, NOS							X																		
URINARY SYSTEM																									
Kidney	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Tubular cell adenocarcinoma																									
Pheochromocytoma, invasive																									
Urinary bladder	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Transitional cell papilloma																									

TABLE B2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF FEMALE RATS: CONTROL (Continued)

ANIMAL NUMBER	40 09	41 10	41 11	41 12	41 13	41 14	41 15	41 16	41 17	41 18	41 19	42 20	42 21	42 22	42 23	42 24	42 25	TOTAL TISSUES TUMORS
WEEKS ON STUDY	11 1	08 6	14 5	13 3	12 1	14 5	14 5	07 0	11 2	14 3	14 1	10 1	10 5	09 5	14 5	11 1	13 3	
INTEGUMENTARY SYSTEM																		
Skin	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	*117
Squamous cell papilloma																		2
Squamous cell carcinoma						X												1
Basal cell tumor																		1
Basal cell carcinoma																		1
Fibroma																		1
Fibrosarcoma																		2
Subcutaneous tissue	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	*117
Sarcoma, NOS, invasive																		1
Fibroma										X								6
Fibrosarcoma																		1
Lipoma																		3
Fibroadenoma																		1
RESPIRATORY SYSTEM																		
Lungs and bronchi	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	116
Squamous cell carcinoma																		1
Alveolar/bronchiolar adenoma						X												1
C cell carcinoma, metastatic																		1
Pheochromocytoma, metastatic																		1
Trachea	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	116
Follicular cell carcinoma, invasive																		1
HEMATOPOIETIC SYSTEM																		
Bone marrow	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	116
Spleen	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	117
Osteosarcoma																		1
Lymph nodes	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	117
C cell carcinoma, metastatic																		2
Thymus	+	+	−	−	+	−	+	+	+	+	+	+	+	−	+	−	−	79
CIRCULATORY SYSTEM																		
Heart	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	116
DIGESTIVE SYSTEM																		
Oral cavity	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	*117
Squamous cell papilloma																		1
Salivary gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	116
Sarcoma, NOS																		2
Liver	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	117
Neoplastic nodule																		4
Hepatocellular carcinoma																		1
Monocytic leukemia																		1
Bile duct	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	117
Gallbladder & common bile duct	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	*117
Pancreas	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	116
Acinar cell adenoma																		2
Esophagus	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	117
Stomach	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	117
Carcinoma, NOS																		1
Small intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	117
Leiomyosarcoma																		1
Large intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	117
Adenomatous polyp, NOS																		1
URINARY SYSTEM																		
Kidney	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	117
Tubular cell adenocarcinoma																		1
Pheochromocytoma, invasive																		1
Urinary bladder	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	117
Transitional cell papilloma																		1

* Animals necropsied

TABLE B2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF FEMALE RATS: CONTROL (Continued)

ANIMAL NUMBER	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333
WEEKS ON STUDY	125	145	084	145	101	108	101	109	145	092	131	140	144	110	145	114	143	107	142	112	108	123	127	133	095
ENDOCRINE SYSTEM																									
Pituitary	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS																									
Adenoma, NOS		X					X		X			X	X							X			X	X	
Adrenal	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Cortical adenoma				X																					
Cortical carcinoma																									
Pheochromocytoma											X	X	X		X						X				
Pheochromocytoma, malignant																									
Thyroid	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Follicular cell adenoma																									
Follicular cell carcinoma															X										
C cell adenoma									X			X			X		X		X		X				
C-cell carcinoma											X														
Parathyroid	+	+	+	+	+	−	+	+	+	+	+	+	+	+	−	+	+	+	+	+	+	+	+	+	+
Adenoma, NOS																									
Pancreatic islets	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Islet cell adenoma																	X								
Islet cell carcinoma									X																
REPRODUCTIVE SYSTEM																									
Mammary gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma in situ, NOS																									
Carcinoma, NOS																									
Adenoma, NOS																									
Adenocarcinoma, NOS																	X								
Papillary cystadenoma, NOS																									
Sarcoma, NOS, invasive																									
Fibroadenoma		X		X		X	X	X	X		X	X	X		X	X	X		X	X		X	X	X	
Preputial/clitoral gland	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Carcinoma, NOS	X				X									X			X			X					
Sarcoma, NOS																	X								
Vagina	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Leiomyosarcoma, invasive																									
Uterus	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Leiomyosarcoma																									
Leiomyosarcoma, invasive																									
Endometrial stromal polyp																			X						
Endometrial stromal sarcoma										X														X	
Endometrial stromal sarcoma, invasive										X															
Hemangiosarcoma																									
Ovary	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Granulosa cell tumor																									
Sertoli cell tumor																									
Mesothelioma, NOS																									
NERVOUS SYSTEM																									
Brain	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS, invasive																									
Astrocytoma																									
SPECIAL SENSE ORGANS																									
Zymbal gland	+	+	+	+	+	+	+	N	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS																					X				
Keratoacanthoma																									
MUSCULOSKELETAL SYSTEM																									
Bone	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Osteosarcoma																	X								
BODY CAVITIES																									
Mediastinum	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Squamous cell carcinoma, metastatic																									
Peritoneum	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Endometrial stromal sarcoma, invasive																								X	
ALL OTHER SYSTEMS																									
Multiple organs, NOS	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Endometrial stromal sarcoma, metastatic										X															
Malignant lymphoma, histiocytic type														X											
Monocytic leukemia	X			X				X							X	X	X						X		

TABLE B2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF FEMALE RATS: CONTROL (Continued)

ANIMAL NUMBER	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358
WEEKS ON STUDY	129	109	090	134	138	117	123	137	122	131	108	119	106	144	142	127	122	127	119	128	123	107	103	116	099
ENDOCRINE SYSTEM																									
Pituitary	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS		X																							
Adenoma, NOS				X		X			X	X					X	X	X	X	X		X	X	X	X	X
Adrenal	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Cortical adenoma							X																		
Cortical carcinoma																									
Pheochromocytoma															X				X				X		
Pheochromocytoma, malignant																									
Thyroid	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Follicular cell adenoma				X		X																			
Follicular cell carcinoma								X						X	X						X				
C-cell adenoma							X			X															
C cell carcinoma															X							X			
Parathyroid	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	–	–	+	+
Adenoma, NOS																									
Pancreatic islets	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Islet cell adenoma																									
Islet cell carcinoma															X										
REPRODUCTIVE SYSTEM																									
Mammary gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma in-situ, NOS																		X							
Carcinoma, NOS														X											
Adenoma, NOS		X																							
Adenocarcinoma, NOS																									
Papillary cystadenoma, NOS																									
Sarcoma, NOS, invasive																		X							
Fibroadenoma	X	X		X	X	X	X	X	X	X				X	X	X		X	X	X				X	
Preputial/clitoral gland	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Carcinoma, NOS																									
Sarcoma, NOS																									
Vagina	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Leiomyosarcoma, invasive																									
Uterus	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Leiomyosarcoma																									
Leiomyosarcoma, invasive																									
Endometrial stromal polyp			X					X					X					X							X
Endometrial stromal sarcoma										X															
Endometrial stromal sarcoma, invasive																									
Hemangiosarcoma																									
Ovary	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Granulosa cell tumor																									
Sertoli cell tumor																									
Mesothelioma, NOS																									
NERVOUS SYSTEM																									
Brain	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS, invasive																									
Astrocytoma																					X				
SPECIAL SENSE ORGANS																									
Zymbal gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS																					X				
Keratoacanthoma																						X			
MUSCULOSKELETAL SYSTEM																									
Bone	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Osteosarcoma																									
BODY CAVITIES																									
Mediastinum	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Squamous cell carcinoma, metastatic																									
Peritoneum	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Endometrial stromal sarcoma, invasive																									
ALL OTHER SYSTEMS																									
Multiple organs, NOS	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Endometrial stromal sarcoma, metastatic																									
Malignant lymphoma, histiocytic type																									
Monocytic leukemia	X			X		X	X		X					X	X			X							

TABLE B2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF FEMALE RATS: CONTROL (Continued)

ANIMAL NUMBER	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377	378	379	380	381	382	383
WEEKS ON STUDY	138	113	145	138	111	128	105	088	129	117	118	123	135	136	087	103	145	131	145	099	087	138	106	120	133
ENDOCRINE SYSTEM																									
Pituitary	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS																									
Adenoma, NOS					X		X		X	X		X						X	X			X		X	
Adrenal	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Cortical adenoma																									
Cortical carcinoma										X															
Pheochromocytoma					X									X					X						
Pheochromocytoma, malignant																					X				
Thyroid	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Follicular cell adenoma																									
Follicular cell carcinoma																									
C-cell adenoma											X			X				X							X
C cell carcinoma			X	X													X								
Parathyroid	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenoma, NOS																			X						
Pancreatic islets	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Islet cell adenoma																									
Islet cell carcinoma	X																								
REPRODUCTIVE SYSTEM																									
Mammary gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma in situ, NOS																									
Carcinoma, NOS																									
Adenoma, NOS												X													
Adenocarcinoma, NOS																									
Papillary cystadenoma, NOS																									
Sarcoma, NOS, invasive																									
Fibroadenoma	X		X	X		X			X			X	X	X	X				X				X		X
Preputial/clitoral gland	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Carcinoma, NOS																						X			
Sarcoma, NOS																									
Vagina	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Leiomyosarcoma, invasive																									
Uterus	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Leiomyosarcoma																									
Leiomyosarcoma, invasive																									
Endometrial stromal polyp									X		X						X		X						
Endometrial stromal sarcoma										X															
Endometrial stromal sarcoma, invasive																									
Hemangiosarcoma																									
Ovary	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Granulosa cell tumor																									
Sertoli cell tumor										X															
Mesothelioma, NOS										X															
NERVOUS SYSTEM																									
Brain	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS, invasive																									
Astrocytoma																X				X					
SPECIAL SENSE ORGANS																									
Zymbal gland	+	+	+	+	N	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS																				X					
Keratoacanthoma																									
MUSCULOSKELETAL SYSTEM																									
Bone	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Osteosarcoma																									
BODY CAVITIES																									
Mediastinum	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Squamous cell carcinoma, metastatic														X											
Peritoneum	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Endometrial stromal sarcoma, invasive																									
ALL OTHER SYSTEMS																									
Multiple organs, NOS	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Endometrial stromal sarcoma, metastatic																									
Malignant lymphoma, histiocytic type																									
Monocytic leukemia	X	X	X	X			X						X		X			X	X			X	X		

TABLE B2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF FEMALE RATS: CONTROL (Continued)

ANIMAL NUMBER	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400	401	402	403	404	405	406	407	408
WEEKS ON STUDY	071	071	133	096	130	135	136	135	110	075	145	140	096	088	123	110	117	145	059	141	124	116	109	101	109
ENDOCRINE SYSTEM																									
Pituitary	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS																									
Adenoma, NOS	X		X	X	X		X			X	X		X			X				X	X	X	X	X	
Adrenal	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Cortical adenoma																									
Cortical carcinoma																									
Pheochromocytoma						X						X									X				
Pheochromocytoma, malignant																									
Thyroid	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	−	+
Follicular cell adenoma																									
Follicular cell carcinoma						X																			
C cell adenoma							X																		
C-cell carcinoma											X					X					X				
Parathyroid	+	−	+	+	+	−	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	−	+
Adenoma, NOS																									
Pancreatic islets	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	−	+
Islet cell adenoma																									
Islet cell carcinoma																									
REPRODUCTIVE SYSTEM																									
Mammary gland	+	+	+	+	+	+	+	+	+	+	+	+	+	N	+	+	+	+	+	+	+	+	+	+	+
Carcinoma in-situ, NOS																									
Carcinoma, NOS																									
Adenoma, NOS			X	X	X											X									
Adenocarcinoma, NOS	X																								
Papillary cystadenoma, NOS																		X							
Sarcoma, NOS, invasive																									
Fibroadenoma	X	X	X			X	X		X		X	X	X		X			X			X	X	X		
Preputial/clitoral gland	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Carcinoma, NOS																									
Sarcoma, NOS																									
Vagina	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Leiomyosarcoma, invasive																									X
Uterus	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Leiomyosarcoma																									X
Leiomyosarcoma, invasive																									X
Endometrial stromal polyp																									
Endometrial stromal sarcoma														X											
Endometrial stromal sarcoma, invasive														X											
Hemangiosarcoma					X																				
Ovary	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Granulosa cell tumor																									
Sertoli cell tumor																									
Mesothelioma, NOS																									
NERVOUS SYSTEM																									
Brain	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS, invasive																									
Astrocytoma										X															
SPECIAL SENSE ORGANS																									
Zymbal gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS																									
Keratoacanthoma																									
MUSCULOSKELETAL SYSTEM																									
Bone	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Osteosarcoma																									
BODY CAVITIES																									
Mediastinum	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Squamous cell carcinoma, metastatic																									
Peritoneum	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Endometrial stromal sarcoma, invasive																									
ALL OTHER SYSTEMS																									
Multiple organs, NOS	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Endometrial stromal sarcoma, metastatic																									
Malignant lymphoma, histiocytic type																									
Monocytic leukemia						X					X	X					X	X				X			

TABLE B2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF FEMALE RATS: CONTROL (Continued)

ANIMAL NUMBER	40901	41001	41101	41201	41301	41401	41501	41601	41701	41801	41901	42001	42101	42201	42301	42401	42501	TOTAL TISSUES TUMORS
WEEKS ON STUDY	11101	08606	14505	13303	12101	14405	14505	07000	11102	14303	14101	10101	10505	09505	14505	11101	13303	
ENDOCRINE SYSTEM																		
Pituitary	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	117
Carcinoma, NOS												X						2
Adenoma, NOS						X			X	X	X			X	X			50
Adrenal	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	117
Cortical adenoma												X						3
Cortical carcinoma																		1
Pheochromocytoma			X			X										X		17
Pheochromocytoma, malignant																		1
Thyroid	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	116
Follicular cell adenoma																		2
Follicular cell carcinoma																X		7
C-cell adenoma											X							14
C cell carcinoma									X									10
Parathyroid	+	+	+	+	+	+	+	+	–	+	+	+	+	+	+	+	+	109
Adenoma, NOS																		1
Pancreatic islets	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	116
Islet cell adenoma											X							2
Islet cell carcinoma																		3
REPRODUCTIVE SYSTEM																		
Mammary gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	*117
Carcinoma in situ, NOS																		1
Carcinoma, NOS																		1
Adenoma, NOS															X			7
Adenocarcinoma, NOS						X					X							4
Papillary cystadenoma, NOS																		1
Sarcoma, NOS, invasive																		1
Fibroadenoma	X		X	X	X	X	X	X	X	X	X		X		X		X	72
Preputial/clitoral gland	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	*117
Carcinoma, NOS																		6
Sarcoma, NOS																		1
Vagina	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	*117
Leiomyosarcoma, invasive																		1
Uterus	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	117
Leiomyosarcoma																		1
Leiomyosarcoma, invasive																		1
Endometrial stromal polyp		X								X					X			13
Endometrial stromal sarcoma																		5
Endometrial stromal sarcoma, invasive																		2
Hemangiosarcoma																		1
Ovary	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	117
Granulosa cell tumor															X			1
Sertoli cell tumor																		1
Mesothelioma, NOS																		1
NERVOUS SYSTEM																		
Brain	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	117
Carcinoma, NOS, invasive												X						1
Astrocytoma																		4
SPECIAL SENSE ORGANS																		
Zymbal gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	*117
Carcinoma, NOS																		3
Keratoacanthoma																		1
MUSCULOSKELETAL SYSTEM																		
Bone	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	*117
Osteosarcoma																		1
BODY CAVITIES																		
Mediastinum	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	*117
Squamous cell carcinoma, metastatic																		1
Peritoneum	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	*117
Endometrial stromal sarcoma, invasive																		1
ALL OTHER SYSTEMS																		
Multiple organs, NOS	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	*117
Endometrial stromal sarcoma, metastatic																		1
Malignant lymphoma, histiocytic type																		1
Monocytic leukemia		X	X		X		X		X					X			X	39

* Animals necropsied

TABLE B2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF FEMALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS: 1,2-DIMETHYLHYDRAZINE DIHYDROCHLORIDE

ANIMAL NUMBER	551	552	553	554	555	556	557	558	559	560	561	562	563	564	565	566	567	568	569	570	571	572	573	574	575
WEEKS ON STUDY	068	053	038	074	078	095	092	103	098	103	051	086	070	098	067	077	067	078	066	075	089	075	086	087	093
INTEGUMENTARY SYSTEM																									
Skin	+	+	+	+	N	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Fibrosarcoma																									
Subcutaneous tissue	+	+	+	+	N	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Fibrosarcoma																									
RESPIRATORY SYSTEM																									
Lungs and bronchi	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS, metastatic																									
Sarcoma, NOS, metastatic					X																				
Trachea	+	+	+	+	–	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
HEMATOPOIETIC SYSTEM																									
Bone marrow	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Spleen	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Lymph nodes	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Thymus	+	+	+	–	+	+	+	+	+	–	+	+	+	+	+	+	+	–	+	+	+	+	+	+	+
CIRCULATORY SYSTEM																									
Heart	+	+	+	+	–	+	+	+	+	+	+	+	+	+	+	+	+	–	+	+	+	+	+	+	+
DIGESTIVE SYSTEM																									
Salivary gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Liver	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Neoplastic nodule				X					X			X						X				X		X	X
Hepatocellular carcinoma	X								X																
Sarcoma, NOS, metastatic																					X				
Monocytic leukemia																									
Bile duct	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Gallbladder & common bile duct	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Pancreas	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Sarcoma, NOS, invasive																									
Esophagus	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	–	+	+	+	+
Stomach	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenocarcinoma, NOS																									
Adenocarcinoma, NOS, invasive																									
Signet ring carcinoma																									
Small intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenocarcinoma, NOS																				X				X	
Mucinous cystadenocarcinoma				X																					
Signet ring carcinoma							X																		
Large intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenocarcinoma, NOS		X																							
Adenomatous polyp, NOS								X	X		X		@X	X		X	X	X			X				
Adenocarcinoma in adenomatous polyp				X		X	X					X		X		X		X		X					
Mucinous cystadenocarcinoma						X					X								X						
Mucinous adenocarcinoma																									
Signet ring carcinoma			X														X								
URINARY SYSTEM																									
Kidney	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Neoplasm, NOS, malignant																									
Tubular cell adenocarcinoma									X																
Sarcoma, NOS				X	X								X		X				X	X	X				
Fibrosarcoma																									
Mixed tumor, malignant														X											
Urinary bladder	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Transitional cell carcinoma																									

@ Multiple occurrence of morphology

TABLE B2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF FEMALE RATS: 1,2-DIMETHYLHYDRAZINE DIHYDROCHLORIDE (Continued)

ANIMAL NUMBER	576	577	578	579	580	581	582	583	584	585	586	587	588	589	590	591	592	593	594	595	596	597	598	599	600
WEEKS ON STUDY	062	074	077	083	064	103	103	066	029	081	093	060	033	082	054	056	066	073	093	083	087	074	087	052	066
INTEGUMENTARY SYSTEM																									
Skin	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Fibrosarcoma																									
Subcutaneous tissue	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Fibrosarcoma																									
RESPIRATORY SYSTEM																									
Lungs and bronchi	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS, metastatic																									
Sarcoma, NOS, metastatic																									
Trachea	+	+	+	+	+	+	+	+	–	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
HEMATOPOIETIC SYSTEM																									
Bone marrow	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Spleen	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Lymph nodes	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Thymus	+	+	+	–	+	+	+	+	+	–	+	–	+	+	+	–	–	+	+	+	+	+	–	–	+
CIRCULATORY SYSTEM																									
Heart	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
DIGESTIVE SYSTEM																									
Salivary gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Liver	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Neoplastic nodule										X													X		
Hepatocellular carcinoma						X						X											X		
Sarcoma, NOS, metastatic																									
Monocytic leukemia																									
Bile duct	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Gallbladder & common bile duct	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Pancreas	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Sarcoma, NOS, invasive					X																				
Esophagus	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Stomach	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenocarcinoma, NOS																		X							
Adenocarcinoma, NOS, invasive																									
Signet ring carcinoma																									
Small intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenocarcinoma, NOS																									
Mucinous cystadenocarcinoma																									
Signet ring carcinoma																			X						
Large intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenocarcinoma, NOS							X																		
Adenomatous polyp, NOS		X		X							X														
Adenocarcinoma in adenomatous polyp						X													X		X				
Mucinous cystadenocarcinoma								X									X								
Mucinous adenocarcinoma																									
Signet ring carcinoma									X												X				
URINARY SYSTEM																									
Kidney	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Neoplasm, NOS, malignant																									
Tubular cell adenocarcinoma																									
Sarcoma, NOS					X										X	X	X			X				X	X
Fibrosarcoma																									
Mixed tumor, malignant	X			X																					
Urinary bladder	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Transitional cell carcinoma																									

TABLE B2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF FEMALE RATS: 1,2-DIMETHYLHYDRAZINE DIHYDROCHLORIDE (Continued)

ANIMAL NUMBER	601	602	603	604	605	606	607	608	609	610	611	612	613	614	615	616	617	618	619	620	621	622	623	624	625
WEEKS ON STUDY	095	084	096	074	093	078	087	074	096	075	078	035	061	098	103	068	035	077	103	066	077	067	069	081	080
INTEGUMENTARY SYSTEM																									
Skin	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Fibrosarcoma																			X						
Subcutaneous tissue	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Fibrosarcoma																					X				
RESPIRATORY SYSTEM																									
Lungs and bronchi	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS, metastatic																									
Sarcoma, NOS, metastatic																									
Trachea	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
HEMATOPOIETIC SYSTEM																									
Bone marrow	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Spleen	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Lymph nodes	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Thymus	+	+	+	+	−	−	+	+	+	+	−	−	−	+	+	+	−	+	+	−	−	−	−	+	−
CIRCULATORY SYSTEM																									
Heart	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
DIGESTIVE SYSTEM																									
Salivary gland	+	+	+	+	+	−	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Liver	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Neoplastic nodule	X						X	X	X		X			X	X				X						
Hepatocellular carcinoma																									
Sarcoma, NOS, metastatic																									
Monocytic leukemia															X										
Bile duct	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Gallbladder & common bile duct	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Pancreas	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Sarcoma, NOS, invasive																									
Esophagus	+	+	+	+	+	+	+	+	+	+	+	+	+	+	−	+	+	+	+	+	+	+	+	+	+
Stomach	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenocarcinoma, NOS																									
Adenocarcinoma, NOS, invasive																									
Signet ring carcinoma																									
Small intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenocarcinoma, NOS																									
Mucinous cystadenocarcinoma					X								X						X	X					
Signet ring carcinoma																									
Large intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenocarcinoma, NOS			X			X						X													
Adenomatous polyp, NOS		X				X	X	X					X		X			X	X					X	
Adenocarcinoma in adenomatous polyp					X		X	X @X						X	X				X			X			
Mucinous cystadenocarcinoma																	X								
Mucinous adenocarcinoma																									
Signet ring carcinoma		X																							
URINARY SYSTEM																									
Kidney	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Neoplasm, NOS, malignant																									
Tubular cell adenocarcinoma			X								X														
Sarcoma, NOS																					X	X			
Fibrosarcoma																		X							
Mixed tumor, malignant					X										X	X				X					
Urinary bladder	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Transitional cell carcinoma								X																	

@ Multiple occurrence of morphology

TABLE B2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF FEMALE RATS: 1,2-DIMETHYLHYDRAZINE DIHYDROCHLORIDE (Continued)

ANIMAL NUMBER	626	627	628	629	630	631	632	633	634	635	636	637	638	639	640	641	642	643	644	645	646	647	648	649	650
WEEKS ON STUDY	066	046	069	103	089	098	103	103	072	092	083	081	089	065	063	077	074	103	086	076	040	103	066	067	070
INTEGUMENTARY SYSTEM																									
Skin	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Fibrosarcoma																									
Subcutaneous tissue	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Fibrosarcoma																									
RESPIRATORY SYSTEM																									
Lungs and bronchi	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS, metastatic																									
Sarcoma, NOS, metastatic																									
Trachea	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
HEMATOPOIETIC SYSTEM																									
Bone marrow	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Spleen	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Lymph nodes	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Thymus	+	+	+	+	+	+	−	−	+	+	+	−	+	+	+	+	+	+	+	+	+	−	+	+	+
CIRCULATORY SYSTEM																									
Heart	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
DIGESTIVE SYSTEM																									
Salivary gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Liver	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Neoplastic nodule				X				X		X								X	X	X		X			
Hepatocellular carcinoma								X		X										X					
Sarcoma, NOS, metastatic										X				X											
Monocytic leukemia						X							X											X	
Bile duct	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Gallbladder & common bile duct	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Pancreas	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Sarcoma, NOS, invasive																									
Esophagus	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	−	+
Stomach	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenocarcinoma, NOS																									
Adenocarcinoma, NOS, invasive												X													
Signet ring carcinoma			X																						
Small intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenocarcinoma, NOS												X													
Mucinous cystadenocarcinoma				X																					
Signet ring carcinoma											X														
Large intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenocarcinoma, NOS																			X	X					
Adenomatous polyp, NOS				@X					X			X			X	X	X					X			X
Adenocarcinoma in adenomatous polyp							X	@X		X									X						
Mucinous cystadenocarcinoma																									
Mucinous adenocarcinoma																									
Signet ring carcinoma																									
URINARY SYSTEM																									
Kidney	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Neoplasm, NOS, malignant		X																							
Tubular cell adenocarcinoma																									
Sarcoma, NOS										X				X						X			X		X
Fibrosarcoma											X														
Mixed tumor, malignant																	X								
Urinary bladder	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Transitional cell carcinoma																									

@ Multiple occurrence of morphology

TABLE B2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF FEMALE RATS: 1,2-DIMETHYLHYDRAZINE DIHYDROCHLORIDE (Continued)

ANIMAL NUMBER	651	652	653	654	655	656	657	658	659	660	661	662	663	664	665	666	667	668	669	670	671	672	673	674	675	TOTAL:
WEEKS ON STUDY	077	056	092	085	087	084	043	077	103	052	093	101	074	103	103	057	045	045	092	066	103	071	067	087	096	TISSUES TUMORS
INTEGUMENTARY SYSTEM																										
Skin	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	*125
Fibrosarcoma																										1
Subcutaneous tissue	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	*125
Fibrosarcoma																										1
RESPIRATORY SYSTEM																										
Lungs and bronchi	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	125
Carcinoma, NOS, metastatic											X															1
Sarcoma, NOS, metastatic																										1
Trachea	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	123
HEMATOPOIETIC SYSTEM																										
Bone marrow	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	125
Spleen	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	125
Lymph nodes	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	125
Thymus	+	+	+	+	+	+	+	+	+	–	+	–	+	+	+	+	+	+	+	+	–	–	+	+	+	98
CIRCULATORY SYSTEM																										
Heart	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	123
DIGESTIVE SYSTEM																										
Salivary gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	124
Liver	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	125
Neoplastic nodule	X								X			X								X	X					29
Hepatocellular carcinoma									X																X	10
Sarcoma, NOS, metastatic																										2
Monocytic leukemia																										5
Bile duct	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	125
Gallbladder & common bile duct	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	*125
Pancreas	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	125
Sarcoma, NOS, invasive																										1
Esophagus	+	+	+	+	+	–	+	+	+	+	+	+	+	+	+	+	+	+	+	–	+	+	+	+	+	120
Stomach	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	125
Adenocarcinoma, NOS																	X									2
Adenocarcinoma, NOS, invasive																										1
Signet ring carcinoma																										1
Small intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	125
Adenocarcinoma, NOS								X																		4
Mucinous cystadenocarcinoma		X																								7
Signet ring carcinoma																										3
Large intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	125
Adenocarcinoma, NOS																										7
Adenomatous polyp, NOS	X		X		X			X						X	@X					X		X	X			38
Adenocarcinoma in adenomatous polyp											X				X										X	28
Mucinous cystadenocarcinoma																					X					7
Mucinous adenocarcinoma																				X						1
Signet ring carcinoma							X										X									7
URINARY SYSTEM																										
Kidney	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	125
Neoplasm, NOS, malignant																										1
Tubular cell adenocarcinoma																										3
Sarcoma, NOS	X					X																				23
Fibrosarcoma													X										X			4
Mixed tumor, malignant										X																9
Urinary bladder	+	+	+	+	+	+	+	+	+	+	+	+	+	–	+	–	+	+	+	+	–	+	+	+	+	122
Transitional cell carcinoma																										1

* Animals necropsied
@ Multiple occurrence of morphology

TABLE B2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF FEMALE RATS: 1,2-DIMETHYLHYDRAZINE DIHYDROCHLORIDE (Continued)

ANIMAL NUMBER	55 51	55 52	55 53	55 54	55 55	55 56	55 57	55 58	55 59	56 60	56 61	56 62	56 63	56 64	56 65	56 66	56 67	56 68	56 69	57 00	57 01	57 02	57 03	57 04	57 05
WEEKS ON STUDY	06 88	09 53	03 88	07 04	07 78	09 95	09 92	10 03	09 98	10 03	09 51	08 86	07 00	09 98	06 87	07 77	06 87	07 88	06 66	07 75	08 89	07 75	08 86	08 87	09 03
ENDOCRINE SYSTEM																									
Pituitary	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	−
Adenoma, NOS										X						X			X				X		
Adrenal	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Cortical adenoma																									
Sarcoma, NOS, invasive																									
Thyroid	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	−
Follicular cell adenoma						X																			
Follicular cell carcinoma							X																		
C-cell adenoma																									
C-cell carcinoma																									
Parathyroid	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
REPRODUCTIVE SYSTEM																									
Mammary gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenocarcinoma, NOS										X														X	
Papillary cystadenoma, NOS																									
Fibroadenoma									X													X	X		
Preputial/clitoral gland	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Carcinoma, NOS																									
Vagina	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Endometrial stromal sarcoma, invasive																									
Uterus	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Leiomyosarcoma																									
Endometrial stromal polyp										X															
Endometrial stromal sarcoma																									
Endometrial stromal sarcoma, invasive																									
Mixed tumor, metastatic																									
Ovary	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Mixed tumor, metastatic																									
NERVOUS SYSTEM																									
Brain	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Astrocytoma																									
SPECIAL SENSE ORGANS																									
Zymbal gland	+	+	N	+	+	+	+	+	+	+	N	+	+	+	N	+	+	N	+	+	+	+	+	+	+
Carcinoma, NOS	X								X				X	X		X			X						X
Squamous cell papilloma	X																X								
Keratoacanthoma																						X			
BODY CAVITIES																									
Peritoneum	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Mucinous cystadenocarcinoma, metastatic																									
Sarcoma, NOS, invasive																									
Mesentery	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Mucinous cystadenocarcinoma, metastatic																									
ALL OTHER SYSTEMS																									
Multiple organs, NOS	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Adenocarcinoma, NOS, metastatic		X																		X				X	
Mucinous cystadenocarcinoma, metastatic						X					X								X						
Mucinous adenocarcinoma, metastatic																									
Signet ring carcinoma, metastatic			X				X										X								
Endometrial stromal sarcoma, metastatic																									
Monocytic leukemia				X			X			X		X		X										X	
Adipose tissue																									
Sarcoma, NOS, invasive																									

TABLE B2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF FEMALE RATS: 1,2-DIMETHYLHYDRAZINE DIHYDROCHLORIDE (Continued)

ANIMAL NUMBER	576	577	578	579	580	581	582	583	584	585	586	587	588	589	590	591	592	593	594	595	596	597	598	599	600
WEEKS ON STUDY	062	074	077	083	064	103	103	066	029	081	093	060	033	082	054	056	066	073	093	083	087	074	087	052	066
ENDOCRINE SYSTEM																									
Pituitary	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenoma, NOS							X	X				X													
Adrenal	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Cortical adenoma																									
Sarcoma, NOS, invasive																									
Thyroid	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Follicular cell adenoma																							X		
Follicular cell carcinoma							X																		
C-cell adenoma																									
C-cell carcinoma																									
Parathyroid	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	−	+	+	+	−	+	+	+
REPRODUCTIVE SYSTEM																									
Mammary gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenocarcinoma, NOS						X																			
Papillary cystadenoma, NOS																									
Fibroadenoma							X																		
Preputial/clitoral gland	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Carcinoma, NOS																									
Vagina	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Endometrial stromal sarcoma, invasive																									
Uterus	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Leiomyosarcoma											X														
Endometrial stromal polyp											X														
Endometrial stromal sarcoma																									
Endometrial stromal sarcoma, invasive																									
Mixed tumor, metastatic																									
Ovary	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Mixed tumor, metastatic																									
NERVOUS SYSTEM																									
Brain	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Astrocytoma																			X						
SPECIAL SENSE ORGANS																									
Zymbal gland	+	+	+	+	+	+	N	N	+	+	+	N	N	+	+	+	+	N	+	+	+	+	+	N	N
Carcinoma, NOS																									
Squamous cell papilloma										X					X				X				X		
Keratoacanthoma																									
BODY CAVITIES																									
Peritoneum	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Mucinous cystadenocarcinoma, metastatic																									
Sarcoma, NOS, invasive					X																				
Mesentery	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Mucinous cystadenocarcinoma, metastatic																									
ALL OTHER SYSTEMS																									
Multiple organs, NOS	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Adenocarcinoma, NOS, metastatic							X											X							
Mucinous cystadenocarcinoma, metastatic								X																	
Mucinous adenocarcinoma, metastatic									X																
Signet ring carcinoma, metastatic																			X						
Endometrial stromal sarcoma, metastatic																									
Monocytic leukemia				X			X			X	X											X	X		
Adipose tissue																									
Sarcoma, NOS, invasive																									

TABLE B2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF FEMALE RATS: 1,2-DIMETHYLHYDRAZINE DIHYDROCHLORIDE (Continued)

ANIMAL NUMBER	601	602	603	604	605	606	607	608	609	610	611	612	613	614	615	616	617	618	619	620	621	622	623	624	625
WEEKS ON STUDY	095	084	096	074	093	078	087	074	096	075	078	035	061	098	103	068	035	077	103	066	077	067	069	081	080
ENDOCRINE SYSTEM																									
Pituitary	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenoma, NOS										X											X				
Adrenal	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Cortical adenoma		X																							
Sarcoma, NOS, invasive																									
Thyroid	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Follicular cell adenoma																									
Follicular cell carcinoma																									
C-cell adenoma																					X				
C-cell carcinoma																									
Parathyroid	+	+	–	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
REPRODUCTIVE SYSTEM																									
Mammary gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenocarcinoma, NOS																									
Papillary cystadenoma, NOS																									
Fibroadenoma														X	X				X			X		X	
Preputial/clitoral gland	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Carcinoma, NOS	X																								
Vagina	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Endometrial stromal sarcoma, invasive								X																	
Uterus	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Leiomyosarcoma																									
Endometrial stromal polyp			X	X	X					X															
Endometrial stromal sarcoma								X	X																
Endometrial stromal sarcoma, invasive								X		X															
Mixed tumor, metastatic																									
Ovary	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Mixed tumor, metastatic																									
NERVOUS SYSTEM																									
Brain	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Astrocytoma																									
SPECIAL SENSE ORGANS																									
Zymbal gland	+	N	+	+	+	+	+	+	+	N	+	+	+	+	+	+	+	+	+	+	+	N	+	+	+
Carcinoma, NOS			X	X		X			X					X									X		
Squamous cell papilloma																			X						
Keratoacanthoma						X																			
BODY CAVITIES																									
Peritoneum	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Mucinous cystadenocarcinoma, metastatic																									
Sarcoma, NOS, invasive																									
Mesentery	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Mucinous cystadenocarcinoma, metastatic																									
ALL OTHER SYSTEMS																									
Multiple organs NOS	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Adenocarcinoma, NOS, metastatic			X									X													
Mucinous cystadenocarcinoma, metastatic													X					X							
Mucinous adenocarcinoma, metastatic																									
Signet ring carcinoma, metastatic																									
Endometrial stromal sarcoma, metastatic																									
Monocytic leukemia	X	X	X	X							X										X				X
Adipose tissue																									
Sarcoma, NOS, invasive																									

TABLE B2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF FEMALE RATS: 1,2-DIMETHYLHYDRAZINE DIHYDROCHLORIDE (Continued)

ANIMAL NUMBER	62 26	62 27	62 28	62 29	63 30	63 31	63 32	63 33	63 34	63 35	63 36	63 37	63 38	63 39	64 40	64 41	64 42	64 43	64 44	64 45	64 46	64 47	64 48	64 49	65 50
WEEKS ON STUDY	06 66	04 46	06 69	10 03	08 89	09 98	10 03	10 03	07 72	09 92	08 83	08 81	08 89	06 65	06 63	07 77	07 74	10 03	08 86	07 76	04 40	10 03	06 66	06 67	07 70
ENDOCRINE SYSTEM																									
Pituitary	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenoma, NOS	X					X	X	X										X							
Adrenal	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Cortical adenoma																									
Sarcoma, NOS, invasive																									X
Thyroid	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Follicular cell adenoma																						X			X
Follicular cell carcinoma																									
C-cell adenoma								X										X							
C-cell carcinoma																									
Parathyroid	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
REPRODUCTIVE SYSTEM																									
Mammary gland	+	N	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenocarcinoma, NOS																									
Papillary cystadenoma, NOS								X																	
Fibroadenoma				X							X														
Preputial/clitoral gland	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Carcinoma, NOS																									
Vagina	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Endometrial stromal sarcoma, invasive																									
Uterus	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Leiomyosarcoma																									
Endometrial stromal polyp														X											X
Endometrial stromal sarcoma																									
Endometrial stromal sarcoma, invasive																									
Mixed tumor, metastatic																									
Ovary	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Mixed tumor, metastatic																									
NERVOUS SYSTEM																									
Brain	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Astrocytoma																									
SPECIAL SENSE ORGANS																									
Zymbal gland	+	N	+	N	+	+	+	+	+	+	+	+	+	N	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS									X	X											X			X	
Squamous cell papilloma													X							X					X
Keratoacanthoma																									
BODY CAVITIES																									
Peritoneum	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Mucinous cystadenocarcinoma, metastatic																									
Sarcoma, NOS, invasive																									
Mesentery	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Mucinous cystadenocarcinoma, metastatic																									
ALL OTHER SYSTEMS																									
Multiple organs, NOS	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Adenocarcinoma, NOS, metastatic												X							X						
Mucinous cystadenocarcinoma, metastatic																									
Mucinous adenocarcinoma, metastatic																									
Signet ring carcinoma, metastatic			X								X														
Endometrial stromal sarcoma, metastatic																									
Monocytic leukemia				X				X		X		X						X		X					
Adipose tissue																									
Sarcoma, NOS, invasive																									

TABLE B2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF FEMALE RATS: 1,2-DIMETHYLHYDRAZINE DIHYDROCHLORIDE (Continued)

ANIMAL NUMBER	651	652	653	654	655	656	657	658	659	660	661	662	663	664	665	666	667	668	669	670	671	672	673	674	675	TOTAL: TISSUES TUMORS
WEEKS ON STUDY	077	058	092	065	087	084	043	077	103	052	093	101	074	103	103	057	045	045	092	066	103	071	067	087	096	
ENDOCRINE SYSTEM																										
Pituitary	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	124
Adenoma, NOS				X																					X	18
Adrenal	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	125
Cortical adenoma											X															2
Sarcoma, NOS, invasive																										1
Thyroid	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	124
Follicular cell adenoma																										4
Follicular cell carcinoma																										2
C-cell adenoma											X															4
C-cell carcinoma															X											1
Parathyroid	+	+	–	+	+	+	+	+	+	+	+	+	–	+	+	+	+	+	+	+	+	+	+	+	–	119
REPRODUCTIVE SYSTEM																										
Mammary gland	+	+	+	+	+	+	+	+	+	N	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	*125
Adenocarcinoma, NOS																										3
Papillary cystadenoma, NOS																										1
Fibroadenoma											X	X														13
Preputial/clitoral gland	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	*125
Carcinoma, NOS																										1
Vagina	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	*125
Endometrial stromal sarcoma, invasive																										1
Uterus	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	125
Leiomyosarcoma																										1
Endometrial stromal polyp									X				X													10
Endometrial stromal sarcoma																X										4
Endometrial stromal sarcoma, invasive																										2
Mixed tumor, metastatic										X																1
Ovary	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	125
Mixed tumor, metastatic										X																1
NERVOUS SYSTEM																										
Brain	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	125
Astrocytoma																										1
SPECIAL SENSE ORGANS																										
Zymbal gland	+	+	+	N	+	+	+	+	+	N	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	*125
Carcinoma, NOS															X							X	X			20
Squamous cell papilloma									X			X														12
Keratoacanthoma																										2
BODY CAVITIES																										
Peritoneum	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	*125
Mucinous cystadenocarcinoma, meta		X																								1
Sarcoma, NOS, invasive																										1
Mesentery	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	*125
Mucinous cystadenocarcinoma, meta		X																								1
ALL OTHER SYSTEMS																										
Multiple organs, NOS	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	*125
Adenocarcinoma, NOS, metastatic								X										X								11
Mucinous cystadenocarcinoma, meta																										6
Mucinous adenocarcinoma, metastatic																				X						1
Signet ring carcinoma, metastatic							X										X									9
Endometrial stromal sarcoma, metastatic																X										1
Monocytic leukemia	X		X	X	X							X		X	X				X		X					34
Adipose tissue																										
Sarcoma, NOS, invasive						X																				1

* Animals necropsied

TABLE B2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF FEMALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS: 1% AMOSITE

ANIMAL NUMBER	00A	001	002	003	004	005	006	007	008	009	010	011	012	013	014	015	016	017	018	019	020	021	022	023	024
WEEKS ON STUDY	145	118	110	101	122	102	141	136	116	111	115	102	098	111	139	098	090	090	069	126	124	069	145	121	110
INTEGUMENTARY SYSTEM																									
Skin	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Squamous cell papilloma																									
Squamous cell carcinoma																									
Basal cell tumor																									
Keratoacanthoma																									
Fibrosarcoma																									
Osteosarcoma																									
Subcutaneous tissue	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Sarcoma, NOS																									
Fibroma									X								X						X		
Fibrosarcoma																									
Lipoma																									
Neurofibroma																									
Neurofibrosarcoma																									
RESPIRATORY SYSTEM																									
Lungs and bronchi	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Squamous cell carcinoma, metastatic																									
Alveolar/bronchiolar carcinoma																									
Cortical carcinoma, metastatic																									
C-cell carcinoma, metastatic																									
Sarcoma, NOS, metastatic																									
Liposarcoma, metastatic																									
Osteosarcoma, metastatic																									
Trachea	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
HEMATOPOIETIC SYSTEM																									
Bone marrow	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Spleen	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Lymph nodes	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenocarcinoma, NOS, metastatic																									
C-cell carcinoma, metastatic																									
Thymus	+	+	+	+	+	+	+	−	+	+	+	−	+	−	+	+	+	+	−	−	+	+	+	+	−
Adenocarcinoma, NOS																									
CIRCULATORY SYSTEM																									
Heart	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Sarcoma, NOS																									
Neurilemoma, malignant																									
Blood vessels	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Nonchromaffin paraganglioma																									
DIGESTIVE SYSTEM																									
Oral cavity	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Squamous cell papilloma																									
Squamous cell carcinoma																									
Salivary gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Sarcoma, NOS																									
Liver	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Neoplastic nodule									X																
Malignant lymphoma, histiocytic type														X											
Kupffer cell sarcoma																									
Monocytic leukemia																									
Bile duct	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Gallbladder & common bile duct	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Pancreas	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Islet cell carcinoma																									
Mixed tumor, benign																									
Esophagus	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Stomach	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Squamous cell carcinoma																									
Leiomyosarcoma																									
Small intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenoma, NOS																									
Adenomatous polyp, NOS																									
Mucinous cystadenocarcinoma								X																	
Leiomyosarcoma																									
Large intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Lipoma																									
Leiomyosarcoma																									
Neurofibroma																									
URINARY SYSTEM																									
Kidney	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Sarcoma, NOS																									
Mixed tumor, benign																									
Mixed tumor, malignant																									
Urinary bladder	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	−	+
Transitional cell papilloma																									
Transitional cell carcinoma																									

TABLE B2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF FEMALE RATS: 1% AMOSITE (Continued)

ANIMAL NUMBER	025	026	027	028	029	030	031	032	033	034	035	036	037	038	039	040	041	042	043	044	045	046	047	048	049
WEEKS ON STUDY	111	123	145	094	142	063	145	128	143	118	124	144	132	142	145	116	142	109	123	098	134	098	141	078	138
INTEGUMENTARY SYSTEM																									
Skin	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Squamous cell papilloma																									
Squamous cell carcinoma																									
Basal cell tumor																									
Keratoacanthoma																									
Fibrosarcoma																							X		
Osteosarcoma																									
Subcutaneous tissue	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Sarcoma, NOS																							X		
Fibroma																							X		
Fibrosarcoma																									
Lipoma																									
Neurofibroma																									
Neurofibrosarcoma																									
RESPIRATORY SYSTEM																									
Lungs and bronchi	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Squamous cell carcinoma, metastatic																									
Alveolar/bronchiolar carcinoma					X																				
Cortical carcinoma, metastatic																									
C-cell carcinoma, metastatic																									
Sarcoma, NOS, metastatic																									
Liposarcoma, metastatic																									
Osteosarcoma, metastatic																									
Trachea	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
HEMATOPOIETIC SYSTEM																									
Bone marrow	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Spleen	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Lymph nodes	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenocarcinoma, NOS, metastatic																									
C-cell carcinoma, metastatic																									
Thymus	+	+	+	−	+	+	+	+	+	+	+	+	−	+	+	+	+	+	+	+	−	+	+	−	+
Adenocarcinoma, NOS																									
CIRCULATORY SYSTEM																									
Heart	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Sarcoma, NOS																									
Neurilemoma, malignant																									
Blood vessels	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Nonchromaffin paraganglioma																									
DIGESTIVE SYSTEM																									
Oral cavity	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Squamous cell papilloma																									
Squamous cell carcinoma																X									
Salivary gland	−	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Sarcoma, NOS																									
Liver	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Neoplastic nodule																	X								
Malignant lymphoma, histiocytic type																									
Kupffer cell sarcoma													X												
Monocytic leukemia																									X
Bile duct	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Gallbladder & common bile duct	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Pancreas	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Islet cell carcinoma																									
Mixed tumor, benign																									X
Esophagus	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Stomach	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Squamous cell carcinoma																									
Leiomyosarcoma																									
Small intestine	+	+	+	+	+	−	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenoma, NOS																									
Adenomatous polyp, NOS																									
Mucinous cystadenocarcinoma																									
Leiomyosarcoma																									
Large intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Lipoma																									
Leiomyosarcoma																									
Neurofibroma																									
URINARY SYSTEM																									
Kidney	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Sarcoma, NOS																									
Mixed tumor, benign																									
Mixed tumor, malignant																									
Urinary bladder	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	−	+	+	+	+
Transitional cell papilloma																									
Transitional cell carcinoma		X																							

TABLE B2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF FEMALE RATS: 1% AMOSITE (Continued)

ANIMAL NUMBER	050	051	052	053	054	055	056	057	058	059	060	061	062	063	064	065	066	067	068	069	070	071	072	073	074
WEEKS ON STUDY	138	119	125	145	126	126	101	135	113	145	145	126	132	142	127	145	122	112	127	077	127	129	136	134	080
INTEGUMENTARY SYSTEM																									
Skin	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Squamous cell papilloma																									
Squamous cell carcinoma																									
Basal cell tumor																									
Keratoacanthoma																									
Fibrosarcoma																									
Osteosarcoma														X											
Subcutaneous tissue	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Sarcoma, NOS																									
Fibroma																X									
Fibrosarcoma					X																				
Lipoma																									
Neurofibroma																									
Neurofibrosarcoma																									
RESPIRATORY SYSTEM																									
Lungs and bronchi	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Squamous cell carcinoma, metastatic																									
Alveolar/bronchiolar carcinoma																									
Cortical carcinoma, metastatic																									
C-cell carcinoma, metastatic																									
Sarcoma, NOS, metastatic																									
Liposarcoma, metastatic	X																								
Osteosarcoma, metastatic																									
Trachea	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
HEMATOPOIETIC SYSTEM																									
Bone marrow	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Spleen	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Lymph nodes	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenocarcinoma, NOS, metastatic																									
C-cell carcinoma, metastatic																									
Thymus	+	+	+	+	+	+	–	+	+	+	+	+	+	+	+	+	+	+	+	–	+	+	–	–	+
Adenocarcinoma, NOS																									
CIRCULATORY SYSTEM																									
Heart	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Sarcoma, NOS																									
Neurilemoma, malignant																									
Blood vessels	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Nonchromaffin paraganglioma																									
DIGESTIVE SYSTEM																									
Oral cavity	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Squamous cell papilloma																									
Squamous cell carcinoma																									
Salivary gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Sarcoma, NOS																									
Liver	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Neoplastic nodule	X																								
Malignant lymphoma, histiocytic type																									
Kupffer cell sarcoma																									
Monocytic leukemia																			X						
Bile duct	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Gallbladder & common bile duct	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Pancreas	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Islet cell carcinoma																									
Mixed tumor, benign																									
Esophagus	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Stomach	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Squamous cell carcinoma																									
Leiomyosarcoma																									
Small intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenoma, NOS																									
Adenomatous polyp, NOS																									
Mucinous cystadenocarcinoma																									
Leiomyosarcoma																									
Large intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Lipoma																									
Leiomyosarcoma																									
Neurofibroma																									
URINARY SYSTEM																									
Kidney	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Sarcoma, NOS								X																	
Mixed tumor, benign																									
Mixed tumor, malignant							X																		
Urinary bladder	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Transitional cell papilloma																									
Transitional cell carcinoma																									

TABLE B2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF FEMALE RATS: 1% AMOSITE (Continued)

ANIMAL NUMBER	075	076	077	078	079	080	081	082	083	084	085	086	087	088	089	090	091	092	093	094	095	096	097	098	099
WEEKS ON STUDY	112	104	145	091	132	129	128	136	116	130	124	138	136	117	105	145	129	137	127	145	110	124	121	110	107
INTEGUMENTARY SYSTEM																									
Skin	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Squamous cell papilloma																									
Squamous cell carcinoma																									
Basal cell tumor								X											X						
Keratoacanthoma													X												
Fibrosarcoma																									
Osteosarcoma																									
Subcutaneous tissue	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Sarcoma, NOS	X																								
Fibroma																X									
Fibrosarcoma																									
Lipoma										X															
Neurofibroma																									
Neurofibrosarcoma																									
RESPIRATORY SYSTEM																									
Lungs and bronchi	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Squamous cell carcinoma, metastatic																									
Alveolar/bronchiolar carcinoma																									
Cortical carcinoma, metastatic																									
C-cell carcinoma, metastatic																									
Sarcoma, NOS, metastatic																									
Liposarcoma, metastatic																									
Osteosarcoma, metastatic																									
Trachea	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
HEMATOPOIETIC SYSTEM																									
Bone marrow	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Spleen	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Lymph nodes	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenocarcinoma, NOS, metastatic																									
C-cell carcinoma, metastatic																									
Thymus	+	–	+	+	+	+	+	+	+	+	+	–	–	+	–	+	+	+	+	+	–	+	+	+	+
Adenocarcinoma, NOS																									
CIRCULATORY SYSTEM																									
Heart	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Sarcoma, NOS																									
Neurilemoma, malignant																									
Blood vessels	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Nonchromaffin paraganglioma																									
DIGESTIVE SYSTEM																									
Oral cavity	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Squamous cell papilloma													X												
Squamous cell carcinoma																									
Salivary gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Sarcoma, NOS																									
Liver	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Neoplastic nodule																									
Malignant lymphoma, histiocytic type																									
Kupffer cell sarcoma																									
Monocytic leukemia																									
Bile duct	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Gallbladder & common bile duct	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Pancreas	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Islet cell carcinoma																									
Mixed tumor, benign																									
Esophagus	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Stomach	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Squamous cell carcinoma																									
Leiomyosarcoma																									
Small intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenoma, NOS																									
Adenomatous polyp, NOS																									
Mucinous cystadenocarcinoma																									
Leiomyosarcoma																									
Large intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Lipoma																									
Leiomyosarcoma																									
Neurofibroma																									
URINARY SYSTEM																									
Kidney	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Sarcoma, NOS																									
Mixed tumor, benign																									
Mixed tumor, malignant																									
Urinary bladder	+	+	+	+	+	+	+	+	+	+	+	+	+	+	–	+	+	+	+	+	+	+	+	+	+
Transitional cell papilloma																									
Transitional cell carcinoma																									

TABLE B2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF FEMALE RATS: 1% AMOSITE (Continued)

ANIMAL NUMBER	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124
WEEKS ON STUDY	141	135	138	145	141	137	127	102	119	137	087	080	142	097	099	126	078	106	145	127	125	143	073	115	133
INTEGUMENTARY SYSTEM																									
Skin	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Squamous cell papilloma																									
Squamous cell carcinoma																									
Basal cell tumor																									
Keratoacanthoma																									
Fibrosarcoma																									
Osteosarcoma																									
Subcutaneous tissue	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Sarcoma, NOS																									
Fibroma																									
Fibrosarcoma																					X				
Lipoma																									
Neurofibroma																									
Neurofibrosarcoma																									
RESPIRATORY SYSTEM																									
Lungs and bronchi	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Squamous cell carcinoma, metastatic																									
Alveolar/bronchiolar carcinoma																									
Cortical carcinoma, metastatic																									
C-cell carcinoma, metastatic																									
Sarcoma, NOS, metastatic																									
Liposarcoma, metastatic																									
Osteosarcoma, metastatic											X														
Trachea	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
HEMATOPOIETIC SYSTEM																									
Bone marrow	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Spleen	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Lymph nodes	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenocarcinoma, NOS, metastatic																									
C-cell carcinoma, metastatic						X																			
Thymus	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	–	–	+	+	+	+	+	+	+	+
Adenocarcinoma, NOS																									
CIRCULATORY SYSTEM																									
Heart	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Sarcoma, NOS						X																			
Neurilemoma, malignant																									
Blood vessels	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Nonchromaffin paraganglioma																				X					
DIGESTIVE SYSTEM																									
Oral cavity	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Squamous cell papilloma																				X					
Squamous cell carcinoma																									
Salivary gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Sarcoma, NOS																									
Liver	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Neoplastic nodule																									
Malignant lymphoma, histiocytic type																									
Kupffer cell sarcoma																									
Monocytic leukemia																									
Bile duct	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Gallbladder & common bile duct	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Pancreas	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Islet cell carcinoma																									
Mixed tumor, benign																									
Esophagus	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Stomach	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Squamous cell carcinoma																									
Leiomyosarcoma																									
Small intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenoma, NOS																									
Adenomatous polyp, NOS																									
Mucinous cystadenocarcinoma																									
Leiomyosarcoma																									
Large intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Lipoma																									
Leiomyosarcoma																									
Neurofibroma																									
URINARY SYSTEM																									
Kidney	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Sarcoma, NOS																									
Mixed tumor, benign																									
Mixed tumor, malignant																									
Urinary bladder	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Transitional cell papilloma																									
Transitional cell carcinoma																									

TABLE B2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF FEMALE RATS: 1% AMOSITE (Continued)

ANIMAL NUMBER	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149
WEEKS ON STUDY	139	120	124	120	121	017	017	017	141	114	103	135	125	124	107	093	068	139	128	128	137	121	112	113	144
INTEGUMENTARY SYSTEM																									
Skin	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Squamous cell papilloma																									
Squamous cell carcinoma																									
Basal cell tumor																									X
Keratoacanthoma																									
Fibrosarcoma																									
Osteosarcoma																									
Subcutaneous tissue	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Sarcoma, NOS																									
Fibroma																									
Fibrosarcoma														X											
Lipoma																									
Neurofibroma																									
Neurofibrosarcoma																			X						
RESPIRATORY SYSTEM																									
Lungs and bronchi	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Squamous cell carcinoma, metastatic																									
Alveolar/bronchiolar carcinoma																									
Cortical carcinoma, metastatic																									
C-cell carcinoma, metastatic																									
Sarcoma, NOS, metastatic																									
Liposarcoma, metastatic																									
Osteosarcoma, metastatic																									
Trachea	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
HEMATOPOIETIC SYSTEM																									
Bone marrow	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Spleen	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Lymph nodes	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenocarcinoma, NOS, metastatic																									
C-cell carcinoma, metastatic																									
Thymus	+	+	+	+	+	+	+	+	–	+	+	+	+	+	+	+	–	+	+	+	+	+	+	+	+
Adenocarcinoma, NOS																									
CIRCULATORY SYSTEM																									
Heart	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Sarcoma, NOS																									
Neurilemoma, malignant																									
Blood vessels	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Nonchromaffin paraganglioma																									
DIGESTIVE SYSTEM																									
Oral cavity	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Squamous cell papilloma																									
Squamous cell carcinoma																									
Salivary gland	+	+	+	+	+	+	+	+	+	+	–	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Sarcoma, NOS																									
Liver	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Neoplastic nodule																									
Malignant lymphoma, histiocytic type																									
Kupffer cell sarcoma																									
Monocytic leukemia					X									X											
Bile duct	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Gallbladder & common bile duct	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Pancreas	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Islet cell carcinoma																						X			
Mixed tumor, benign																									
Esophagus	+	+	+	+	+	–	–	–	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Stomach	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Squamous cell carcinoma																									
Leiomyosarcoma																									
Small intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenoma, NOS																									
Adenomatous polyp, NOS																									
Mucinous cystadenocarcinoma																									
Leiomyosarcoma																									
Large intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Lipoma																									
Leiomyosarcoma																									
Neurofibroma																									
URINARY SYSTEM																									
Kidney	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Sarcoma, NOS																									
Mixed tumor, benign																						X			
Mixed tumor, malignant																									
Urinary bladder	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Transitional cell papilloma																									
Transitional cell carcinoma															X										

TABLE B2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF FEMALE RATS: 1% AMOSITE (Continued)

ANIMAL NUMBER	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174
WEEKS ON STUDY	117	129	075	145	120	145	137	135	138	132	101	104	140	145	141	138	115	145	120	145	129	096	123	145	131
INTEGUMENTARY SYSTEM																									
Skin	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Squamous cell papilloma						X																			
Squamous cell carcinoma																									
Basal cell tumor																									
Keratoacanthoma																									
Fibrosarcoma																									
Osteosarcoma																									
Subcutaneous tissue	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Sarcoma, NOS						X															X				
Fibroma																						X			
Fibrosarcoma																									
Lipoma																									
Neurofibroma		X																							
Neurofibrosarcoma																									
RESPIRATORY SYSTEM																									
Lungs and bronchi	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Squamous cell carcinoma, metastatic																									
Alveolar/bronchiolar carcinoma																									
Cortical carcinoma, metastatic																									
C-cell carcinoma, metastatic																									
Sarcoma, NOS, metastatic																									
Liposarcoma, metastatic																									
Osteosarcoma, metastatic																									
Trachea	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
HEMATOPOIETIC SYSTEM																									
Bone marrow	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Spleen	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Lymph nodes	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenocarcinoma, NOS, metastatic																									
C-cell carcinoma, metastatic																									
Thymus	+	+	–	+	+	+	+	+	+	+	+	+	+	–	–	+	+	+	+	–	+	–	+	+	+
Adenocarcinoma, NOS		X																							
CIRCULATORY SYSTEM																									
Heart	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Sarcoma, NOS																									
Neurilemoma, malignant																									
Blood vessels	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Nonchromaffin paraganglioma																									
DIGESTIVE SYSTEM																									
Oral cavity	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Squamous cell papilloma																									
Squamous cell carcinoma																	X								
Salivary gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Sarcoma, NOS																									
Liver	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Neoplastic nodule																		X							
Malignant lymphoma, histiocytic type																									
Kupffer cell sarcoma																									
Monocytic leukemia																									
Bile duct	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Gallbladder & common bile duct	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Pancreas	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Islet cell carcinoma																									
Mixed tumor, benign																									
Esophagus	+	–	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Stomach	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Squamous cell carcinoma																									
Leiomyosarcoma																									
Small intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenoma, NOS								X																	
Adenomatous polyp, NOS																		X							
Mucinous cystadenocarcinoma																									
Leiomyosarcoma																									
Large intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Lipoma								X																	
Leiomyosarcoma																									
Neurofibroma																									
URINARY SYSTEM																									
Kidney	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Sarcoma, NOS																									
Mixed tumor, benign																									
Mixed tumor, malignant																									
Urinary bladder	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Transitional cell papilloma				X																					
Transitional cell carcinoma																									

TABLE B2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF FEMALE RATS: 1% AMOSITE (Continued)

ANIMAL NUMBER	175	926	927	928	929	930	931	932	933	934	935	936	937	938	939	940	941	942	943	944	945	946	947	948	949
WEEKS ON STUDY	135	145	111	145	110	135	114	121	137	116	123	100	126	110	120	138	125	134	128	120	127	102	145	124	085
INTEGUMENTARY SYSTEM																									
Skin	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Squamous cell papilloma													X												
Squamous cell carcinoma																									
Basal cell tumor																									
Keratoacanthoma									X																
Fibrosarcoma																									
Osteosarcoma																									
Subcutaneous tissue	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Sarcoma, NOS																									
Fibroma																									
Fibrosarcoma									X																
Lipoma																									
Neurofibroma																									
Neurofibrosarcoma																									
RESPIRATORY SYSTEM																									
Lungs and bronchi	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Squamous cell carcinoma, metastatic																									
Alveolar/bronchiolar carcinoma																									
Cortical carcinoma, metastatic																									
C-cell carcinoma, metastatic																									
Sarcoma, NOS, metastatic																									
Liposarcoma, metastatic																									
Osteosarcoma, metastatic																									
Trachea	+	+	–	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
HEMATOPOIETIC SYSTEM																									
Bone marrow	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Spleen	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Lymph nodes	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenocarcinoma, NOS, metastatic															X										
C-cell carcinoma, metastatic																									
Thymus	+	+	–	+	+	+	+	–	+	+	+	–	+	+	+	+	–	+	+	+	+	+	+	+	+
Adenocarcinoma, NOS																									
CIRCULATORY SYSTEM																									
Heart	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Sarcoma, NOS																									
Neurilemoma, malignant																									
Blood vessels	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Nonchromaffin paraganglioma																									
DIGESTIVE SYSTEM																									
Oral cavity	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Squamous cell papilloma																									
Squamous cell carcinoma																									
Salivary gland	+	+	–	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	–	+	+	+	
Sarcoma, NOS																									
Liver	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Neoplastic nodule				X													X						X		
Malignant lymphoma, histiocytic type																									
Kupffer cell sarcoma																									
Monocytic leukemia																									
Bile duct	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Gallbladder & common bile duct	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Pancreas	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Islet cell carcinoma																									
Mixed tumor, benign																									
Esophagus	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Stomach	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Squamous cell carcinoma										X															
Leiomyosarcoma																X									
Small intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenoma, NOS																									
Adenomatous polyp, NOS																									
Mucinous cystadenocarcinoma																									
Leiomyosarcoma																									
Large intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Lipoma																									
Leiomyosarcoma																									
Neurofibroma																									
URINARY SYSTEM																									
Kidney	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Sarcoma, NOS																									
Mixed tumor, benign																									
Mixed tumor, malignant																									
Urinary bladder	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Transitional cell papilloma																									
Transitional cell carcinoma																									

TABLE B2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF FEMALE RATS: 1% AMOSITE (Continued)

ANIMAL NUMBER	95 50	95 51	95 52	95 53	95 54	95 55	95 56	95 57	95 58	95 59	96 60	96 61	96 62	96 63	96 64	96 65	96 66	96 67	96 68	96 69	97 70	97 71	97 72	97 73	97 74
WEEKS ON STUDY	12 28	11 11	12 21	13 37	09 98	14 45	12 26	13 32	11 12	13 35	14 40	13 32	11 11	10 09	12 28	08 84	11 16	07 70	14 45	12 24	14 45	12 24	14 45	13 30	14 45
INTEGUMENTARY SYSTEM																									
Skin	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Squamous cell papilloma																									
Squamous cell carcinoma			X																						
Basal cell tumor																									
Keratoacanthoma																									
Fibrosarcoma																									
Osteosarcoma																									
Subcutaneous tissue	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Sarcoma, NOS												X									X				
Fibroma						X																			
Fibrosarcoma																									
Lipoma													X												
Neurofibroma																									
Neurofibrosarcoma																									
RESPIRATORY SYSTEM																									
Lungs and bronchi	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Squamous cell carcinoma, metastatic			X																						
Alveolar/bronchiolar carcinoma																									
Cortical carcinoma, metastatic																									
C cell carcinoma, metastatic																									
Sarcoma, NOS, metastatic												X													
Liposarcoma, metastatic																									
Osteosarcoma, metastatic																									
Trachea	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
HEMATOPOIETIC SYSTEM																									
Bone marrow	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Spleen	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Lymph nodes	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenocarcinoma, NOS, metastatic																									
C cell carcinoma, metastatic				@X																					
Thymus	+	+	+	+	+	+	+	–	+	+	+	–	+	–	+	–	+	+	+	+	+	+	+	–	+
Adenocarcinoma, NOS																									
CIRCULATORY SYSTEM																									
Heart	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Sarcoma, NOS																									
Neurilemoma, malignant																									
Blood vessels	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Nonchromaffin paraganglioma																									
DIGESTIVE SYSTEM																									
Oral cavity	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Squamous cell papilloma																									
Squamous cell carcinoma																									
Salivary gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Sarcoma, NOS																									
Liver	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Neoplastic nodule	X																								
Malignant lymphoma, histiocytic type																									
Kupffer cell sarcoma																									
Monocytic leukemia																									
Bile duct	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Gallbladder & common bile duct	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Pancreas	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Islet cell carcinoma																									
Mixed tumor, benign																									
Esophagus	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Stomach	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Squamous cell carcinoma																									
Leiomyosarcoma																									
Small intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenoma, NOS																									
Adenomatous polyp, NOS																									
Mucinous cystadenocarcinoma																									
Leiomyosarcoma																									
Large intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Lipoma																									
Leiomyosarcoma				X																					
Neurofibroma																									
URINARY SYSTEM																									
Kidney	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Sarcoma, NOS																									
Mixed tumor, benign																									
Mixed tumor, malignant																									
Urinary bladder	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Transitional cell papilloma																									
Transitional cell carcinoma																									

@ Multiple occurrence of morphology

TABLE B2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF FEMALE RATS: 1% AMOSITE (Continued)

ANIMAL NUMBER	97501	97606	97707	97808	97909	98001	98101	98202	98303	98404	98505	98606	98707	98808	98909	99001	99101	99202	99303	99404	99505	99606	99707	99808	99909	TOTAL:
WEEKS ON STUDY	123	123	127	131	089	145	126	143	082	142	132	113	145	102	125	097	139	122	121	143	104	126	126	141	070	TISSUES TUMORS
INTEGUMENTARY SYSTEM																										
Skin	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	*250
Squamous cell papilloma											X															3
Squamous cell carcinoma																										1
Basal cell tumor																										3
Keratoacanthoma																										2
Fibrosarcoma																										1
Osteosarcoma																										1
Subcutaneous tissue	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	*250
Sarcoma, NOS																										6
Fibroma																										8
Fibrosarcoma																										4
Lipoma																										2
Neurofibroma																										1
Neurofibrosarcoma																										1
RESPIRATORY SYSTEM																										
Lungs and bronchi	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	250
Squamous cell carcinoma, metastatic																										1
Alveolar/bronchiolar carcinoma																										1
Cortical carcinoma, metastatic																							X			1
C cell carcinoma, metastatic										X	X															2
Sarcoma, NOS, metastatic																										1
Liposarcoma, metastatic																										1
Osteosarcoma, metastatic																										1
Trachea	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	249
HEMATOPOIETIC SYSTEM																										
Bone marrow	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	250
Spleen	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	−	+	249
Lymph nodes	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	250
Adenocarcinoma, NOS, metastatic																										1
C-cell carcinoma, metastatic											X															3
Thymus	+	+	+	+	+	+	+	−	+	+	+	+	+	−	+	+	+	−	+	+	+	+	+	+	+	210
Adenocarcinoma, NOS																										1
CIRCULATORY SYSTEM																										
Heart	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	250
Sarcoma, NOS																										1
Neurilemoma, malignant																	X									1
Blood vessels	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	*250
Nonchromaffin paraganglioma																										1
DIGESTIVE SYSTEM																										
Oral cavity	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	*250
Squamous cell papilloma																										2
Squamous cell carcinoma																										2
Salivary gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	246
Sarcoma, NOS													X													1
Liver	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	250
Neoplastic nodule								X											X							10
Malignant lymphoma, histiocytic type																										1
Kupffer cell sarcoma																										1
Monocytic leukemia																										4
Bile duct	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	250
Gallbladder & common bile duct	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	+	N	N	*250
Pancreas	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	−	+	249
Islet cell carcinoma																										1
Mixed tumor, benign																										1
Esophagus	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	246
Stomach	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	250
Squamous cell carcinoma																										1
Leiomyosarcoma																										1
Small intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	−	+	249
Adenoma, NOS																										1
Adenomatous polyp, NOS																										1
Mucinous cystadenocarcinoma																										1
Leiomyosarcoma										X																1
Large intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	250
Lipoma																										1
Leiomyosarcoma																										1
Neurofibroma							X																			1
URINARY SYSTEM																										
Kidney	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	250
Sarcoma, NOS																										1
Mixed tumor, benign																										1
Mixed tumor, malignant																										1
Urinary bladder	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	248
Transitional cell papilloma																										1
Transitional cell carcinoma																										2

* Animals necropsied

TABLE B2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF FEMALE RATS: 1% AMOSITE (Continued)

ANIMAL NUMBER	00A	001	002	003	004	005	006	007	008	009	010	011	012	013	014	015	016	017	018	019	020	021	022	023	024
WEEKS ON STUDY	145	118	110	101	122	102	141	136	116	111	115	102	098	111	139	098	090	090	069	126	124	069	145	121	110
ENDOCRINE SYSTEM																									
Pituitary	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS											X							X							
Adenoma, NOS	X		X	X	X			X	X	X			X			X				X					
Adrenal	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Cortical adenoma											X														
Cortical carcinoma																									
Pheochromocytoma		X						X																	
Pheochromocytoma, malignant																									
Thyroid	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Follicular cell adenoma																									
Follicular cell carcinoma																									
C-cell adenoma							X		X	X										X					
C-cell carcinoma																								X	
Parathyroid	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Pancreatic islet s	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Islet cell adenoma														X	X										
Islet cell carcinoma	X																								
REPRODUCTIVE SYSTEM																									
Mammary gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenoma, NOS																									
Adenocarcinoma, NOS	X																								
Papillary adenocarcinoma																									
Papillary cystadenoma, NOS										X															
Fibroadenoma		X					X				X		X							X	X		X	X	X
Preputial/clitoral gland	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Carcinoma, NOS								X						X								X			
Adenoma, NOS																									
Keratoacanthoma																									
Sarcoma, NOS, invasive																									
Uterus	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS																									
Adenocarcinoma, NOS																									
Papillary adenoma																									
Papillary adenocarcinoma																									
Leiomyoma																									
Leiomyosarcoma																									
Endometrial stromal polyp									X											X					
Endometrial stromal sarcoma																									
Endometrial stromal sarcoma, invasive																									
Ovary	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Papillary cystadenoma, NOS																									
Thecoma																									
Granulosa cell tumor																									
NERVOUS SYSTEM																									
Nerves	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Squamous cell carcinoma, metastatic																									
Brain	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS, invasive											X							X							
Granular cell tumor, NOS																									
Glioma, NOS																									
Astrocytoma																									
Astrocytoma, invasive																									
SPECIAL SENSE ORGANS																									
Zymbal gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS																									
Squamous cell papilloma																									
MUSCULOSKELETAL SYSTEM																									
Bone	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Osteosarcoma																									
BODY CAVITIES																									
Peritoneum	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Pheochromocytoma, invasive																									
Sarcoma, NOS, metastatic																									
Fibrosarcoma																									
Endometrial stromal sarcoma, invasive																									
Mesentery	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Leiomyosarcoma, invasive																									
Mesothelioma, malignant																									
ALL OTHER SYSTEMS																									
Multiple organs, NOS	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Carcinoma, NOS, invasive																									
Squamous cell carcinoma, metastatic																									
Sarcoma, NOS, invasive																									
Sarcoma, NOS, metastatic																									
Liposarcoma, metastatic																									
Mesothelioma, invasive																									
Myelomonocytic leukemia																									
Monocytic leukemia						X				X			X			X					X			X	X

TABLE B2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF FEMALE RATS: 1% AMOSITE (Continued)

ANIMAL NUMBER	025	026	027	028	029	030	031	032	033	034	035	036	037	038	039	040	041	042	043	044	045	046	047	048	049
WEEKS ON STUDY	111	123	145	094	142	063	145	128	143	118	124	144	132	142	145	116	142	109	123	098	134	098	141	078	138
ENDOCRINE SYSTEM																									
Pituitary	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS															X										
Adenoma, NOS	X						X	X	X		X	X	X	X			X				X				X
Adrenal	−	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Cortical adenoma																									
Cortical carcinoma																									
Pheochromocytoma							X							X	X										X
Pheochromocytoma, malignant																									
Thyroid	−	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Follicular cell adenoma			X																				X		
Follicular cell carcinoma															X										
C cell adenoma			X													X	X	X			X				X
C-cell carcinoma		X									X	X								X					
Parathyroid	−	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	−	+	+	+	+	+	+
Pancreatic islets	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Islet cell adenoma																							X		
Islet cell carcinoma									X																
REPRODUCTIVE SYSTEM																									
Mammary gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenoma, NOS																					X				
Adenocarcinoma, NOS										X		X			X										
Papillary adenocarcinoma														X											
Papillary cystadenoma, NOS																									
Fibroadenoma		X	X				X		X	X		X	X	X	X		X	X	X						X
Preputial/clitoral gland	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Carcinoma, NOS																									
Adenoma, NOS																									
Keratoacanthoma																									
Sarcoma, NOS, invasive																									
Uterus	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS																									
Adenocarcinoma, NOS																									
Papillary adenoma																									
Papillary adenocarcinoma																									
Leiomyoma																									
Leiomyosarcoma																									
Endometrial stromal polyp			X		X			X											X					X	
Endometrial stromal sarcoma																									
Endometrial stromal sarcoma, invasive																									
Ovary	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Papillary cystadenoma, NOS																									
Thecoma		X																							
Granulosa cell tumor																									
NERVOUS SYSTEM																									
Nerves	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Squamous cell carcinoma, metastatic																									
Brain	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS, invasive																									
Granular cell tumor, NOS										X															
Glioma, NOS																									
Astrocytoma																									
Astrocytoma, invasive																									
SPECIAL SENSE ORGANS																									
Zymbal gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	N	+	+	+
Carcinoma, NOS																									
Squamous cell papilloma																									
MUSCULOSKELETAL SYSTEM																									
Bone	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Osteosarcoma																									
BODY CAVITIES																									
Peritoneum	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Pheochromocytoma, invasive																									
Sarcoma, NOS, metastatic																									
Fibrosarcoma																									
Endometrial stromal sarcoma, invasive																									
Mesentery	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Leiomyosarcoma, invasive																									
Mesothelioma, malignant																									
ALL OTHER SYSTEMS																									
Multiple organs, NOS	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Carcinoma, NOS, invasive																									
Squamous cell carcinoma, metastatic																									
Sarcoma, NOS, invasive																									
Sarcoma, NOS, metastatic																									
Liposarcoma, metastatic																									
Mesothelioma, invasive																									
Myelomonocytic leukemia																									
Monocytic leukemia				X			X		X	X						X	X			X	X	X	X		

TABLE B2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF FEMALE RATS: 1% AMOSITE (Continued)

ANIMAL NUMBER	050	051	052	053	054	055	056	057	058	059	060	061	062	063	064	065	066	067	068	069	070	071	072	073	074
WEEKS ON STUDY	138	119	125	145	126	126	101	135	113	145	145	126	132	142	127	145	122	112	127	077	127	129	136	134	080
ENDOCRINE SYSTEM																									
Pituitary	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS																									
Adenoma, NOS				X		X	X		X	X	X	X	X		X	X		X			X	X			X
Adrenal	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Cortical adenoma				X																					
Cortical carcinoma																									
Pheochromocytoma						X				X				X											
Pheochromocytoma, malignant																	X								
Thyroid	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Follicular cell adenoma																	X								
Follicular cell carcinoma																									
C cell adenoma																									
C-cell carcinoma			X	X				X										X							
Parathyroid	+	+	+	+	+	+	+	–	+	+	+	+	+	+	+	+	–	+	+	+	+	+	+	+	+
Pancreatic islets	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Islet cell adenoma																									
Islet cell carcinoma					X																				
REPRODUCTIVE SYSTEM																									
Mammary gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenoma, NOS					X	X			X																
Adenocarcinoma, NOS																						X		X	
Papillary adenocarcinoma																									
Papillary cystadenoma, NOS																									
Fibroadenoma		X	X	X	X			X	X	X	X		X			X		X	X			X	X	X	
Preputial/chtoral gland	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Carcinoma, NOS																									
Adenoma, NOS																									
Keratoacanthoma																									
Sarcoma, NOS, invasive																									
Uterus	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS																									
Adenocarcinoma, NOS																									
Papillary adenoma																									
Papillary adenocarcinoma																									
Leiomyoma																									
Leiomyosarcoma																									
Endometrial stromal polyp																				X					
Endometrial stromal sarcoma																		X		X					
Endometrial stromal sarcoma, invasive																		X							
Ovary	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Papillary cystadenoma, NOS																									
Thecoma																									
Granulosa cell tumor										X															
NERVOUS SYSTEM																									
Nerves	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Squamous cell carcinoma, metastatic																									
Brain	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS, invasive																									
Granular cell tumor, NOS																									
Glioma, NOS																									
Astrocytoma																									
Astrocytoma, invasive																									
SPECIAL SENSE ORGANS																									
Zymbal gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS																									
Squamous cell papilloma																									
MUSCULOSKELETAL SYSTEM																									
Bone	N	+	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Osteosarcoma																									
BODY CAVITIES																									
Peritoneum	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Pheochromocytoma, invasive																									
Sarcoma, NOS, metastatic																									
Fibrosarcoma																									
Endometrial stromal sarcoma, invasive																		X							
Mesentery	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Leiomyosarcoma, invasive																									
Mesothelioma, malignant																									
ALL OTHER SYSTEMS																									
Multiple organs, NOS	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Carcinoma, NOS, invasive																									
Squamous cell carcinoma, metastatic																									
Sarcoma, NOS, invasive																									
Sarcoma, NOS, metastatic																									
Liposarcoma, metastatic		X																							
Mesothelioma, invasive																									
Myelomonocytic leukemia																									
Monocytic leukemia				X	X	X			X	X		X				X								X	X

TABLE B2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF FEMALE RATS: 1% AMOSITE (Continued)

ANIMAL NUMBER	075	076	077	078	079	080	081	082	083	084	085	086	087	088	089	090	091	092	093	094	095	096	097	098	099
WEEKS ON STUDY	112	104	145	091	132	129	128	136	116	130	124	138	136	117	105	145	129	137	127	145	110	124	121	110	107
ENDOCRINE SYSTEM																									
Pituitary	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS																									
Adenoma, NOS	X		X		X	X	X	X						X			X				X	X		X	
Adrenal	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Cortical adenoma								X					X												
Cortical carcinoma																									
Pheochromocytoma																		X	X						X
Pheochromocytoma, malignant																									
Thyroid	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Follicular cell adenoma													X												
Follicular cell carcinoma																									
C cell adenoma	X		X																	X			X		X
C cell carcinoma	X									X				X			X								
Parathyroid	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Pancreatic islets	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Islet cell adenoma																			X						
Islet cell carcinoma								X																	
REPRODUCTIVE SYSTEM																									
Mammary gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenoma, NOS																	X			X					
Adenocarcinoma, NOS											X														
Papillary adenocarcinoma																									
Papillary cystadenoma, NOS																									
Fibroadenoma		X	X		X	X		X		X	X		X	X			X	X	X	X		X	X		X
Preputial/clitoral gland	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Carcinoma, NOS																									
Adenoma, NOS																									
Keratoacanthoma														X											
Sarcoma, NOS, invasive																									
Uterus	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS																									
Adenocarcinoma, NOS																									
Papillary adenoma																									
Papillary adenocarcinoma																									
Leiomyoma																									
Leiomyosarcoma																									
Endometrial stromal polyp														X											
Endometrial stromal sarcoma																									
Endometrial stromal sarcoma, invasive																									
Ovary	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Papillary cystadenoma, NOS																									
Thecoma																									
Granulosa cell tumor																									
NERVOUS SYSTEM																									
Nerves	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Squamous cell carcinoma, metastatic																									
Brain	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS, invasive																									
Granular cell tumor, NOS																									
Glioma, NOS																									
Astrocytoma		X																							
Astrocytoma, invasive		@X																							
SPECIAL SENSE ORGANS																									
Zymbal gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS																							X		
Squamous cell papilloma												X													
MUSCULOSKELETAL SYSTEM																									
Bone	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	+	N	+	N	N	N	N	N
Osteosarcoma																									
BODY CAVITIES																									
Peritoneum	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Pheochromocytoma, invasive																									
Sarcoma, NOS, metastatic																									
Fibrosarcoma																								X	
Endometrial stromal sarcoma, invasive																									
Mesentery	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Leiomyosarcoma, invasive																									
Mesothelioma, malignant																			X						
ALL OTHER SYSTEMS																									
Multiple organs, NOS	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Carcinoma, NOS, invasive																									
Squamous cell carcinoma, metastatic																									
Sarcoma, NOS, invasive																									
Sarcoma, NOS, metastatic	X																								
Liposarcoma, metastatic																									
Mesothelioma, invasive																			X						
Myelomonocytic leukemia			X																						
Monocytic leukemia	X			X		X									X								X		

@ Multiple occurrence of morphology

TABLE B2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF FEMALE RATS: 1% AMOSITE
(Continued)

ANIMAL NUMBER	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124
WEEKS ON STUDY	141	135	138	145	141	137	127	102	119	137	087	080	142	097	099	126	078	106	145	127	125	143	073	115	133
ENDOCRINE SYSTEM																									
Pituitary	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS															X	X									
Adenoma, NOS	X			X		X			X	X			X	X			X						X	X	X
Adrenal	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Cortical adenoma																				X					
Cortical carcinoma																									
Pheochromocytoma			X																						X
Pheochromocytoma, malignant																									
Thyroid	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Follicular cell adenoma																									
Follicular cell carcinoma																									
C cell adenoma	X		X													X					X		X		
C cell carcinoma				X		X							X												
Parathyroid	+	+	+	+	+	–	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Pancreatic islets	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Islet cell adenoma																									
Islet cell carcinoma																									
REPRODUCTIVE SYSTEM																									
Mammary gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenoma, NOS																				X			X		
Adenocarcinoma, NOS	X																			X					
Papillary adenocarcinoma																									
Papillary cystadenoma, NOS																									
Fibroadenoma		X			X	X	X		X	X			X			X	X	X	X	X	X			X	X
Preputial/clitoral gland	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Carcinoma, NOS	X																								
Adenoma, NOS																									
Keratoacanthoma																									
Sarcoma, NOS, invasive																									
Uterus	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS	X																								
Adenocarcinoma, NOS																									
Papillary adenoma																									
Papillary adenocarcinoma																									
Leiomyoma																									
Leiomyosarcoma																									
Endometrial stromal polyp				X								X			X			X			X			
Endometrial stromal sarcoma																									
Endometrial stromal sarcoma, invasive																									
Ovary	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Papillary cystadenoma, NOS		X																							
Thecoma																									
Granulosa cell tumor																									
NERVOUS SYSTEM																									
Nerves	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Squamous cell carcinoma, metastatic																									
Brain	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS, invasive																X									
Granular cell tumor, NOS																									
Glioma, NOS								X																	
Astrocytoma																									
Astrocytoma, invasive																									
SPECIAL SENSE ORGANS																									
Zymbal gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS																									
Squamous cell papilloma																									
MUSCULOSKELETAL SYSTEM																									
Bone	N	N	N	N	N	+	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Osteosarcoma											X														
BODY CAVITIES																									
Peritoneum	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Pheochromocytoma, invasive																									
Sarcoma, NOS, metastatic																									
Fibrosarcoma																									
Endometrial stromal sarcoma, invasive																									
Mesentery	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Leiomyosarcoma, invasive																									
Mesothelioma, malignant																									
ALL OTHER SYSTEMS																									
Multiple organs, NOS	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Carcinoma, NOS, invasive																									
Squamous cell carcinoma, metastatic																									
Sarcoma, NOS, invasive																									
Sarcoma, NOS, metastatic																									
Liposarcoma, metastatic																									
Mesothelioma, invasive																									
Myelomonocytic leukemia																									
Monocytic leukemia					X				X									X	X		X				

TABLE B2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF FEMALE RATS: 1% AMOSITE (Continued)

ANIMAL NUMBER	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149
WEEKS ON STUDY	139	120	124	120	121	017	017	017	141	114	103	135	125	124	107	093	068	139	128	128	137	121	112	113	144
ENDOCRINE SYSTEM																									
Pituitary	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS													X								X				
Adenoma, NOS	X	X	X	X	X				X	X		X		X	X									X	
Adrenal	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Cortical adenoma		X	X															X	X						
Cortical carcinoma																									
Pheochromocytoma				X					X																
Pheochromocytoma, malignant																									
Thyroid	+	+	+	+	+	−	+	+	+	+	−	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Follicular cell adenoma			X																						X
Follicular cell carcinoma																		X							
C cell adenoma	X																				X				
C-cell carcinoma																									X
Parathyroid	+	+	+	+	+	−	−	+	+	+	−	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Pancreatic islets	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Islet cell adenoma																							X		
Islet cell carcinoma																									
REPRODUCTIVE SYSTEM																									
Mammary gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenoma, NOS										X															
Adenocarcinoma, NOS	X	X		X								X		X		X									
Papillary adenocarcinoma																									
Papillary cystadenoma, NOS																									
Fibroadenoma	X		X	X					X			X	X	X	X			X		X	X	X			X
Preputial/clitoral gland	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Carcinoma, NOS					X						X	X													
Adenoma, NOS																									
Keratoacanthoma																									
Sarcoma, NOS, invasive																									
Uterus	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS		X																							
Adenocarcinoma, NOS																									
Papillary adenoma																									
Papillary adenocarcinoma									X																
Leiomyoma																									
Leiomyosarcoma																									
Endometrial stromal polyp															X		X					X			
Endometrial stromal sarcoma																									
Endometrial stromal sarcoma, invasive																									
Ovary	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Papillary cystadenoma, NOS																									
Thecoma																									
Granulosa cell tumor													X												
NERVOUS SYSTEM																									
Nerves	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Squamous cell carcinoma, metastatic																									
Brain	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS, invasive													X												
Granular cell tumor, NOS																									
Glioma, NOS																									
Astrocytoma																									
Astrocytoma, invasive																									
SPECIAL SENSE ORGANS																									
Zymbal gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS																									
Squamous cell papilloma																									
MUSCULOSKELETAL SYSTEM																									
Bone	N	N	N	N	N	N	N	N	+	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Osteosarcoma																									
BODY CAVITIES																									
Peritoneum	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Pheochromocytoma, invasive																									
Sarcoma, NOS, metastatic																									
Fibrosarcoma																									
Endometrial stromal sarcoma, invasive																									
Mesentery	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Leiomyosarcoma, invasive																									
Mesothelioma, malignant																									
ALL OTHER SYSTEMS																									
Multiple organs, NOS	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Carcinoma, NOS, invasive		X																							
Squamous cell carcinoma, metastatic																									
Sarcoma, NOS, invasive																									
Sarcoma, NOS, metastatic																									
Liposarcoma, metastatic																									
Mesothelioma, invasive																									
Myelomonocytic leukemia																									
Monocytic leukemia	X		X																X	X	X		X		

TABLE B2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF FEMALE RATS: 1% AMOSITE (Continued)

ANIMAL NUMBER	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174
WEEKS ON STUDY	117	129	075	145	120	145	137	135	138	132	101	104	140	145	141	138	115	145	120	145	129	096	123	145	131
ENDOCRINE SYSTEM																									
Pituitary	+	+	+	+	+	+	+	–	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS																									
Adenoma, NOS	X	X	X	X		X				X							X		X		X		X	X	X
Adrenal	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Cortical adenoma																									
Cortical carcinoma																									
Pheochromocytoma		X		X																					
Pheochromocytoma, malignant								X																	
Thyroid	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Follicular cell adenoma					X				X																
Follicular cell carcinoma																									
C cell adenoma								X		X															
C cell carcinoma			X	X					X								X	X		X					
Parathyroid	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	–	+	+
Pancreatic islets	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Islet cell adenoma		X					X																		
Islet cell carcinoma																									
REPRODUCTIVE SYSTEM																									
Mammary gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenoma, NOS																									
Adenocarcinoma, NOS													X					X		X					
Papillary adenocarcinoma																									
Papillary cystadenoma, NOS																									
Fibroadenoma		X		X	X	X		X	X	X			X	X							X		X		
Preputial/clitoral gland	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Carcinoma, NOS																									
Adenoma, NOS																									
Keratoacanthoma																									
Sarcoma, NOS, invasive						X																			
Uterus	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS																									
Adenocarcinoma, NOS																									
Papillary adenoma																									
Papillary adenocarcinoma																									
Leiomyoma																									
Leiomyosarcoma																									
Endometrial stromal polyp	X			X			X						X					X							X
Endometrial stromal sarcoma																									
Endometrial stromal sarcoma, invasive																									
Ovary	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Papillary cystadenoma, NOS																									
Thecoma																									
Granulosa cell tumor																									
NERVOUS SYSTEM																									
Nerves	N	N	N	N	N	N	N	N	N	N	N	N	N	N	+	N	N	N	N	N	N	N	N	N	N
Squamous cell carcinoma, metastatic															X										
Brain	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS, invasive																									
Granular cell tumor, NOS																									
Ghoma, NOS																									
Astrocytoma																									
Astrocytoma, invasive																									
SPECIAL SENSE ORGANS																									
Zymbal gland	+	+	+	+	+	+	+	N	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS																							X		
Squamous cell papilloma																									
MUSCULOSKELETAL SYSTEM																									
Bone	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	+	N
Osteosarcoma																									
BODY CAVITIES																									
Peritoneum	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Pheochromocytoma, invasive																									
Sarcoma, NOS, metastatic																									
Fibrosarcoma																									
Endometrial stromal sarcoma, invasive																									
Mesentery	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Leiomyosarcoma, invasive																									
Mesothelioma, malignant																									
ALL OTHER SYSTEMS																									
Multiple organs, NOS	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Carcinoma, NOS, invasive																									
Squamous cell carcinoma, metastatic																									
Sarcoma, NOS, invasive																									
Sarcoma, NOS, metastatic																									
Liposarcoma, metastatic																									
Mesothelioma, invasive																									
Myelomonocytic leukemia																									
Monocytic leukemia										X	X	X	X			X		X			X			X	X

TABLE B2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF FEMALE RATS: 1% AMOSITE (Continued)

ANIMAL NUMBER	175	926	927	928	929	930	931	932	933	934	935	936	937	938	939	940	941	942	943	944	945	946	947	948	949
WEEKS ON STUDY	135	145	111	145	110	135	114	121	137	116	123	100	126	110	120	138	125	134	128	120	127	102	145	124	085
ENDOCRINE SYSTEM																									
Pituitary	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS												X													X
Adenoma, NOS		X	X	X	X	X					X				X								X		
Adrenal	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Cortical adenoma								X									X								
Cortical carcinoma																									
Pheochromocytoma													X			X					X		X		
Pheochromocytoma, malignant																									
Thyroid	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Follicular cell adenoma													X												
Follicular cell carcinoma																									
C cell adenoma				X															X						
C cell carcinoma																									
Parathyroid	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Pancreatic islets	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Islet cell adenoma																									
Islet cell carcinoma																								X	
REPRODUCTIVE SYSTEM																									
Mammary gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenoma, NOS																		X							
Adenocarcinoma, NOS															X								X		X
Papillary adenocarcinoma																		X							
Papillary cystadenoma, NOS																									
Fibroadenoma	X	X				X	X	X	X	X	X			X		X	X	X	X		X		X		
Preputial/clitoral gland	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Carcinoma, NOS					X											X		X							
Adenoma, NOS																									
Keratoacanthoma																									
Sarcoma, NOS, invasive																									
Uterus	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS																									
Adenocarcinoma, NOS																									
Papillary adenoma		X																							
Papillary adenocarcinoma																									
Leiomyoma																									
Leiomyosarcoma																									
Endometrial stromal polyp				X	X		X	X										X							
Endometrial stromal sarcoma																									
Endometrial stromal sarcoma, invasive																									
Ovary	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Papillary cystadenoma, NOS																									
Thecoma																									
Granulosa cell tumor																									
NERVOUS SYSTEM																									
Nerves	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Squamous cell carcinoma, metastatic																									
Brain	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS, invasive												X													X
Granular cell tumor, NOS																									
Glioma, NOS																									
Astrocytoma																									
Astrocytoma, invasive																									
SPECIAL SENSE ORGANS																									
Zymbal gland	+	+	N	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS																									
Squamous cell papilloma						X																			
MUSCULOSKELETAL SYSTEM																									
Bone	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	+	N	N	N	N	N	N	N
Osteosarcoma																									
BODY CAVITIES																									
Peritoneum	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Pheochromocytoma, invasive																									
Sarcoma, NOS, metastatic																									
Fibrosarcoma																									
Endometrial stromal sarcoma, invasive																									
Mesentery	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Leiomyosarcoma, invasive																X									
Mesothelioma, malignant																									
ALL OTHER SYSTEMS																									
Multiple organs, NOS	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Carcinoma, NOS, invasive																									
Squamous cell carcinoma, metastatic										X															
Sarcoma, NOS, invasive																									
Sarcoma, NOS, metastatic																									
Liposarcoma, metastatic																									
Mesothelioma, invasive																									
Myelomonocytic leukemia																									
Monocytic leukemia		X									X		X				X	X			X	X		X	

TABLE B2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF FEMALE RATS: 1% AMOSITE (Continued)

ANIMAL NUMBER	950	951	952	953	954	955	956	957	958	959	960	961	962	963	964	965	966	967	968	969	970	971	972	973	974
WEEKS ON STUDY	128	111	121	137	098	145	126	132	112	135	140	132	111	109	128	084	116	070	145	124	145	124	145	130	145
ENDOCRINE SYSTEM																									
Pituitary	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS																								X	
Adenoma, NOS		X		X	X		X		X	X			X			X	X				X				X
Adrenal	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Cortical adenoma																							X		
Cortical carcinoma																									
Pheochromocytoma				X			X												X						X
Pheochromocytoma, malignant																							X		
Thyroid	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Follicular cell adenoma																									
Follicular cell carcinoma			X																						
C-cell adenoma	X		X												X								X	X	X
C-cell carcinoma				X																		X			
Parathyroid	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Pancreatic islets	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Islet cell adenoma																									
Islet cell carcinoma																									
REPRODUCTIVE SYSTEM																									
Mammary gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenoma, NOS																									
Adenocarcinoma, NOS																			X						
Papillary adenocarcinoma																									
Papillary cystadenoma, NOS																									
Fibroadenoma	X	X		X				X					X		X		X	X	X				X	X	X
Preputial/clitoral gland	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Carcinoma, NOS																									
Adenoma, NOS																									
Keratoacanthoma																									
Sarcoma, NOS, invasive																					X				
Uterus	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS																									
Adenocarcinoma, NOS																									X
Papillary adenoma																									
Papillary adenocarcinoma																									
Leiomyoma															X										
Leiomyosarcoma				X																					
Endometrial stromal polyp								X									X								
Endometrial stromal sarcoma					X																				
Endometrial stromal sarcoma, invasive																									
Ovary	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Papillary cystadenoma, NOS																									
Thecoma																									
Granulosa cell tumor																									
NERVOUS SYSTEM																									
Nerves	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Squamous cell carcinoma, metastatic																									
Brain	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS, invasive																								X	
Granular cell tumor, NOS																									
Glioma, NOS																									
Astrocytoma																								X	
Astrocytoma, invasive																									
SPECIAL SENSE ORGANS																									
Zymbal gland	+	+	+	+	N	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS																									
Squamous cell papilloma											X														
MUSCULOSKELETAL SYSTEM																									
Bone	N	N	N	N	N	N	N	N	N	N	+	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Osteosarcoma																									
BODY CAVITIES																									
Peritoneum	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Pheochromocytoma, invasive																							X		
Sarcoma, NOS, metastatic												X													
Fibrosarcoma																									
Endometrial stromal sarcoma, invasive																									
Mesentery	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Leiomyosarcoma, invasive																									
Mesothelioma, malignant																									
ALL OTHER SYSTEMS																									
Multiple organs, NOS	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Carcinoma, NOS, invasive																									
Squamous cell carcinoma, metastatic																									
Sarcoma, NOS, invasive												X													
Sarcoma, NOS, metastatic																									
Liposarcoma, metastatic																									
Mesothelioma, invasive																									
Myelomonocytic leukemia																									
Monocytic leukemia	X	X									X		X	X	X				X		X	X			X

TABLE B2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF FEMALE RATS: 1% AMOSITE (Continued)

ANIMAL NUMBER	97 5	97 6	97 7	97 8	97 9	98 0	98 1	98 2	98 3	98 4	98 5	98 6	98 7	98 8	98 9	99 0	99 1	99 2	99 3	99 4	99 5	99 6	99 7	99 8	99 9	TOTAL:
WEEKS ON STUDY	123	123	127	131	089	145	126	143	082	142	132	113	145	102	125	097	139	122	121	143	104	126	126	141	070	TISSUES TUMORS
ENDOCRINE SYSTEM																										
Pituitary	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	249
Carcinoma, NOS											X															11
Adenoma, NOS	X		X							X					X		X	X	X		X					107
Adrenal	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	249
Cortical adenoma													X													13
Cortical carcinoma																							X			1
Pheochromocytoma						X																				27
Pheochromocytoma, malignant																										3
Thyroid	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	247
Follicular cell adenoma				X																						10
Follicular cell carcinoma																										3
C-cell adenoma		X				X						X								X			X			37
C cell carcinoma								X		X	X				X											29
Parathyroid	+	+	+	+	+	+	+	+	+	+	–	+	+	+	+	+	+	+	+	+	+	+	+	+	+	240
Pancreatic islets	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	–	+	249
Islet cell adenoma																										7
Islet cell carcinoma																							X			6
REPRODUCTIVE SYSTEM																										
Mammary gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	*250
Adenoma, NOS	X							X																	X	13
Adenocarcinoma, NOS															X											23
Papillary adenocarcinoma																										2
Papillary cystadenoma, NOS																										1
Fibroadenoma	X	X	X	X		X	X	X			X		X	X			X	X		X	X	X		X	N	135
Preputial/clitoral gland	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	*250
Carcinoma, NOS						X									X	X						X				14
Adenoma, NOS								X																		1
Keratoacanthoma																										1
Sarcoma, NOS, invasive																										2
Uterus	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	250
Carcinoma, NOS																										2
Adenocarcinoma, NOS																										1
Papillary adenoma																										1
Papillary adenocarcinoma																										1
Leiomyoma																										1
Leiomyosarcoma																										1
Endometrial stromal polyp																					X					31
Endometrial stromal sarcoma					X																					4
Endometrial stromal sarcoma, invasive					X																					2
Ovary	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	250
Papillary cystadenoma, NOS																										1
Thecoma																										1
Granulosa cell tumor																				X						3
NERVOUS SYSTEM																										
Nerves	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	*250
Squamous cell carcinoma, metastatic																										1
Brain	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	250
Carcinoma, NOS, invasive											X															8
Granular cell tumor, NOS																										1
Glioma, NOS																										1
Astrocytoma									X					X												4
Astrocytoma, invasive																										1
SPECIAL SENSE ORGANS																										
Zymbal gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	N	*250
Carcinoma, NOS			X								X															4
Squamous cell papilloma																										3
MUSCULOSKELETAL SYSTEM																										
Bone	N	N	N	N	N	+	N	N	N	+	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	*250
Osteosarcoma						X																				2
BODY CAVITIES																										
Peritoneum	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	*250
Pheochromocytoma, invasive																										1
Sarcoma, NOS, metastatic																										1
Fibrosarcoma																										1
Endometrial stromal sarcoma, invasive																										1
Mesentery	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	*250
Leiomyosarcoma, invasive																										1
Mesothelioma, malignant																										1
ALL OTHER SYSTEMS																										
Multiple organs, NOS	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	*250
Carcinoma, NOS, invasive																										1
Squamous cell carcinoma, metastatic																										1
Sarcoma, NOS, invasive													X													2
Sarcoma, NOS, metastatic																										1
Liposarcoma, metastatic																										1
Mesothelioma, invasive																										1
Myelomonocytic leukemia																										1
Monocytic leukemia	X	X				X	X					X	X						X	X		X				78

* Animals necropsied

TABLE B2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF FEMALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS: 1% AMOSITE AND 1,2-DIMETHYLHYDRAZINE DIHYDROCHLORIDE

ANIMAL NUMBER	351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375
WEEKS ON STUDY	083	097	100	106	106	087	106	106	069	074	079	070	102	102	102	055	074	077	091	080	063	085	065	094	078
INTEGUMENTARY SYSTEM																									
Skin	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Squamous cell papilloma																									
Basal cell carcinoma				X																					
Fibrosarcoma																									
Carcinosarcoma																									
Subcutaneous tissue	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS, invasive																									
RESPIRATORY SYSTEM																									
Lungs and bronchi	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Alveolar/bronchiolar adenoma																									
Alveolar/bronchiolar carcinoma																									
Pheochromocytoma, metastatic																									
Liposarcoma, metastatic																									
Mixed tumor, metastatic																									
Carcinosarcoma, metastatic																									
Trachea	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
HEMATOPOIETIC SYSTEM																									
Bone marrow	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Spleen	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Lymph nodes	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenocarcinoma, NOS, metastatic																									
Adenocarcinoma in adenomatous polyp, metastatic																									
Mucinous cystadenocarcinoma, metastatic																									
Signet ring carcinoma, metastatic																									
Thymus	+	+	+	–	–	+	+	+	+	+	+	–	+	+	+	–	+	+	+	+	+	+	+	+	+
CIRCULATORY SYSTEM																									
Heart	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Mixed tumor, metastatic																									
DIGESTIVE SYSTEM																									
Oral cavity	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Squamous cell papilloma																									
Salivary gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Liver	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Neoplastic nodule			X															X							
Hepatocellular carcinoma					X																		X		
Neurofibrosarcoma																									
Monocytic leukemia				X						X															X
Bile duct	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Gallbladder & common bile duct	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Pancreas	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Mixed tumor, invasive																									
Esophagus	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Stomach	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Squamous cell papilloma																									
Signet ring carcinoma, metastatic																									
Mixed tumor, invasive																									
Small intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenocarcinoma, NOS	X						X															X		X	
Adenocarcinoma in adenomatous polyp																									
Adenocarcinoma in adenomatous polyp, metastatic																									
Mucinous cystadenocarcinoma																									
Signet ring carcinoma																									
Large intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma in situ, NOS																									
Adenocarcinoma, NOS								X	X																
Adenomatous polyp, NOS		X		X	X			X		X	X	X		X			X	X		X					
Adenocarcinoma in adenomatous polyp				X			@X			X		X			X			X	X			X			X
Mucinous cystadenocarcinoma																							X		X
Mucinous cystadenocarcinoma, metastatic																									
Signet ring carcinoma																			X						
Signet ring carcinoma, metastatic																									
Rectum	+	+	+	+	+	N	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenomatous polyp, NOS																									
URINARY SYSTEM																									
Kidney	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Tubular cell adenoma																									
Tubular cell adenocarcinoma																									
Sarcoma, NOS																				X			X		
Mixed tumor, malignant		X								X	X			X							X				
Hemangioma																									
Urinary bladder	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	–
Endometrial stromal sarcoma, invasive																									

@ Multiple occurrence of morphology

TABLE B2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF FEMALE RATS: 1% AMOSITE AND 1,2-DIMETHYLHYDRAZINE DIHYDROCHLORIDE (Continued)

ANIMAL NUMBER	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400
WEEKS ON STUDY	055	086	080	078	070	106	072	059	097	091	072	084	095	106	075	088	073	106	077	095	071	106	074	062	077
INTEGUMENTARY SYSTEM																									
Skin	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Squamous cell papilloma																									
Basal cell carcinoma																									
Fibrosarcoma																									
Carcinosarcoma																									
Subcutaneous tissue	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS, invasive																									
RESPIRATORY SYSTEM																									
Lungs and bronchi	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Alveolar/bronchiolar adenoma																									
Alveolar/bronchiolar carcinoma																									
Pheochromocytoma, metastatic																									
Liposarcoma, metastatic																									
Mixed tumor, metastatic																									
Carcinosarcoma, metastatic																									
Trachea	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
HEMATOPOIETIC SYSTEM																									
Bone marrow	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Spleen	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Lymph nodes	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenocarcinoma, NOS, metastatic						X																			
Adenocarcinoma in adenomatous polyp, metastatic																	X								
Mucinous cystadenocarcinoma, metastatic																									
Signet ring carcinoma, metastatic																								X	
Thymus	+	+	–	+	+	+	–	–	+	+	+	+	+	+	–	+	+	+	+	–	+	+	–	+	–
CIRCULATORY SYSTEM																									
Heart	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Mixed tumor, metastatic																									
DIGESTIVE SYSTEM																									
Oral cavity	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Squamous cell papilloma																									
Salivary gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Liver	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Neoplastic nodule						X				X			X					X		X		X				
Hepatocellular carcinoma								X		X															
Neurofibrosarcoma																									
Monocytic leukemia																									
Bile duct	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Gallbladder & common bile duct	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Pancreas	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Mixed tumor, invasive																									
Esophagus	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Stomach	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Squamous cell papilloma																									
Signet ring carcinoma, metastatic																									
Mixed tumor, invasive																									
Small intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenocarcinoma, NOS																									
Adenocarcinoma in adenomatous polyp											X														
Adenocarcinoma in adenomatous polyp, metastatic																				X					
Mucinous cystadenocarcinoma																X									
Signet ring carcinoma																									
Large intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma in situ, NOS																									
Adenocarcinoma, NOS						X																			
Adenomatous polyp, NOS		X		X		X					X	X							X			X			X
Adenocarcinoma in adenomatous polyp	X									X	X		X				X			X	X				X
Mucinous cystadenocarcinoma																									
Mucinous cystadenocarcinoma, metastatic																									
Signet ring carcinoma																					X		X		
Signet ring carcinoma, metastatic																									
Rectum	N	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenomatous polyp, NOS																									
URINARY SYSTEM																									
Kidney	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Tubular cell adenoma																									
Tubular cell adenocarcinoma																									
Sarcoma, NOS	X																								
Mixed tumor, malignant			X									X		X			X						X	X	
Hemangioma																									
Urinary bladder	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Endometrial stromal sarcoma, invasive																									

TABLE B2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF FEMALE RATS: 1% AMOSITE AND 1,2-DIMETHYLHYDRAZINE DIHYDROCHLORIDE (Continued)

ANIMAL NUMBER	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425
WEEKS ON STUDY	049	084	106	049	077	077	073	081	067	061	080	095	091	088	094	074	088	073	064	060	078	070	091	082	091
INTEGUMENTARY SYSTEM																									
Skin	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Squamous cell papilloma																									
Basal cell carcinoma																									
Fibrosarcoma																									
Carcinosarcoma																									
Subcutaneous tissue	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS, invasive																									
RESPIRATORY SYSTEM																									
Lungs and bronchi	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Alveolar/bronchiolar adenoma																									
Alveolar/bronchiolar carcinoma																									
Pheochromocytoma, metastatic																									
Liposarcoma, metastatic																									
Mixed tumor, metastatic																									
Carcinosarcoma, metastatic																									
Trachea	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
HEMATOPOIETIC SYSTEM																									
Bone marrow	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Spleen	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Lymph nodes	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenocarcinoma, NOS, metastatic						X																			
Adenocarcinoma in adenomatous polyp, metastatic																									
Mucinous cystadenocarcinoma, metastatic																									
Signet ring carcinoma, metastatic															X										
Thymus	+	+	+	+	+	+	–	+	–	+	–	+	+	+	+	+	+	–	+	+	+	+	+	+	+
CIRCULATORY SYSTEM																									
Heart	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Mixed tumor, metastatic																									
DIGESTIVE SYSTEM																									
Oral cavity	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Squamous cell papilloma			X																						
Salivary gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Liver	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Neoplastic nodule		X									X		X	X											X
Hepatocellular carcinoma															X		X								
Neurofibrosarcoma																									
Monocytic leukemia																									
Bile duct	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Gallbladder & common bile duct	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Pancreas	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Mixed tumor, invasive														X											
Esophagus	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Stomach	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Squamous cell papilloma																									
Signet ring carcinoma, metastatic																									
Mixed tumor, invasive																									
Small intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenocarcinoma, NOS																		X							
Adenocarcinoma in adenomatous polyp																									
Adenocarcinoma in adenomatous polyp, metastatic																									
Mucinous cystadenocarcinoma							X																		
Signet ring carcinoma								X							X							X	X		
Large intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma in situ, NOS																	X								
Adenocarcinoma, NOS						X															X				
Adenomatous polyp, NOS	X			X				X			X	X			X		X				X		X		X
Adenocarcinoma in adenomatous polyp			X	X									X								X		X	X	
Mucinous cystadenocarcinoma							X																		
Mucinous cystadenocarcinoma, metastatic																									
Signet ring carcinoma																									
Signet ring carcinoma, metastatic															X										
Rectum	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenomatous polyp, NOS																									
URINARY SYSTEM																									
Kidney	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Tubular cell adenoma																									
Tubular cell adenocarcinoma																									
Sarcoma, NOS				X																X					
Mixed tumor, malignant					X		X			X		X		X		X			X						X
Hemangioma																									
Urinary bladder	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Endometrial stromal sarcoma, invasive																									

TABLE B2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF FEMALE RATS: 1% AMOSITE AND 1,2-DIMETHYLHYDRAZINE DIHYDROCHLORIDE (Continued)

ANIMAL NUMBER	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450
WEEKS ON STUDY	088	066	054	079	088	091	060	100	073	057	106	062	101	066	048	106	081	077	073	083	106	069	102	043	106
INTEGUMENTARY SYSTEM																									
Skin	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Squamous cell papilloma																									X
Basal cell carcinoma																									
Fibrosarcoma																									
Carcinosarcoma									X																
Subcutaneous tissue	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS, invasive																									
RESPIRATORY SYSTEM																									
Lungs and bronchi	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Alveolar/bronchiolar adenoma																									X
Alveolar/bronchiolar carcinoma																									
Pheochromocytoma, metastatic																									
Liposarcoma, metastatic																									
Mixed tumor, metastatic			X																						
Carcinosarcoma, metastatic									X																
Trachea	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
HEMATOPOIETIC SYSTEM																									
Bone marrow	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Spleen	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Lymph nodes	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenocarcinoma, NOS, metastatic																									
Adenocarcinoma in adenomatous polyp, metastatic																						X			
Mucinous cystadenocarcinoma, metastatic																									
Signet ring carcinoma, metastatic																									
Thymus	–	+	+	+	+	+	–	+	–	+	–	+	+	+	+	+	+	–	+	+	–	+	+	–	+
CIRCULATORY SYSTEM																									
Heart	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Mixed tumor, metastatic			X																						
DIGESTIVE SYSTEM																									
Oral cavity	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Squamous cell papilloma																									
Salivary gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Liver	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Neoplastic nodule						X					X											X			
Hepatocellular carcinoma																									
Neurofibrosarcoma																									
Monocytic leukemia													X												
Bile duct	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Gallbladder & common bile duct	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Pancreas	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Mixed tumor, invasive																									
Esophagus	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Stomach	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Squamous cell papilloma																									
Signet ring carcinoma, metastatic												X													
Mixed tumor, invasive																									
Small intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenocarcinoma, NOS											X							X						X	
Adenocarcinoma in adenomatous polyp																									X
Adenocarcinoma in adenomatous polyp, metastatic																									
Mucinous cystadenocarcinoma																									
Signet ring carcinoma												X													
Large intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma in situ, NOS																									
Adenocarcinoma, NOS									X																
Adenomatous polyp, NOS				X			X		X		X						X				X				
Adenocarcinoma in adenomatous polyp							X											X				X			
Mucinous cystadenocarcinoma																									
Mucinous cystadenocarcinoma, metastatic																									
Signet ring carcinoma															X										
Signet ring carcinoma, metastatic																									
Rectum	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	N	+	+	+	+
Adenomatous polyp, NOS																									
URINARY SYSTEM																									
Kidney	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Tubular cell adenoma																									
Tubular cell adenocarcinoma																									
Sarcoma, NOS		X					X								X		X			X					
Mixed tumor, malignant	X		X	X	X	X								X				X			X				
Hemangioma																									
Urinary bladder	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	–	+	+	+	+	+	+	+	+	+
Endometrial stromal sarcoma, invasive																									

TABLE B2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF FEMALE RATS: 1% AMOSITE AND 1,2-DIMETHYLHYDRAZINE DIHYDROCHLORIDE (Continued)

ANIMAL NUMBER	45 51	45 52	45 53	45 54	45 55	45 56	45 57	45 58	45 59	46 00	46 01	46 02	46 03	46 04	46 05	46 06	46 67	46 68	46 69	47 00	47 11	47 12	47 13	47 14	47 75
WEEKS ON STUDY	06 77	05 00	10 06	10 06	10 04	07 79	06 99	10 06	10 06	06 33	07 77	07 77	09 92	07 66	10 55	10 06	07 74	10 06	09 94	06 88	09 99	08 83	07 71	06 67	09 93
INTEGUMENTARY SYSTEM																									
Skin	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Squamous cell papilloma																									
Basal cell carcinoma																									
Fibrosarcoma																						X			
Carcinosarcoma																									
Subcutaneous tissue	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS, invasive																									
RESPIRATORY SYSTEM																									
Lungs and bronchi	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Alveolar/bronchiolar adenoma																	X								
Alveolar/bronchiolar carcinoma																									
Pheochromocytoma, metastatic																									
Liposarcoma, metastatic																									
Mixed tumor, metastatic																									
Carcinosarcoma, metastatic																									
Trachea	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
HEMATOPOIETIC SYSTEM																									
Bone marrow	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	–	+	+
Spleen	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Lymph nodes	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenocarcinoma, NOS, metastatic																									
Adenocarcinoma in adenomatous polyp, metastatic																									
Mucinous cystadenocarcinoma, metastatic																									
Signet ring carcinoma, metastatic											X														
Thymus	+	–	–	+	+	+	–	+	+	–	–	–	+	–	–	+	–	+	+	+	+	+	+	+	+
CIRCULATORY SYSTEM																									
Heart	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Mixed tumor, metastatic																									
DIGESTIVE SYSTEM																									
Oral cavity	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Squamous cell papilloma																									
Salivary gland	+	+	+	+	+	+	+	+	+	+	+	+	+	–	+	+	+	+	+	+	+	+	+	+	+
Liver	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Neoplastic nodule									X				X				X				X				X
Hepatocellular carcinoma																					X				
Neurofibrosarcoma			X																						
Monocytic leukemia																	X				X				
Bile duct	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Gallbladder & common bile duct	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Pancreas	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Mixed tumor, invasive																									
Esophagus	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Stomach	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Squamous cell papilloma																									
Signet ring carcinoma, metastatic																									
Mixed tumor, invasive																									
Small intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenocarcinoma, NOS										X													X		
Adenocarcinoma in adenomatous polyp																									
Adenocarcinoma in adenomatous polyp, metastatic																									
Mucinous cystadenocarcinoma																									
Signet ring carcinoma	X																								
Large intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma in situ, NOS																									
Adenocarcinoma, NOS																			X						X
Adenomatous polyp, NOS			X						X				X					@X			X	X			X
Adenocarcinoma in adenomatous polyp						X					X		@X		X		X								
Mucinous cystadenocarcinoma																									
Mucinous cystadenocarcinoma, metastatic																									
Signet ring carcinoma		X									X														
Signet ring carcinoma, metastatic	X																								
Rectum	+	+	+	+	+	+	N	+	+	+	+	+	+	N	+	+	+	+	+	+	+	+	+	+	+
Adenomatous polyp, NOS																	X								
URINARY SYSTEM																									
Kidney	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Tubular cell adenoma				X																					
Tubular cell adenocarcinoma								X									X								
Sarcoma, NOS							X							X						X		X		X	
Mixed tumor, malignant																				X					
Hemangioma																									
Urinary bladder	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Endometrial stromal sarcoma, invasive																									

@ Multiple occurrence of morphology

TABLE B2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF FEMALE RATS: 1% AMOSITE AND 1,2-DIMETHYLHYDRAZINE DIHYDROCHLORIDE (Continued)

ANIMAL NUMBER	47601	47703	47807	47909	48005	48106	48201	48309	48407	48506	48606	48706	48806	48906	49006	49106	49206	49306	49406	49506	49606	49706	49806	49906	50006
WEEKS ON STUDY	071	103	070	069	095	106	091	097	068	076	106	106	096	106	106	103	060	106	106	066	106	088	106	106	099
INTEGUMENTARY SYSTEM																									
Skin	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Squamous cell papilloma																									
Basal cell carcinoma																									
Fibrosarcoma																									
Carcinosarcoma																									
Subcutaneous tissue	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS, invasive																									
RESPIRATORY SYSTEM																									
Lungs and bronchi	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Alveolar/bronchiolar adenoma																									
Alveolar/bronchiolar carcinoma																									
Pheochromocytoma, metastatic											X														
Liposarcoma, metastatic															X										
Mixed tumor, metastatic																									
Carcinosarcoma, metastatic																									
Trachea	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
HEMATOPOIETIC SYSTEM																									
Bone marrow	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Spleen	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Lymph nodes	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenocarcinoma, NOS, metastatic																									
Adenocarcinoma in adenomatous polyp, metastatic																									
Mucinous cystadenocarcinoma, metastatic																									
Signet ring carcinoma, metastatic																								X	
Thymus	+	+	+	–	+	+	+	+	+	+	+	+	–	+	+	+	–	+	+	+	+	+	+	+	+
CIRCULATORY SYSTEM																									
Heart	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Mixed tumor, metastatic																									
DIGESTIVE SYSTEM																									
Oral cavity	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Squamous cell papilloma																									
Salivary gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Liver	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Neoplastic nodule							X				X	X					X		X				X		
Hepatocellular carcinoma																								X	
Neurofibrosarcoma																									
Monocytic leukemia																									
Bile duct	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Gallbladder & common bile duct	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Pancreas	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Mixed tumor, invasive																									
Esophagus	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Stomach	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Squamous cell papilloma																									
Signet ring carcinoma, metastatic																									
Mixed tumor, invasive																									
Small intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenocarcinoma, NOS																									
Adenocarcinoma in adenomatous polyp																									
Adenocarcinoma in adenomatous polyp, metastatic																									
Mucinous cystadenocarcinoma																									
Signet ring carcinoma										X															
Large intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma in situ, NOS																									
Adenocarcinoma, NOS																									
Adenomatous polyp, NOS								X	X		X					X		X						X	X
Adenocarcinoma in adenomatous polyp	X			X			X				X	X								@X	X				
Mucinous cystadenocarcinoma																	X		X						
Mucinous cystadenocarcinoma, metastatic																									
Signet ring carcinoma																							X	X	
Signet ring carcinoma, metastatic																									
Rectum	+	+	+	+	+	+	+	+	+	+	+	+	N	+	+	+	+	+	+	+	+	+	+	+	+
Adenomatous polyp, NOS																									
URINARY SYSTEM																									
Kidney	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Tubular cell adenoma																									
Tubular cell adenocarcinoma																									
Sarcoma, NOS			X																	X					
Mixed tumor, malignant				X						X			X												
Hemangioma																								X	
Urinary bladder	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Endometrial stromal sarcoma, invasive																								X	

@ Multiple occurrence of morphology

TABLE B2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF FEMALE RATS: 1% AMOSITE AND 1,2-DIMETHYLHYDRAZINE DIHYDROCHLORIDE (Continued)

ANIMAL NUMBER	501	502	503	504	505	506	507	508	509	510	511	512	513	514	515	516	517	518	519	520	521	522	523	524	525	TOTAL:
WEEKS ON STUDY	080	106	039	080	082	090	080	106	080	080	085	069	099	088	079	063	091	091	097	085	069	093	084	078	106	TISSUES TUMORS
INTEGUMENTARY SYSTEM																										
Skin	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	*175
Squamous cell papilloma																										1
Basal cell carcinoma																										1
Fibrosarcoma																										1
Carcinosarcoma																										1
Subcutaneous tissue	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	*175
Carcinoma, NOS, invasive																	X									1
RESPIRATORY SYSTEM																										
Lungs and bronchi	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	175
Alveolar/bronchiolar adenoma																										1
Alveolar/bronchiolar carcinoma																										1
Pheochromocytoma, metastatic																										1
Liposarcoma, metastatic																										1
Mixed tumor, metastatic																										1
Carcinosarcoma, metastatic																										1
Trachea	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	175
HEMATOPOIETIC SYSTEM																										
Bone marrow	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	174
Spleen	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	175
Lymph nodes	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	175
Adenocarcinoma, NOS, metastatic																										2
Adenoca in adenomatous polyp, meta																										2
Mucinous cystadenocarcinoma, meta														X												1
Signet ring carcinoma, metastatic																										4
Thymus	–	+	+	–	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	139
CIRCULATORY SYSTEM																										
Heart	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	175
Mixed tumor, metastatic																										1
DIGESTIVE SYSTEM																										
Oral cavity	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	*175
Squamous cell papilloma																										1
Salivary gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	174
Liver	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	175
Neoplastic nodule		X					X										X	X			X					32
Hepatocellular carcinoma																										8
Neurofibrosarcoma																										1
Monocytic leukemia														X												7
Bile duct	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	175
Gallbladder & common bile duct	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	*175
Pancreas	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	175
Mixed tumor, invasive																										1
Esophagus	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	175
Stomach	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	175
Squamous cell papilloma																								X		1
Signet ring carcinoma, metastatic																										1
Mixed tumor, invasive																			X							1
Small intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	175
Adenocarcinoma, NOS								X																		11
Adenocarcinoma in adenomatous polyp																										2
Adenoca in adenomatous polyp, meta																										1
Mucinous cystadenocarcinoma																										2
Signet ring carcinoma							X																			8
Large intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	175
Carcinoma in-situ, NOS										X																2
Adenocarcinoma, NOS																X										9
Adenomatous polyp, NOS				X		X		X	@X	X	X				X		X				X		X			59
Adenocarcinoma in adenomatous polyp	X					X				X	X				X		X				X			X		46
Mucinous cystadenocarcinoma														X										X		7
Mucinous cystadenocarcinoma, meta														X												1
Signet ring carcinoma					X																					9
Signet ring carcinoma, metastatic																										2
Rectum	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	*175
Adenomatous polyp, NOS																										1
URINARY SYSTEM																										
Kidney	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	175
Tubular cell adenoma																										1
Tubular cell adenocarcinoma																										2
Sarcoma, NOS			X									X														19
Mixed tumor, malignant											X					X			X				X			35
Hemangioma																										1
Urinary bladder	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	173
Endometrial stromal sarcoma, invasive																										1

* Animals necropsied
@ Multiple occurrence of morphology

TABLE B2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF FEMALE RATS: 1% AMOSITE AND 1,2-DIMETHYLHYDRAZINE DIHYDROCHLORIDE (Continued)

ANIMAL NUMBER	351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375
WEEKS ON STUDY	083	097	100	106	106	087	106	106	069	074	079	070	102	102	102	055	074	077	091	080	063	085	065	094	078
ENDOCRINE SYSTEM																									
Pituitary	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS																									
Adenoma, NOS		X		X	X				X			X		X										
Adrenal	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Cortical adenoma							X								X			X							
Pheochromocytoma																									
Pheochromocytoma, malignant																									
Sarcoma, NOS, invasive																									
Mixed tumor, invasive																									
Ganglioneuroma																									
Thyroid	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Follicular cell adenoma																									
Follicular cell carcinoma																									
C-cell adenoma																									X
C-cell carcinoma			X																						
Parathyroid	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Pancreatic islets	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Islet cell adenoma																									
REPRODUCTIVE SYSTEM																									
Mammary gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenoma, NOS																								X	
Papillary adenocarcinoma																									
Fibroadenoma				X																					
Preputial/clitoral gland	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Carcinoma, NOS																									
Keratoacanthoma																									
Uterus	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Fibrosarcoma																									
Leiomyoma																									
Endometrial stromal polyp			X														X					X			X
Endometrial stromal sarcoma																									
Endometrial stromal sarcoma, invasive																									
Angioma																									
Ovary	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Papillary cystadenocarcinoma, NOS																									
NERVOUS SYSTEM																									
Brain	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
SPECIAL SENSE ORGANS																									
Ear	+	+	+	+	+	+	+	+	+	N	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Squamous cell papilloma																									
Squamous cell carcinoma																									
Zymbal gland	+	+	+	+	+	+	+	+	+	N	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS		X											X			X				X					
Squamous cell papilloma															X										
Keratoacanthoma																									
MUSCULOSKELETAL SYSTEM																									
Bone	+	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Carcinoma, NOS, invasive																									
BODY CAVITIES																									
Mediastinum	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Signet ring carcinoma, metastatic																									
Pericardium	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Mesothelioma, NOS																									
Peritoneum	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Sarcoma, NOS, invasive																									
Lipoma				X																					
Mixed tumor, invasive																									
Mesentery	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Adenocarcinoma, NOS, metastatic																									
Sarcoma, NOS, invasive																									
ALL OTHER SYSTEMS																									
Multiple organs, NOS	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Adenocarcinoma, NOS, metastatic	X						X															X		X	
Mucinous cystadenocarcinoma, metastatic																							X		X
Signet ring carcinoma, metastatic																			X						
Monocytic leukemia		X	X		X	X							X	X				X							
Orbital region																									
Sarcoma, NOS																									

TABLE B2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF FEMALE RATS: 1% AMOSITE AND 1,2-DIMETHYLHYDRAZINE DIHYDROCHLORIDE (Continued)

ANIMAL NUMBER	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400
WEEKS ON STUDY	055	086	080	078	070	106	072	059	097	091	072	084	095	106	075	088	073	106	077	095	071	106	074	062	077
ENDOCRINE SYSTEM																									
Pituitary	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS																									
Adenoma, NOS														X		X									
Adrenal	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Cortical adenoma																									
Pheochromocytoma																									
Pheochromocytoma, malignant																									
Sarcoma, NOS, invasive																									
Mixed tumor, invasive																									
Ganglioneuroma																									
Thyroid	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Follicular cell adenoma																									
Follicular cell carcinoma																		X							
C-cell adenoma																									
C-cell carcinoma																		X							
Parathyroid	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Pancreatic islets	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Islet cell adenoma																									
REPRODUCTIVE SYSTEM																									
Mammary gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenoma, NOS																									
Papillary adenocarcinoma												X													
Fibroadenoma		X				X								X				X							
Preputial/clitoral gland	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Carcinoma, NOS														X											
Keratoacanthoma					X																				
Uterus	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Fibrosarcoma																									
Leiomyoma																									
Endometrial stromal polyp																									X
Endometrial stromal sarcoma																									
Endometrial stromal sarcoma, invasive																									
Angioma																									
Ovary	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Papillary cystadenocarcinoma, NOS																			X						
NERVOUS SYSTEM																									
Brain	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
SPECIAL SENSE ORGANS																									
Ear	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Squamous cell papilloma																									
Squamous cell carcinoma																									
Zymbal gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS				X			X	X			X														
Squamous cell papilloma																							X	X	
Keratoacanthoma																									
MUSCULOSKELETAL SYSTEM																									
Bone	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Carcinoma, NOS, invasive																									
BODY CAVITIES																									
Mediastinum	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Signet ring carcinoma, metastatic																									
Pericardium	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Mesothelioma, NOS																									
Peritoneum	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Sarcoma, NOS, invasive																									
Lipoma																									
Mixed tumor, invasive																									
Mesentery	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Adenocarcinoma, NOS, metastatic						X																			
Sarcoma, NOS, invasive																									
ALL OTHER SYSTEMS																									
Multiple organs, NOS	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Adenocarcinoma, NOS, metastatic																									
Mucinous cystadenocarcinoma, metastatic																									
Signet ring carcinoma, metastatic																					X				
Monocytic leukemia									X	X			X		X	X				X		X	X		
Orbital region																									
Sarcoma, NOS																									

TABLE B2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF FEMALE RATS: 1% AMOSITE AND 1,2-DIMETHYLHYDRAZINE DIHYDROCHLORIDE (Continued)

ANIMAL NUMBER	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425
WEEKS ON STUDY	049	084	106	049	077	077	073	081	067	061	080	095	091	088	094	074	088	073	064	080	078	070	091	082	091
ENDOCRINE SYSTEM																									
Pituitary	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	X	+	+	+
Carcinoma, NOS																									
Adenoma, NOS																									
Adrenal	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Cortical adenoma																									
Pheochromocytoma																									
Pheochromocytoma, malignant																									
Sarcoma, NOS, invasive																									
Mixed tumor, invasive														X											
Ganglioneuroma																									
Thyroid	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Follicular cell adenoma		X	X																						
Follicular cell carcinoma																									
C cell adenoma																									X
C cell carcinoma													X												
Parathyroid	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Pancreatic islets	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Islet cell adenoma																									
REPRODUCTIVE SYSTEM																									
Mammary gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenoma, NOS																									
Papillary adenocarcinoma																									
Fibroadenoma													X				X								
Preputial/clitoral gland	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Carcinoma, NOS																									
Keratoacanthoma																									
Uterus	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Fibrosarcoma																									
Leiomyoma																									
Endometrial stromal polyp																									X
Endometrial stromal sarcoma																									
Endometrial stromal sarcoma, invasive																									
Angioma																									
Ovary	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Papillary cystadenocarcinoma, NOS																									
NERVOUS SYSTEM																									
Brain	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
SPECIAL SENSE ORGANS																									
Ear	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Squamous cell papilloma													X												
Squamous cell carcinoma																									
Zymbal gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS	X								X																
Squamous cell papilloma				X				X																	
Keratoacanthoma											X														
MUSCULOSKELETAL SYSTEM																									
Bone	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	+	N	N	N
Carcinoma, NOS, invasive																									
BODY CAVITIES																									
Mediastinum	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Signet ring carcinoma, metastatic																									
Pericardium	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Mesothelioma, NOS																									
Peritoneum	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Sarcoma, NOS, invasive																									
Lipoma																									
Mixed tumor, invasive																									
Mesentery	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Adenocarcinoma, NOS, metastatic																									
Sarcoma, NOS, invasive																									
ALL OTHER SYSTEMS																									
Multiple organs, NOS	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Adenocarcinoma, NOS, metastatic																		X							
Mucinous cystadenocarcinoma, metastatic																									
Signet ring carcinoma, metastatic																						X			
Monocytic leukemia		X	X										X										X		
Orbital region																									
Sarcoma, NOS																									

TABLE B2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF FEMALE RATS: 1% AMOSITE AND 1,2-DIMETHYLHYDRAZINE DIHYDROCHLORIDE (Continued)

ANIMAL NUMBER	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450
WEEKS ON STUDY	088	066	054	079	088	091	060	100	073	057	106	062	101	066	048	106	081	077	073	083	106	069	102	043	106
ENDOCRINE SYSTEM																									
Pituitary	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS																									
Adenoma, NOS								X													X				
Adrenal	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Cortical adenoma																									
Pheochromocytoma								X																	
Pheochromocytoma, malignant																									
Sarcoma, NOS, invasive																	X								
Mixed tumor, invasive					X																				
Ganglioneuroma																									
Thyroid	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Follicular cell adenoma																				X					
Follicular cell carcinoma																									
C-cell adenoma								X																	
C-cell carcinoma																									
Parathyroid	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	–	+	+	+	+	+	+
Pancreatic islets	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Islet cell adenoma																							X		
REPRODUCTIVE SYSTEM																									
Mammary gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenoma, NOS																									
Papillary adenocarcinoma																									
Fibroadenoma											X										X				
Preputial/clitoral gland	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Carcinoma, NOS																X									
Keratoacanthoma																									
Uterus	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Fibrosarcoma																									
Leiomyoma																									
Endometrial stromal polyp																	X								
Endometrial stromal sarcoma																									
Endometrial stromal sarcoma, invasive																									
Angioma																									
Ovary	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Papillary cystadenocarcinoma, NOS																									
NERVOUS SYSTEM																									
Brain	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
SPECIAL SENSE ORGANS																									
Ear	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	N	+	+	+	+	+	+
Squamous cell papilloma																									
Squamous cell carcinoma																									
Zymbal gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	N	+	+	+	+	+	+
Carcinoma, NOS	X									X												X			
Squamous cell papilloma																		X			X				
Keratoacanthoma													X												
MUSCULOSKELETAL SYSTEM																									
Bone	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Carcinoma, NOS, invasive																									
BODY CAVITIES																									
Mediastinum	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Signet ring carcinoma, metastatic																									
Pericardium	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Mesothelioma, NOS																									
Peritoneum	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Sarcoma, NOS, invasive															X										
Lipoma																									
Mixed tumor, invasive																									
Mesentery	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Adenocarcinoma, NOS, metastatic																									
Sarcoma, NOS, invasive																									
ALL OTHER SYSTEMS																									
Multiple organs, NOS	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Adenocarcinoma, NOS, metastatic									X									X						X	
Mucinous cystadenocarcinoma, metastatic																									
Signet ring carcinoma, metastatic		X																							
Monocytic leukemia						X		X			X	X								X		X		X	
Orbital region																									
Sarcoma, NOS																									

TABLE B2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF FEMALE RATS: 1% AMOSITE AND 1,2-DIMETHYLHYDRAZINE DIHYDROCHLORIDE (Continued)

ANIMAL NUMBER	451	452	453	454	455	456	457	458	459	460	461	462	463	464	465	466	467	468	469	470	471	472	473	474	475
WEEKS ON STUDY	067	050	106	106	104	079	069	106	106	063	077	077	092	076	105	106	074	106	094	068	099	083	071	067	093
ENDOCRINE SYSTEM																									
Pituitary	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS																									
Adenoma, NOS			X												X						X				X
Adrenal	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Cortical adenoma				X																					
Pheochromocytoma																									
Pheochromocytoma, malignant																									
Sarcoma, NOS, invasive																									
Mixed tumor, invasive																									
Ganglioneuroma																									
Thyroid	+	+	+	+	+	+	+	+	+	+	+	+	+	–	+	+	+	+	+	+	+	+	+	+	+
Follicular cell adenoma																X									X
Follicular cell carcinoma																									
C-cell adenoma						X									X										X
C cell carcinoma																		X							
Parathyroid	+	+	+	+	+	+	+	+	+	+	+	+	+	–	+	+	+	+	+	+	+	+	+	+	+
Pancreatic islets	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Islet cell adenoma					X																				
REPRODUCTIVE SYSTEM																									
Mammary gland	+	N	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenoma, NOS																									
Papillary adenocarcinoma																									
Fibroadenoma				X							X														X
Preputial/clitoral gland	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Carcinoma, NOS																									
Keratoacanthoma																									
Uterus	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Fibrosarcoma																									
Leiomyoma																									
Endometrial stromal polyp			X	X	X									X	X	X									
Endometrial stromal sarcoma																					X				
Endometrial stromal sarcoma, invasive																					X				
Angioma																									
Ovary	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Papillary cystadenocarcinoma, NOS																									
NERVOUS SYSTEM																									
Brain	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
SPECIAL SENSE ORGANS																									
Ear	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Squamous cell papilloma																									
Squamous cell carcinoma																									
Zymbal gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS	X		X														X		X			X	X		X
Squamous cell papilloma																		X							
Keratoacanthoma																									
MUSCULOSKELETAL SYSTEM																									
Bone	N	N	N	N	N	N	N	N	N	+	N	N	N	N	N	N	N	N	N	N	N	N	+	N	N
Carcinoma, NOS, invasive																									
BODY CAVITIES																									
Mediastinum	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Signet ring carcinoma, metastatic	X																								
Pericardium	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Mesothelioma, NOS										X															
Peritoneum	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Sarcoma, NOS, invasive																									
Lipoma																									
Mixed tumor, invasive																									
Mesentery	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Adenocarcinoma, NOS, metastatic																									
Sarcoma, NOS, invasive																									
ALL OTHER SYSTEMS																									
Multiple organs, NOS	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Adenocarcinoma, NOS, metastatic										X															
Mucinous cystadenocarcinoma, metastatic																									
Signet ring carcinoma, metastatic		X																							
Monocytic leukemia					X			X	X			X	X		X		X								
Orbital region																									
Sarcoma, NOS																			X						

TABLE B2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF FEMALE RATS: 1% AMOSITE AND 1,2-DIMETHYLHYDRAZINE DIHYDROCHLORIDE (Continued)

ANIMAL NUMBER	476	477	478	479	480	481	482	483	484	485	486	487	488	489	490	491	492	493	494	495	496	497	498	499	500
WEEKS ON STUDY	071	103	070	069	095	106	091	097	068	076	106	106	096	106	106	103	060	106	106	066	106	088	106	106	099
ENDOCRINE SYSTEM																									
Pituitary	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS																									
Adenoma, NOS															X										
Adrenal	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Cortical adenoma																									
Pheochromocytoma																									
Pheochromocytoma, malignant											X														
Sarcoma, NOS, invasive																									
Mixed tumor, invasive													X												
Ganglioneuroma					X																				
Thyroid	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Follicular cell adenoma																									
Follicular cell carcinoma																									
C cell adenoma																		X					X		
C-cell carcinoma													X											X	
Parathyroid	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Pancreatic islets	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Islet cell adenoma																									
REPRODUCTIVE SYSTEM																									
Mammary gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Adenoma, NOS							X																		
Papillary adenocarcinoma																									
Fibroadenoma							X				X				X		X	X							
Preputial/clitoral gland	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Carcinoma, NOS															X										
Keratoacanthoma																									
Uterus	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Fibrosarcoma						X																			
Leiomyoma																									
Endometrial stromal polyp				X											X										
Endometrial stromal sarcoma																								X	
Endometrial stromal sarcoma, invasive																								X	
Angioma									X																
Ovary	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Papillary cystadenocarcinoma, NOS																									
NERVOUS SYSTEM																									
Brain	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
SPECIAL SENSE ORGANS																									
Ear	+	+	+	+	+	+	+	+	N	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Squamous cell papilloma																									
Squamous cell carcinoma																				X					
Zymbal gland	+	+	+	+	+	+	+	+	N	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS																									
Squamous cell papilloma	X										X		X			X									
Keratoacanthoma																									
MUSCULOSKELETAL SYSTEM																									
Bone	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Carcinoma, NOS, invasive																									
BODY CAVITIES																									
Mediastinum	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Signet ring carcinoma, metastatic																									
Pericardium	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Mesothelioma, NOS																									
Peritoneum	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Sarcoma, NOS, invasive																									
Lipoma																									
Mixed tumor, invasive													X												
Mesentery	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Adenocarcinoma, NOS, metastatic																									
Sarcoma, NOS, invasive																									
ALL OTHER SYSTEMS																									
Multiple organs, NOS	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Adenocarcinoma, NOS, metastatic																									
Mucinous cystadenocarcinoma, metastatic																	X			X					
Signet ring carcinoma, metastatic										X															
Monocytic leukemia		X				X	X				X	X	X	X	X	X		X			X		X	X	X
Orbital region																									
Sarcoma, NOS																									

TABLE B2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF FEMALE RATS: 1% AMOSITE AND 1,2-DIMETHYLHYDRAZINE DIHYDROCHLORIDE (Continued)

ANIMAL NUMBER	501	502	503	504	505	506	507	508	509	510	511	512	513	514	515	516	517	518	519	520	521	522	523	524	525	TOTAL:
WEEKS ON STUDY	080	106	039	080	082	090	080	106	080	080	085	069	099	088	079	063	091	091	097	085	069	093	084	078	106	TISSUES TUMORS
ENDOCRINE SYSTEM																										
Pituitary	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	175
Carcinoma, NOS																				X						1
Adenoma, NOS										X													X		X	19
Adrenal	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	175
Cortical adenoma																										4
Pheochromocytoma					X																				X	3
Pheochromocytoma, malignant																										1
Sarcoma, NOS, invasive																										1
Mixed tumor, invasive																										3
Ganglioneuroma																										1
Thyroid	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	174
Follicular cell adenoma																	X									6
Follicular cell carcinoma																										1
C-cell adenoma																										8
C-cell carcinoma																										6
Parathyroid	+	+	+	+	+	+	+	+	+	+	−	+	+	+	+	+	+	+	+	+	+	+	+	+	+	172
Pancreatic islets	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	175
Islet cell adenoma																										2
REPRODUCTIVE SYSTEM																										
Mammary gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	*175
Adenoma, NOS																										2
Papillary adenocarcinoma																										1
Fibroadenoma																									X	18
Preputial/clitoral gland	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	*175
Carcinoma, NOS																										3
Keratoacanthoma																										1
Uterus	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	175
Fibrosarcoma																										1
Leiomyoma																						X				1
Endometrial stromal polyp											X						X						X		X	19
Endometrial stromal sarcoma																										2
Endometrial stromal sarcoma, invasive																										2
Angioma																										1
Ovary	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	175
Papillary cystadenocarcinoma, NOS																										1
NERVOUS SYSTEM																										
Brain	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	175
SPECIAL SENSE ORGANS																										
Ear	+	+	N	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	*175
Squamous cell papilloma					X																					2
Squamous cell carcinoma													X													2
Zymbal gland	+	+	N	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	*175
Carcinoma, NOS															X			X					X			23
Squamous cell papilloma				X												X										14
Keratoacanthoma																										2
MUSCULOSKELETAL SYSTEM																										
Bone	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	*175
Carcinoma, NOS, invasive																		X								1
BODY CAVITIES																										
Mediastinum	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	*175
Signet ring carcinoma, metastatic																										1
Pericardium	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	*175
Mesothelioma, NOS																										1
Peritoneum	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	*175
Sarcoma, NOS, invasive																										1
Lipoma																										1
Mixed tumor, invasive																										1
Mesentery	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	*175
Adenocarcinoma, NOS, metastatic																										1
Sarcoma, NOS, invasive			X																							1
ALL OTHER SYSTEMS																										
Multiple organs, NOS	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	*175
Adenocarcinoma, NOS, metastatic								X																		10
Mucinous cystadenocarcinoma, meta																								X		5
Signet ring carcinoma, metastatic							X																			7
Monocytic leukemia	X	X		X	X		X		X								X									54
Orbital region																										
Sarcoma, NOS																										1

* Animals necropsied

TABLE B2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF FEMALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS: 1% AMOSITE AND PREWEANING GAVAGE

ANIMAL NUMBER	626	627	628	629	630	631	632	633	634	635	636	637	638	639	640	641	642	643	644	645	646	647	648	649	650
WEEKS ON STUDY	130	131	077	145	132	120	132	138	129	145	123	141	113	099	104	145	114	117	145	124	111	138	145	109	143
INTEGUMENTARY SYSTEM																									
Skin	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Basal cell tumor																									
Basal cell carcinoma																									
Fibroma		X																							
Subcutaneous tissue	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Sarcoma, NOS											X														
Fibroma																									
Fibrosarcoma																								X	
RESPIRATORY SYSTEM																									
Lungs and bronchi	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS, metastatic																									
Alveolar/bronchiolar carcinoma																									
C-cell carcinoma, metastatic																									
Sarcoma, NOS, metastatic																									
Trachea	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
C cell carcinoma, invasive												X													
HEMATOPOIETIC SYSTEM																									
Bone marrow	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Spleen	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Lipoma																									
Lymph nodes	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Thymus	+	–	+	–	+	+	–	+	+	+	+	+	+	+	+	+	+	+	+	–	+	+	+	+	+
Carcinoma, NOS																									
Thymoma																									
CIRCULATORY SYSTEM																									
Heart	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Sarcoma, NOS																									
DIGESTIVE SYSTEM																									
Salivary gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Sarcoma, NOS																									
Liver	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Neoplastic nodule							X												X						
Monocytic leukemia																									
Bile duct	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Gallbladder & common bile duct	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Pancreas	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Esophagus	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Stomach	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Small intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Mucinous cystadenocarcinoma																									
Sarcoma, NOS																									
Large intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS						X																			
Adenomatous polyp, NOS								X																	
URINARY SYSTEM																									
Kidney	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Mixed tumor, malignant																									
Urinary bladder	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Transitional cell papilloma																									

TABLE B2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF FEMALE RATS: 1% AMOSITE AND PREWEANING GAVAGE (Continued)

ANIMAL NUMBER	651	652	653	654	655	656	657	658	659	660	661	662	663	664	665	666	667	668	669	670	671	672	673	674	675
WEEKS ON STUDY	107	124	105	145	124	111	106	111	137	115	130	144	123	136	127	056	131	132	121	123	128	120	129	142	145
INTEGUMENTARY SYSTEM																									
Skin	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Basal cell tumor																			X						
Basal cell carcinoma																									
Fibroma																									
Subcutaneous tissue	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Sarcoma, NOS																									
Fibroma																									
Fibrosarcoma																									
RESPIRATORY SYSTEM																									
Lungs and bronchi	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS, metastatic																									
Alveolar/bronchiolar carcinoma																									
C-cell carcinoma, metastatic																									
Sarcoma, NOS, metastatic																X									
Trachea	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
C-cell carcinoma, invasive																									
HEMATOPOIETIC SYSTEM																									
Bone marrow	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Spleen	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Lipoma																									
Lymph nodes	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Thymus	+	+	+	–	+	+	+	+	+	+	+	+	+	+	+	+	–	+	–	+	+	+	–	+	+
Carcinoma, NOS																									
Thymoma											X														
CIRCULATORY SYSTEM																									
Heart	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Sarcoma, NOS																X									
DIGESTIVE SYSTEM																									
Salivary gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Sarcoma, NOS																									
Liver	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Neoplastic nodule																							X		
Monocytic leukemia																									
Bile duct	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Gallbladder & common bile duct	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Pancreas	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Esophagus	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Stomach	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Small intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Mucinous cystadenocarcinoma				X																					
Sarcoma, NOS																									
Large intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS																									
Adenomatous polyp, NOS																									
URINARY SYSTEM																									
Kidney	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Mixed tumor, malignant																									
Urinary bladder	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Transitional cell papilloma																									

TABLE B2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF FEMALE RATS: 1% AMOSITE AND PREWEANING GAVAGE (Continued)

ANIMAL NUMBER	67 76	67 77	67 78	67 79	68 80	68 81	68 82	68 83	68 84	68 85	68 86	68 87	68 88	68 89	69 00	69 01	69 02	69 03	69 04	69 05	69 06	69 07	69 08	69 09	70 00
WEEKS ON STUDY	10 06	13 02	12 08	13 11	10 02	11 17	14 44	12 29	12 22	10 07	14 55	09 09	11 13	10 07	12 28	14 55	11 10	12 26	13 00	12 24	12 28	11 14	12 25	10 07	11 17
INTEGUMENTARY SYSTEM																									
Skin	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Basal cell tumor																									
Basal cell carcinoma				X																					
Fibroma																									
Subcutaneous tissue	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Sarcoma, NOS																									
Fibroma					X																				
Fibrosarcoma																									
RESPIRATORY SYSTEM																									
Lungs and bronchi	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS, metastatic																									
Alveolar/bronchiolar carcinoma																									
C cell carcinoma, metastatic															X										
Sarcoma, NOS, metastatic																									
Trachea	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
C cell carcinoma, invasive															X										
HEMATOPOIETIC SYSTEM																									
Bone marrow	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Spleen	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Lipoma								X																	
Lymph nodes	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Thymus	+	+	+	+	+	–	+	+	+	+	+	+	–	+	+	+	+	+	–	–	+	+	+	+	–
Carcinoma, NOS																							X		
Thymoma																									
CIRCULATORY SYSTEM																									
Heart	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Sarcoma, NOS																									
DIGESTIVE SYSTEM																									
Salivary gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Sarcoma, NOS																									
Liver	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Neoplastic nodule		X																							
Monocytic leukemia																									
Bile duct	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Gallbladder & common bile duct	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Pancreas	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Esophagus	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Stomach	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Small intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Mucinous cystadenocarcinoma																									
Sarcoma, NOS																									
Large intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS																									
Adenomatous polyp, NOS																									
URINARY SYSTEM																									
Kidney	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Mixed tumor, malignant																									
Urinary bladder	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Transitional cell papilloma																									

TABLE B2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF FEMALE RATS: 1% AMOSITE AND PREWEANING GAVAGE (Continued)

ANIMAL NUMBER	701	702	703	704	705	706	707	708	709	710	711	712	713	714	715	716	717	718	719	720	721	722	723	724	725	TOTAL. TISSUES TUMORS
WEEKS ON STUDY	132	117	131	094	118	107	068	116	107	111	105	065	100	122	096	129	063	118	110	117	142	091	141	025	130	
INTEGUMENTARY SYSTEM																										
Skin	+	+	+	+	+	+	+	+	N	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	*100
Basal cell tumor																										1
Basal cell carcinoma																										1
Fibroma																										1
Subcutaneous tissue	+	+	+	+	+	+	+	+	N	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	*100
Sarcoma, NOS																										1
Fibroma	X																									2
Fibrosarcoma																										1
RESPIRATORY SYSTEM																										
Lungs and bronchi	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	100
Carcinoma, NOS, metastatic																				X						1
Alveolar/bronchiolar carcinoma																						X				1
C-cell carcinoma, metastatic																										1
Sarcoma, NOS, metastatic																										1
Trachea	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	100
C cell carcinoma, invasive																										2
HEMATOPOIETIC SYSTEM																										
Bone marrow	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	100
Spleen	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	100
Lipoma																										1
Lymph nodes	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	100
Thymus	+	+	−	+	+	+	−	+	+	+	+	+	+	−	+	+	−	−	+	−	+	+	+	+	+	81
Carcinoma, NOS																										1
Thymoma																										1
CIRCULATORY SYSTEM																										
Heart	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	100
Sarcoma, NOS																										1
DIGESTIVE SYSTEM																										
Salivary gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	100
Sarcoma, NOS															X											1
Liver	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	100
Neoplastic nodule																										4
Monocytic leukemia																				X						1
Bile duct	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	100
Gallbladder & common bile duct	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	*100
Pancreas	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	100
Esophagus	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	100
Stomach	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	100
Small intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	100
Mucinous cystadenocarcinoma																										1
Sarcoma, NOS						X																				1
Large intestine	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	100
Carcinoma, NOS																										1
Adenomatous polyp, NOS																										1
URINARY SYSTEM																										
Kidney	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	100
Mixed tumor, malignant																						X				1
Urinary bladder	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	−	+	+	+	+	+	+	+	+	+	99
Transitional cell papilloma								X																		1

* Animals necropsied

TABLE B2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF FEMALE RATS: 1% AMOSITE AND PREWEANING GAVAGE (Continued)

ANIMAL NUMBER	626	627	628	629	630	631	632	633	634	635	636	637	638	639	640	641	642	643	644	645	646	647	648	649	650
WEEKS ON STUDY	130	131	077	145	132	120	132	138	129	145	123	141	113	099	104	145	114	117	145	124	111	138	145	109	143
ENDOCRINE SYSTEM																									
Pituitary	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS																									
Adenoma, NOS	X	X		X	X			X	X	X		X	X										X		X
Ganglioneuroma																									
Adrenal	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Cortical adenoma										X															
Pheochromocytoma					X													X						
Mixed tumor, invasive																									
Thyroid	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Follicular cell adenoma																									
Follicular cell carcinoma																									
C-cell adenoma		X						X									X								X
C-cell carcinoma	X			X						X		X													
Parathyroid	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Pancreatic islets	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Islet cell adenoma																									
REPRODUCTIVE SYSTEM																									
Mammary gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS																									
Adenoma, NOS																X									X
Adenocarcinoma, NOS							X													X			X		
Fibrosarcoma																									
Fibroadenoma	X				X	X	X	X	X	X		X		X			X		X	X		X	X		X
Preputial/clitoral gland	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Carcinoma, NOS														X		X									
Uterus	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Squamous cell papilloma																						X			
Endometrial stromal polyp		X								X		X													
Ovary	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Granulosa cell tumor																									
Granulosa cell carcinoma																									
Sertoli cell tumor																									
NERVOUS SYSTEM																									
Brain	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS, invasive																									
Astrocytoma		X																							
SPECIAL SENSE ORGANS																									
Eye	N	+	N	N	N	N	N	+	+	N	N	+	N	N	N	+	N	N	+	N	N	N	N	N	+
Leiomyosarcoma									X																
Zymbal gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS																									
Keratoacanthoma																									
MUSCULOSKELETAL SYSTEM																									
Bone	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Osteosarcoma																									
BODY CAVITIES																									
Mediastinum	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Sarcoma, NOS, metastatic																									
Peritoneum	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Lipoma																									
ALL OTHER SYSTEMS																									
Multiple organs, NOS	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
C-cell carcinoma, metastatic												X													
Sarcoma, NOS, invasive																									
Fibrosarcoma, invasive																								X	
Osteosarcoma, metastatic																									
Myelomonocytic leukemia																									
Monocytic leukemia			X		X			X	X		X				X		X		X		X	X			

TABLE B2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF FEMALE RATS: 1% AMOSITE AND PREWEANING GAVAGE (Continued)

ANIMAL NUMBER	651	652	653	654	655	656	657	658	659	660	661	662	663	664	665	666	667	668	669	670	671	672	673	674	675
WEEKS ON STUDY	107	124	105	145	124	111	106	111	137	115	130	144	123	136	127	056	131	132	121	123	128	120	129	142	145
ENDOCRINE SYSTEM																									
Pituitary	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS						X																			
Adenoma, NOS	X			X					X	X	X		X		X				X	X		X			
Ganglioneuroma																									
Adrenal	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Cortical adenoma																									
Pheochromocytoma									X																
Mixed tumor, invasive																									
Thyroid	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Follicular cell adenoma																									
Follicular cell carcinoma		X										X													
C cell adenoma												X		X				X		X					X
C-cell carcinoma							X			X							X		X						
Parathyroid	+	+	+	+	+	+	–	+	+	+	+	+	+	+	+	–	+	+	–	+	+	+	+	+	+
Pancreatic islets	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Islet cell adenoma																									
REPRODUCTIVE SYSTEM																									
Mammary gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	N	+	+	+	+	+	+	+	+	+
Carcinoma, NOS																									
Adenoma, NOS																									
Adenocarcinoma, NOS												X													
Fibrosarcoma																									
Fibroadenoma		X		X		X				X		X			X		X	X		X		X	X	X	X
Preputial/clitoral gland	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Carcinoma, NOS																									
Uterus	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Squamous cell papilloma																									
Endometrial stromal polyp	X		X				X	X																X	
Ovary	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Granulosa cell tumor																					X				
Granulosa cell carcinoma																									
Sertoli cell tumor																									
NERVOUS SYSTEM																									
Brain	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS, invasive						X																			
Astrocytoma																								X	
SPECIAL SENSE ORGANS																									
Eye	N	N	+	+	+	N	N	N	+	N	N	+	N	+	N	N	+	N	+	+	+	N	N	N	+
Leiomyosarcoma																									
Zymbal gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS		X											X												
Keratoacanthoma																									
MUSCULOSKELETAL SYSTEM																									
Bone	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Osteosarcoma																									
BODY CAVITIES																									
Mediastinum	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Sarcoma, NOS, metastatic																X									
Peritoneum	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Lipoma	X																								
ALL OTHER SYSTEMS																									
Multiple organs, NOS	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
C cell carcinoma, metastatic																									
Sarcoma, NOS, invasive																X									
Fibrosarcoma, invasive																									
Osteosarcoma, metastatic																									
Myelomonocytic leukemia																									
Monocytic leukemia		X			X		X					X									X		X	X	

TABLE B2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF FEMALE RATS: 1% AMOSITE AND PREWEANING GAVAGE (Continued)

ANIMAL NUMBER	676	677	678	679	680	681	682	683	684	685	686	687	688	689	690	691	692	693	694	695	696	697	698	699	700
WEEKS ON STUDY	106	132	128	131	102	117	144	129	122	107	145	099	113	107	128	145	110	126	130	124	128	114	125	107	117
ENDOCRINE SYSTEM																									
Pituitary	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS																				X					
Adenoma, NOS			X	X		X			X	X		X			X	X	X					X			
Ganglioneuroma	X																								
Adrenal	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Cortical adenoma																									X
Pheochromocytoma							X	X								X									
Mixed tumor, invasive																									
Thyroid	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Follicular cell adenoma																						X			
Follicular cell carcinoma																									
C cell adenoma		X		X				X				X													
C-cell carcinoma							X								X					X					
Parathyroid	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Pancreatic islets	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Islet cell adenoma																									
REPRODUCTIVE SYSTEM																									
Mammary gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS																									
Adenoma, NOS			X				X																		
Adenocarcinoma, NOS																	X			X					
Fibrosarcoma										X															
Fibroadenoma		X	X			X	X	X	X	X	X			X	X	X	X	X	X			X	X		
Preputial/clitoral gland	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Carcinoma, NOS								X												X					X
Uterus	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Squamous cell papilloma																									
Endometrial stromal polyp																	X			X					
Ovary	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Granulosa cell tumor																				X					
Granulosa cell carcinoma																									
Sertoli cell tumor	X																								
NERVOUS SYSTEM																									
Brain	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS, invasive																									
Astrocytoma																									
SPECIAL SENSE ORGANS																									
Eye	N	+	N	N	N	N	+	N	N	N	+	N	N	+	N	+	N	N	N	+	+	+	+	N	N
Leiomyosarcoma																									
Zymbal gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma, NOS																									
Keratoacanthoma																								X	
MUSCULOSKELETAL SYSTEM																									
Bone	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Osteosarcoma																									
BODY CAVITIES																									
Mediastinum	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Sarcoma, NOS, metastatic																									
Peritoneum	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Lipoma																									
ALL OTHER SYSTEMS																									
Multiple organs, NOS	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
C cell carcinoma, metastatic																									
Sarcoma, NOS, invasive																									
Fibrosarcoma, invasive																									
Osteosarcoma, metastatic																									
Myelomonocytic leukemia																			X						
Monocytic leukemia			X	X	X		X								X						X	X			X

TABLE B2. INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF FEMALE RATS: 1% AMOSITE AND PREWEANING GAVAGE (Continued)

ANIMAL NUMBER	701	702	703	704	705	706	707	708	709	710	711	712	713	714	715	716	717	718	719	720	721	722	723	724	725	TOTAL:
WEEKS ON STUDY	132	117	131	094	118	107	068	116	107	111	105	065	100	122	096	129	063	118	110	117	142	091	141	025	130	TISSUES TUMORS
ENDOCRINE SYSTEM																										
Pituitary	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	100
Carcinoma, NOS																			X							3
Adenoma, NOS	X			X	X			X						X						X	X		X			39
Ganglioneuroma																										1
Adrenal	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	100
Cortical adenoma																X							X			4
Pheochromocytoma																										6
Mixed tumor, invasive																						X				1
Thyroid	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	100
Follicular cell adenoma	X													X												3
Follicular cell carcinoma																										2
C-cell adenoma								X																	X	15
C cell carcinoma										X								X					X			14
Parathyroid	+	+	+	+	+	+	–	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	96
Pancreatic islets	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	100
Islet cell adenoma															X											1
REPRODUCTIVE SYSTEM																										
Mammary gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	*100
Carcinoma, NOS																					X					1
Adenoma, NOS								X																		5
Adenocarcinoma, NOS					X																					7
Fibrosarcoma																										1
Fibroadenoma		X	X						X					X		X				X	X		X			52
Preputial/clitoral gland	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	*100
Carcinoma, NOS					X							X														7
Uterus	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	100
Squamous cell papilloma																										1
Endometrial stromal polyp				X										X		X								X		14
Ovary	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	–	+	+	+	+	+	+	+	+	+	99
Granulosa cell tumor																										2
Granulosa cell carcinoma				X																						1
Sertoli cell tumor																										1
NERVOUS SYSTEM																										
Brain	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	100
Carcinoma, NOS, invasive																			@X							2
Astrocytoma																										2
SPECIAL SENSE ORGANS																										
Eye	+	N	+	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	+	N	+	N	N	*100
Leiomyosarcoma																										1
Zymbal gland	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	N	+	+	+	+	+	+	+	+	*100
Carcinoma, NOS											X															3
Keratoacanthoma																										1
MUSCULOSKELETAL SYSTEM																										
Bone	N	N	N	N	N	N	+	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	*100
Osteosarcoma							X																			1
BODY CAVITIES																										
Mediastinum	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	*100
Sarcoma, NOS, metastatic																										1
Peritoneum	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	*100
Lipoma																										1
ALL OTHER SYSTEMS																										
Multiple organs, NOS	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	X	N	N	N	N	N	N	*100
C cell carcinoma, metastatic																			X							2
Sarcoma, NOS, invasive																										1
Fibrosarcoma, invasive																										1
Osteosarcoma, metastatic							X																			1
Myelomonocytic leukemia																										1
Monocytic leukemia		X	X							X			X		X	X					X		X			33

* Animals necropsied
@ Multiple occurrence of morphology

TABLE B3a. ANALYSIS OF PRIMARY TUMORS IN FEMALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS

	Untreated Control	1% Amosite	1% Amosite + PW	1% Amosite vs. 1% Amosite + PW
Skin: Squamous Cell Papilloma or Carcinoma				
Overall Rates (a)	3/117 (3%)	4/250 (2%)	0/100 (0%)	
Adjusted Rates (b)	18.2%	5.8%	0.0%	
Terminal Rates (c)	2/13 (15%)	1/30 (3%)	0/9 (0%)	
Week of First Observation	136	121		
Life Table Test (d)		P=0.357N	P=0.195N	
Incidental Tumor Test (d)		P=0.337N	P=0.154N	
Fisher Exact Test (d)		P=0.396N	P=0.155N	
Subcutaneous Tissue: Lipoma				
Overall Rates (a)	3/117 (3%)	2/250 (1%)	0/100 (0%)	
Adjusted Rates (b)	16.1%	1.6%	0.0%	
Terminal Rates (c)	2/13 (15%)	0/30 (0%)	0/9 (0%)	
Week of First Observation	84	111		
Life Table Test (d)		P=0.171N	P=0.179N	
Incidental Tumor Test (d)		P=0.196N	P=0.171N	
Fisher Exact Test (d)		P=0.187N	P=0.155N	
Subcutaneous Tissue: Fibroma				
Overall Rates (a)	7/117 (6%)	8/250 (3%)	3/100 (3%)	
Adjusted Rates (b)	26.8%	16.3%	8.4%	
Terminal Rates (c)	2/13 (12%)	4/30 (13%)	0/9 (0%)	
Week of First Observation	96	90	102	
Life Table Tests (d)		P=0.138N	P=0.341N	P=0.576
Incidental Tumor Tests (d)		P=0.178N	P=0.269N	P=0.593N
Fisher Exact Test (d)		P=0.165N	P=0.238N	P=0.612N
Subcutaneous Tissue: Fibroma or Neurofibroma				
Overall Rates (a)	7/117 (6%)	9/250 (4%)	3/100 (3%)	
Adjusted Rates (b)	26.8%	17.2%	8.4%	
Terminal Rates (c)	2/13 (12%)	4/30 (13%)	0/9 (0%)	
Week of First Observation	96	90	102	
Life Table Tests (d)		P=0.189N	P=0.341N	P=0.622N
Incidental Tumor Tests (d)		P=0.233N	P=0.269N	P=0.521N
Fisher Exact Test (d)		P=0.218N	P=0.238N	P=0.536N
Subcutaneous Tissue: Sarcoma				
Overall Rates (a)	0/117 (0%)	6/250 (2%)	1/100 (1%)	
Adjusted Rates (b)	0.0%	11.0%	2.0%	
Terminal Rates (c)	0/13 (0%)	2/30 (7%)	0/9 (0%)	
Week of First Observation		112	123	
Life Table Tests (d)		P=0.123	P=0.478	P=0.421N
Incidental Tumor Tests (d)		P=0.100	P=0.550	P=0.348N
Fisher Exact Test (d)		P=0.098	P=0.461	P=0.358N
Subcutaneous Tissue: Fibrosarcoma				
Overall Rates (a)	3/117 (3%)	5/250 (2%)	1/100 (1%)	
Adjusted Rates (b)	6.9%	5.7%	1.3%	
Terminal Rates (c)	0/13 (0%)	0/30 (0%)	0/9 (0%)	
Week of First Observation	105	124	109	
Life Table Tests (d)		P=0.452N	P=0.358N	P=0.498N
Incidental Tumor Tests (d)		P=0.503N	P=0.447N	P=0.412N
Fisher Exact Test (d)		P=0.497N	P=0.372N	P=0.450N
Subcutaneous Tissue: Fibroma or Fibrosarcoma				
Overall Rates (a)	10/117 (9%)	12/250 (5%)	4/100 (4%)	
Adjusted Rates (b)	31.8%	19.4%	0.6%	
Terminal Rates (c)	2/13 (15%)	4/30 (13%)	0/9 (0%)	
Week of First Observation	96	90	102	
Life Table Tests (d)		P=0.089N	P=0.207N	P=0.608N
Incidental Tumor Tests (d)		P=0.125N	P=0.189N	P=0.471N
Fisher Exact Test (d)		P=0.122N	P=0.139N	P=0.499N

TABLE B3a. ANALYSIS OF PRIMARY TUMORS IN FEMALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS (Continued)

	Untreated Control	1% Amosite	1% Amosite + PW	1% Amosite vs. 1% Amosite + PW
Subcutaneous Tissue: Sarcoma, Fibrosarcoma, or Neurofibrosarcoma				
Overall Rates (a)	3/117 (3%)	11/250 (4%)	2/100 (2%)	
Adjusted Rates (b)	6.9%	15.1%	3.3%	
Terminal Rates (c)	0/13 (0%)	2/30 (7%)	0/9 (0%)	
Week of First Observation	105	112	109	
Life Table Tests (d)		P=0.352	P=0.559N	P=0.312N
Incidental Tumor Tests (d)		P=0.286	P=0.612N	P=0.226N
Fisher Exact Test (d)		P=0.296	P=0.574N	P=0.230N
Subcutaneous Tissue: Fibroma, Neurofibroma, Sarcoma, Fibrosarcoma, or Neurofibrosarcoma				
Overall Rates (a)	10/117 (9%)	19/250 (8%)	5/100 (5%)	
Adjusted Rates (b)	31.8%	29.0%	11.3%	
Terminal Rates (c)	2/13 (15%)	6/30 (20%)	0/9 (0%)	
Week of First Observation	96	90	102	
Life Table Tests (d)		P=0.380N	P=0.305N	P=0.395N
Incidental Tumor Tests (d)		P=0.472N	P=0.271N	P=0.262N
Fisher Exact Test (d)		P=0.450N	P=0.226N	P=0.269N
Integumentary System or Salivary Gland: Sarcoma, Fibrosarcoma, or Neurofibrosarcoma				
Overall Rates (a)	5/117 (4%)	12/250 (5%)	3/100 (3%)	
Adjusted Rates (b)	15.8%	17.3%	5.9%	
Terminal Rates (c)	1/13 (8%)	3/30 (10%)	0/9 (0%)	
Week of First Observation	105	112	109	
Life Table Tests (d)		P=0.594N	P=0.457N	P=0.437N
Incidental Tumor Tests (d)		P=0.529	P=0.482N	P=0.332N
Fisher Exact Test (d)		P=0.529	P=0.451N	P=0.336N
Integumentary System or Salivary Gland: Fibroma, Neurofibroma, Sarcoma, Fibrosarcoma, or Neurofibrosarcoma				
Overall Rates (a)	11/117 (9%)	20/250 (8%)	6/100 (6%)	
Adjusted Rates (b)	33.2%	31.9%	13.7%	
Terminal Rates (c)	2/13 (15%)	7/30 (23%)	0/9 (0%)	
Week of First Observation	96	90	102	
Life Table Tests (d)		P=0.324N	P=0.333N	P=0.490N
Incidental Tumor Tests (d)		P=0.410N	P=0.297N	P=0.343N
Fisher Exact Test (d)		P=0.395N	P=0.251N	P=0.347N
Hematopoietic System: Leukemia				
Overall Rates (e)	40/117 (34%)	83/250 (33%)	35/100 (35%)	
Adjusted Rates (b)	82.4%	70.3%	70.5%	
Terminal Rates (c)	8/13 (62%)	13/30 (43%)	1/9 (11%)	
Week of First Observation	86	80	77	
Life Table Test (d)		P=0.275N	P=0.394	P=0.197
Incidental Tumor Test (d)		P=0.408N	P=0.558N	P=0.441
Fisher Exact Test (d)		P=0.471N	P=0.507	P=0.420
Oral Cavity: Squamous Cell Papilloma or Carcinoma				
Overall Rates (e)	1/117 (1%)	4/250 (2%)	0/100 (0%)	
Adjusted Rates (b)	2.4%	3.4%	0.0%	
Terminal Rates (c)	0/13 (0%)	0/30 (0%)	0/9 (0%)	
Week of First Observation	131	115		
Life Table Tests (d)		P=0.510	P=0.574N	
Incidental Tumor Tests (d)		P=0.541	P=0.535N	
Fisher Exact Test (d)		P=0.489	P=0.539N	

TABLE B3a. ANALYSIS OF PRIMARY TUMORS IN FEMALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS (Continued)

	Untreated Control	1% Amosite	1% Amosite + PW	1% Amosite vs. 1% Amosite + PW
Liver: Neoplastic Nodule				
Overall Rates (e)	4/117 (3%)	10/250 (4%)	4/100 (4%)	
Adjusted Rates (b)	9.6%	16.0%	20.4%	
Terminal Rates (c)	0/13 (0%)	2/30 (7%)	1/9 (11%)	
Week of First Observation	101	116	129	
Life Table Test (d)		P=0.577	P=0.468	P=0.484
Incidental Tumor Test (d)		P=0.600	P=0.556	P=0.585
Fisher Exact Test (d)		P=0.522	P=0.549	P=0.603
Liver: Neoplastic Nodule or Hepatocellular Carcinoma				
Overall Rates (e)	5/117 (4%)	10/250 (4%)	4/100 (4%)	
Adjusted Rates (b)	11.9%	16.0%	20.4%	
Terminal Rates (c)	0/13 (0%)	2/30 (7%)	1/9 (11%)	
Week of First Observation	101	116	129	
Life Table Test (d)		P=0.497N	P=0.561	P=0.484
Incidental Tumor Test (d)		P=0.472N	P=0.596N	P=0.585
Fisher Exact Test (d)		P=0.550N	P=0.597N	P=0.603
Pituitary Gland: Adenoma				
Overall Rates (e)	50/117 (43%)	107/249 (43%)	39/100 (39%)	
Adjusted Rates (b)	79.1%	80.4%	83.8%	
Terminal Rates (c)	6/13 (46%)	16/30 (53%)	5/9 (56%)	
Week of First Observation	71	73	94	
Life Table Test (d)		P=0.308N	P=0.469N	P=0.398
Incidental Tumor Test (d)		P=0.507N	P=0.266N	P=0.313N
Fisher Exact Test (d)		P=0.529	P=0.338N	P=0.288N
Pituitary Gland: Carcinoma				
Overall Rates (e)	2/117 (2%)	11/249 (4%)	3/100 (3%)	
Adjusted Rates (b)	2.2%	10.4%	4.7%	
Terminal Rates (c)	0/13 (0%)	1/30 (3%)	0/9 (0%)	
Week of First Observation	101	85	110	
Life Table Test (d)		P=0.194	P=0.467	P=0.457N
Incidental Tumor Test (d)		P=0.127	P=0.363	P=0.362N
Fisher Exact Test (d)		P=0.158	P=0.426	P=0.394N
Pituitary Gland: Adenoma or Carcinoma				
Overall Rates (e)	52/117 (44%)	118/249 (47%)	42/100 (42%)	
Adjusted Rates (b)	79.6%	83.1%	84.6%	
Terminal Rates (c)	6/13 (46%)	17/30 (57%)	5/9 (56%)	
Week of First Observation	71	73	94	
Life Table Test (d)		P=0.443N	P=0.521N	P=0.453
Incidental Tumor Test (d)		P=0.369	P=0.355N	P=0.229N
Fisher Exact Test (d)		P=0.340	P=0.411N	P=0.214N
Adrenal Cortex: Cortical Adenoma				
Overall Rates (e)	3/117 (3%)	13/249 (5%)	4/100 (4%)	
Adjusted Rates (b)	10.2%	18.6%	20.2%	
Terminal Rates (c)	1/13 (8%)	3/30 (10%)	1/9 (11%)	
Week of First Observation	101	115	117	
Life Table Tests (d)		P=0.256	P=0.389	P=0.563N
Incidental Tumor Tests (d)		P=0.260	P=0.451	P=0.455N
Fisher Exact Test (d)		P=0.190	P=0.414	P=0.433N
Adrenal Cortex: Cortical Adenoma or Carcinoma				
Overall Rates (e)	4/117 (3%)	14/249 (6%)	4/100 (4%)	
Adjusted Rates (b)	11.6%	19.2%	20.2%	
Terminal Rates (c)	1/13 (8%)	3/30 (10%)	1/9 (11%)	
Week of First Observation	101	115	117	
Life Table Tests (d)		P=0.344	P=0.533	P=0.505N
Incidental Tumor Tests (d)		P=0.369	P=0.615	P=0.393N
Fisher Exact Test (d)		P=0.264	P=0.549	P=0.375N

TABLE B3a. ANALYSIS OF PRIMARY TUMORS IN FEMALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS (Continued)

	Untreated Control	1% Amosite	1% Amosite + PW	1% Amosite vs. 1% Amosite + PW
Adrenal Medulla: Pheochromocytoma				
Overall Rates (e)	17/117 (15%)	27/249 (11%)	6/100 (6%)	
Adjusted Rates (b)	51.4%	40.3%	29.6%	
Terminal Rates (c)	4/13 (31%)	7/30 (23%)	1/9 (11%)	
Week of First Observation	103	107	117	
Life Table Test (d)		P=0.125N	P=0.067N	P=0.269N
Incidental Tumor Test (d)		P=0.146N	P=0.034N	P=0.141N
Fisher Exact Test (d)		P=0.199N	P=0.033N	P=0.113N
Adrenal Medulla: Pheochromocytoma or Malignant Pheochromocytoma				
Overall Rates (e)	18/117 (15%)	30/249 (12%)	6/100 (6%)	
Adjusted Rates (b)	51.8%	44.0%	29.6%	
Terminal Rates (c)	4/13 (31%)	8/30 (27%)	1/9 (11%)	
Week of First Observation	87	107	117	
Life Table Test (d)		P=0.150N	P=0.049N	P=0.191N
Incidental Tumor Test (d)		P=0.180N	P=0.025N	P=0.085N
Fisher Exact Test (d)		P=0.235N	P=0.022N	P=0.064N
Thyroid Gland: Follicular Cell Adenoma				
Overall Rates (e)	2/116 (2%)	10/247 (4%)	3/100 (3%)	
Adjusted Rates (b)	4.4%	14.4%	7.2%	
Terminal Rates (c)	0/13 (0%)	1/30 (3%)	0/9 (0%)	
Week of First Observation	117	120	114	
Life Table Test (d)		P=0.258	P=0.396	P=0.577N
Incidental Tumor Test (d)		P=0.290	P=0.537	P=0.466N
Fisher Exact Test (d)		P=0.204	P=0.430	P=0.456N
Thyroid Gland: Follicular Cell Carcinoma				
Overall Rates (e)	7/116 (6%)	3/247 (1%)	2/100 (2%)	
Adjusted Rates (b)	26.0%	5.7%	11.0%	
Terminal Rates (c)	1/13 (8%)	1/30 (3%)	0/9 (0%)	
Week of First Observation	111	121	124	
Life Table Test (d)		P=0.007N	P=0.171N	P=0.388
Incidental Tumor Test (d)		P=0.008N	P=0.114N	P=0.456
Fisher Exact Test (d)		P=0.014N	P=0.127N	P=0.448
Thyroid Gland: Follicular Cell Adenoma or Carcinoma				
Overall Rates (e)	9/116 (8%)	13/247 (5%)	5/100 (5%)	
Adjusted Rates (b)	29.3%	19.4%	17.4%	
Terminal Rates (c)	1/13 (8%)	2/30 (7%)	0/9 (0%)	
Week of First Observation	111	120	114	
Life Table Test (d)		P=0.171N	P=0.370N	P=0.484
Incidental Tumor Test (d)		P=0.151N	P=0.223N	P=0.602N
Fisher Exact Test (d)		P=0.240N	P=0.296N	P=0.579N
Thyroid Gland: C-Cell Adenoma				
Overall Rates (e)	14/116 (12%)	37/247 (15%)	15/100 (15%)	
Adjusted Rates (b)	43.1%	44.8%	49.5%	
Terminal Rates (c)	2/13 (15%)	7/30 (23%)	1/9 (11%)	
Week of First Observation	108	73	99	
Life Table Test (d)		P=0.412	P=0.203	P=0.304
Incidental Tumor Test (d)		P=0.383	P=0.362	P=0.504
Fisher Exact Test (d)		P=0.284	P=0.333	P=0.558
Thyroid Gland: C-Cell Carcinoma				
Overall Rates (e)	10/116 (9%)	29/247 (12%)	14/100 (14%)	
Adjusted Rates (b)	35.3%	38.6%	48.8%	
Terminal Rates (c)	3/13 (23%)	5/30 (17%)	2/9 (22%)	
Week of First Observation	107	75	106	
Life Table Test (d)		P=0.346	P=0.119	P=0.169
Incidental Tumor Test (d)		P=0.282	P=0.156	P=0.305
Fisher Exact Test (d)		P=0.241	P=0.150	P=0.339

TABLE B3a. ANALYSIS OF PRIMARY TUMORS IN FEMALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS (Continued)

	Untreated Control	1% Amosite	1% Amosite + PW	1% Amosite vs. 1% Amosite + PW
Thyroid Gland: C-Cell Adenoma or Carcinoma				
Overall Rates (e)	24/116 (21%)	65/247 (26%)	29/100 (29%)	
Adjusted Rates (b)	65.4%	68.1%	75.4%	
Terminal Rates (c)	5/13 (38%)	12/30 (40%)	3/9 (33%)	
Week of First Observation	107	73	99	
Life Table Test (d)		P=0.311	P=0.057	P=0.107
Incidental Tumor Test (d)		P=0.246	P=0.111	P=0.271
Fisher Exact Test (d)		P=0.151	P=0.105	P=0.351
Pancreatic Islets: Islet Cell Adenoma				
Overall Rates (e)	2/116 (2%)	7/249 (3%)	1/100 (1%)	
Adjusted Rates (b)	10.4%	8.0%	1.1%	
Terminal Rates (c)	0/13 (0%)	0/30 (0%)	0/9 (0%)	
Week of First Observation	141	111	96	
Life Table Tests (d)		P=0.443	P=0.583N	P=0.322N
Incidental Tumor Tests (d)		P=0.362	P=0.588N	P=0.255N
Fisher Exact Test (d)		P=0.414	P=0.556N	P=0.280N
Pancreatic Islets: Islet Cell Carcinoma				
Overall Rates (e)	3/116 (3%)	(f) 7/249 (3%)	0/100 (0%)	
Adjusted Rates (b)	15.8%	10.0%	0.0%	
Terminal Rates (c)	1/13 (8%)	1/30 (3%)	0/9 (0%)	
Week of First Observation	138	121		
Life Table Tests (d)		P=0.624N	P=0.195N	P=0.141N
Incidental Tumor Tests (d)		P=0.587N	P=0.154N	P=0.104N
Fisher Exact Test (d)		P=0.602	P=0.153N	P=0.092N
Pancreatic Islets: Islet Cell Adenoma or Carcinoma				
Overall Rates (e)	5/116 (4%)	(f) 14/249 (6%)	1/100 (1%)	
Adjusted Rates (b)	24.5%	17.2%	1.1%	
Terminal Rates (c)	1/13 (8%)	1/30 (3%)	0/9 (0%)	
Week of First Observation	138	111	96	
Life Table Tests (d)		P=0.470	P=0.192N	P=0.086N
Incidental Tumor Tests (d)		P=0.440	P=0.162N	P=0.051N
Fisher Exact Test (d)		P=0.403	P=0.145N	P=0.041N
Mammary Gland: Adenoma				
Overall Rates (a)	(g) 8/117 (7%)	(g) 14/250 (6%)	5/100 (5%)	
Adjusted Rates (b)	23.6%	14.2%	28.9%	
Terminal Rates (c)	2/13 (15%)	1/30 (3%)	1/9 (11%)	
Week of First Observation	96	70	116	
Life Table Test (d)		P=0.333N	P=0.456N	P=0.575
Incidental Tumor Test (d)		P=0.364N	P=0.398N	P=0.571N
Fisher Exact Test (d)		P=0.400N	P=0.392N	P=0.528N
Mammary Gland: Fibroadenoma				
Overall Rates (a)	72/117 (62%)	135/250 (54%)	52/100 (52%)	
Adjusted Rates (b)	98.4%	91.5%	95.3%	
Terminal Rates (c)	12/13 (92%)	21/30 (70%)	7/9 (78%)	
Week of First Observation	70	70	99	
Life Table Test (d)		P=0.053N	P=0.354N	P=0.192
Incidental Tumor Test (d)		P=0.016N	P=0.041N	P=0.507N
Fisher Exact Test (d)		P=0.106N	P=0.101N	P=0.412N
Mammary Gland: Adenocarcinoma				
Overall Rates (a)	(h) 6/117 (5%)	(i) 25/250 (10%)	7/100 (7%)	
Adjusted Rates (b)	25.0%	34.0%	28.9%	
Terminal Rates (c)	1/13 (8%)	5/30 (17%)	1/9 (11%)	
Week of First Observation	71	85	118	
Life Table Test (d)		P=0.137	P=0.325	P=0.436N
Incidental Tumor Test (d)		P=0.148	P=0.430	P=0.287N
Fisher Exact Test (d)		P=0.083	P=0.383	P=0.255N

TABLE B3a. ANALYSIS OF PRIMARY TUMORS IN FEMALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS (Continued)

	Untreated Control	1% Amosite	1% Amosite + PW	1% Amosite vs. 1% Amosite + PW
Clitoral Gland: Carcinoma				
Overall Rates (e)	6/117 (5%)	14/250 (6%)	7/100 (7%)	
Adjusted Rates (b)	14.4%	14.4%	19.8%	
Terminal Rates (c)	0/13 (0%)	1/30 (3%)	1/9 (11%)	
Week of First Observation	101	69	65	
Life Table Tests (d)		P=0.584N	P=0.381	P=0.285
Incidental Tumor Tests (d)		P=0.459	P=0.395	P=0.391
Fisher Exact Test (d)		P=0.535	P=0.383	P=0.390
Clitoral Gland: Adenoma or Carcinoma				
Overall Rates (e)	6/117 (5%)	15/250 (6%)	7/100 (7%)	
Adjusted Rates (b)	14.4%	16.8%	19.8%	
Terminal Rates (c)	0/13 (0%)	1/30 (3%)	1/9 (11%)	
Week of First Observation	101	69	65	
Life Table Tests (d)		P=0.547	P=0.381	P=0.333
Incidental Tumor Tests (d)		P=0.403	P=0.395	P=0.444
Fisher Exact Test (d)		P=0.473	P=0.283	P=0.446
Uterus: Endometrial Stromal Polyp				
Overall Rates (e)	13/117 (11%)	31/250 (12%)	14/100 (14%)	
Adjusted Rates (b)	40.0%	32.3%	39.0%	
Terminal Rates (c)	3/13 (23%)	5/30 (17%)	1/9 (11%)	
Week of First Observation	86	68	25	
Life Table Test (d)		P=0.532	P=0.286	P=0.273
Incidental Tumor Test (d)		P=0.489	P=0.315	P=0.398
Fisher Exact Test (d)		P=0.434	P=0.330	P=0.403
Uterus: Endometrial Stromal Sarcoma				
Overall Rates (e)	5/117 (4%)	4/250 (2%)	0/100 (0%)	
Adjusted Rates (b)	8.1%	1.8%	0.0%	
Terminal Rates (c)	0/13 (0%)	0/30 (0%)	0/9 (0%)	
Week of First Observation	88	77		
Life Table Test (d)		P=0.107N	P=0.065N	
Incidental Tumor Test (d)		P=0.195N	P=0.055N	
Fisher Exact Test (d)		P=0.121N	P=0.044N	
Ovary: Granulosa Cell Tumor or Carcinoma				
Overall Rates (e)	1/117 (1%)	3/250 (1%)	3/100 (3%)	
Adjusted Rates (b)	7.7%	6.7%	5.5%	
Terminal Rates (c)	1/13 (8%)	1/30 (3%)	0/9 (0%)	
Week of First Observation	145	125	94	
Life Table Tests (d)		P=0.626	P=0.249	P=0.191
Incidental Tumor Tests (d)		P=0.650	P=0.260	P=0.239
Fisher Exact Test (d)		P=0.619	P=0.254	P=0.228
Ovary: Thecoma, Granulosa Cell Tumor, or Granulosa Cell Carcinoma				
Overall Rates (e)	1/117 (1%)	4/250 (2%)	3/100 (3%)	
Adjusted Rates (b)	7.7%	7.4%	5.5%	
Terminal Rates (c)	1/13 (8%)	1/30 (3%)	0/9 (0%)	
Week of First Observation	145	123	94	
Life Table Tests (d)		P=0.504	P=0.249	P=0.279
Incidental Tumor Tests (d)		P=0.541	P=0.260	P=0.340
Fisher Exact Test (d)		P=0.489	P=0.254	P=0.320
Brain: Astrocytoma				
Overall Rates (e)	4/117 (3%)	4/250 (2%)	2/100 (2%)	
Adjusted Rates (b)	4.0%	2.4%	10.3%	
Terminal Rates (c)	0/13 (0%)	0/30 (0%)	0/9 (0%)	
Week of First Observation	75	82	131	
Life Table Tests (d)		P=0.225N	P=0.425N	P=0.546
Incidental Tumor Tests (d)		P=0.357N	P=0.505N	P=0.559
Fisher Exact Test (d)		P=0.227N	P=0.418N	P=0.550

TABLE B3a. ANALYSIS OF PRIMARY TUMORS IN FEMALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS (Continued)

	Untreated Control	1% Amosite	1% Amosite + PW	1% Amosite vs. 1% Amosite + PW
Brain: Glioma or Astrocytoma				
Overall Rates (e)	4/117 (3%)	5/250 (2%)	2/100 (2%)	
Adjusted Rates (b)	4.0%	2.9%	10.3%	
Terminal Rates (c)	0/13 (0%)	0/30 (0%)	0/9 (0%)	
Week of First Observation	75	82	131	
Life Table Tests (d)		P=0.312N	P=0.425N	P=0.639
Incidental Tumor Tests (d)		P=0.485N	P=0.505N	P=0.661
Fisher Exact Test (d)		P=0.313N	P=0.418N	P=0.642
Zymbal Gland: Carcinoma				
Overall Rates (e)	3/117 (3%)	4/250 (2%)	3/100 (3%)	
Adjusted Rates (b)	3.9%	3.3%	5.1%	
Terminal Rates (c)	0/13 (0%)	0/30 (0%)	0/9 (0%)	
Week of First Observation	99	121	105	
Life Table Tests (d)		P=0.359N	P=0.614	P=0.278
Incidental Tumor Tests (d)		P=0.403N	P=0.619	P=0.349
Fisher Exact Test (d)		P=0.396N	P=0.582	P=0.320
Zymbal Gland: Carcinoma or Squamous Cell Papilloma				
Overall Rates (e)	3/117 (3%)	7/250 (3%)	3/100 (3%)	
Adjusted Rates (b)	3.9%	7.9%	5.1%	
Terminal Rates (c)	0/13 (0%)	0/30 (0%)	0/9 (0%)	
Week of First Observation	99	121	105	
Life Table Tests (d)		P=0.628N	P=0.614	P=0.494
Incidental Tumor Tests (d)		P=0.606	P=0.619	P=0.596
Fisher Exact Test (d)		P=0.599	P=0.582	P=0.581
All Sites: Benign Tumors				
Overall Rates (a)	99/117 (85%)	213/250 (85%)	79/100 (79%)	
Adjusted Rates (b)	100.0%	99.5%	100.0%	
Terminal Rates (c)	13/13 (100%)	29/30 (97%)	9/9 (100%)	
Week of First Observation	70	68	25	
Life Table Test (d)		P=0.230N	P=0.517N	P=0.267
Incidental Tumor Test (d)		P=0.320N	P=0.123N	P=0.144N
Fisher Exact Test (d)		P=0.499	P=0.185N	P=0.107N
All Sites: Malignant Tumors				
Overall Rates (a)	74/117 (63%)	166/250 (66%)	68/100 (68%)	
Adjusted Rates (b)	96.0%	93.0%	93.9%	
Terminal Rates (c)	11/13 (85%)	21/30 (70%)	6/9 (67%)	
Week of First Observation	71	69	56	
Life Table Test (d)		P=0.399N	P=0.245	P=0.136
Incidental Tumor Test (d)		P=0.284	P=0.274	P=0.434
Fisher Exact Test (d)		P=0.317	P=0.278	P=0.438
All Sites: All Tumors				
Overall Rates (a)	113/117 (97%)	240/250 (96%)	98/100 (98%)	
Adjusted Rates (b)	100.0%	100.0%	100.0%	
Terminal Rates (c)	13/13 (100%)	30/30 (100%)	9/9 (100%)	
Week of First Observation	70	68	25	
Life Table Test (d)		P=0.192N	P=0.350	P=0.081
Incidental Tumor Test (d)		P=0.571N	P=0.379	P=0.257
Fisher Exact Test (d)		P=0.522N	P=0.418	P=0.284

TABLE B3a. ANALYSIS OF PRIMARY TUMORS IN FEMALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS (Continued)

(a) Number of tumor-bearing animals/number of animals examined grossly at the site
(b) Kaplan-Meier estimated tumor incidences at the end of the study after adjusting for intercurrent mortality
(c) Observed tumor incidence in animals killed at the end of the study
(d) Beneath the dosed group incidence are the P values corresponding to pairwise comparisons between that dosed group and the controls. The life table analysis regards tumors in animals dying prior to terminal kill as being (directly or indirectly) the cause of death. The incidental tumor test regards these lesions as nonfatal. The Fisher exact test compares directly the overall incidence rates. A lower incidence in a dosed group than in controls is indicated by (N). The P values for the comparison of the 1% amosite group with the 1% amosite + PW group are presented in the last column for sites with a tumor incidence of at least 2% in at least one of the two groups.
(e) Number of tumor-bearing animals/number of animals examined microscopically at the site
(f) Includes one islet cell carcinoma of the pancreas
(g) Includes one papillary cystadenoma, NOS
(h) Includes one carcinoma in situ, NOS, and one carcinoma, NOS
(i) Includes two papillary adenocarcinomas

TABLE B3b. ANALYSIS OF PRIMARY TUMORS IN FEMALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS AND DIMETHYLHYDRAZINE (DMH)

	Untreated Control	DMH	1% Amosite + DMH	DMH vs. Amosite + DMH
Skin: Squamous Cell Papilloma or Carcinoma				
Overall Rates (a)	3/117 (3%)	0/125 (0%)	1/175 (1%)	
Adjusted Rates (b)	3.2%	0.0%	2.8%	
Terminal Rates (c)	3/94 (3%)	0/15 (0%)	1/36 (3%)	
Week of First Observation	136		106	
Life Table Tests (d)		P=0.559N	P=0.671N	
Incidental Tumor Tests (d)		P=0.329N	P=0.430N	
Fisher Exact Test (d)		P=0.112N	P=0.178N	
Subcutaneous Tissue: Fibroma				
Overall Rates (a)	7/117 (6%)	0/125 (0%)	0/175 (0%)	
Adjusted Rates (b)	7.3%	0.0%	0.0%	
Terminal Rates (c)	6/94 (6%)	0/15 (0%)	0/36 (0%)	
Week of First Observation	96			
Life Table Tests (d)		P=0.288N	P=0.101N	
Incidental Tumor Tests (d)		P=0.104N	P=0.029N	
Fisher Exact Test (d)		P=0.006N	P=0.001N	
Subcutaneous Tissue: Fibrosarcoma				
Overall Rates (a)	3/117 (3%)	2/125 (2%)	1/175 (1%)	
Adjusted Rates (b)	3.2%	8.1%	1.1%	
Terminal Rates (c)	3/94 (3%)	1/15 (7%)	0/36 (0%)	
Week of First Observation	105	77	83	
Life Table Tests (d)		P=0.245	P=0.598N	
Incidental Tumor Tests (d)		P=0.690N	P=0.220N	
Fisher Exact Test (d)		P=0.469N	P=0.178N	
Integumentary System: Fibroma or Fibrosarcoma				
Overall Rates (a)	10/117 (9%)	2/125 (2%)	1/175 (1%)	
Adjusted Rates (b)	10.5%	8.1%	1.1%	
Terminal Rates (c)	9/94 (10%)	1/15 (7%)	0/36 (0%)	
Week of First Observation	96	77	83	
Life Table Tests (d)		P=0.640	P=0.114N	
Incidental Tumor Tests (d)		P=0.153N	P=0.010N	
Fisher Exact Test (d)		P=0.013N	P<0.001N	
Integumentary System or Salivary Gland: Sarcoma or Fibrosarcoma				
Overall Rates (a)	5/117 (4%)	2/125 (2%)	1/175 (1%)	
Adjusted Rates (b)	5.3%	8.1%	1.1%	
Terminal Rates (c)	5/94 (5%)	1/15 (7%)	0/36 (0%)	
Week of First Observation	103	77	83	
Life Table Tests (d)		P=0.377	P=0.383N	
Incidental Tumor Tests (d)		P=0.465N	P=0.087N	
Fisher Exact Test (d)		P=0.197N	P=0.040N	
Integumentary System or Salivary Gland: Fibroma, Sarcoma, or Fibrosarcoma				
Overall Rates (a)	11/117 (9%)	2/125 (2%)	1/175 (1%)	
Adjusted Rates (b)	11.5%	8.1%	1.1%	
Terminal Rates (c)	10/94 (11%)	1/15 (7%)	0/36 (0%)	
Week of First Observation	96	77	83	
Life Table Tests (d)		P=0.634N	P=0.090N	
Incidental Tumor Tests (d)		P=0.121N	P=0.006N	
Fisher Exact Test (d)		P=0.007N	P<0.001N	
Hematopoietic System: Leukemia				
Overall Rates (a)	40/117 (34%)	39/125 (31%)	61/175 (35%)	
Adjusted Rates (b)	41.0%	81.7%	79.7%	
Terminal Rates (c)	37/94 (39%)	9/15 (60%)	23/36 (64%)	
Week of First Observation	86	65	62	
Life Table Tests (d)		P<0.001	P<0.001	P=0.075N
Incidental Tumor Tests (d)		P=0.017	P=0.002	P=0.382N
Fisher Exact Test (d)		P=0.360N	P=0.504	P=0.296

TABLE B3b. ANALYSIS OF PRIMARY TUMORS IN FEMALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS AND DIMETHYLHYDRAZINE (DMH) (Continued)

	Untreated Control	DMH	1% Amosite + DMH	DMH vs. Amosite + DMH
Liver: Neoplastic Nodule				
Overall Rates (e)	4/117 (3%)	29/125 (23%)	32/175 (18%)	
Adjusted Rates (b)	4.2%	73.6%	48.7%	
Terminal Rates (c)	3/94 (3%)	8/43 (53%)	11/36 (31%)	
Week of First Observation	101	66	69	
Life Table Tests (d)		P<0.001	P<0.001	P=0.006N
Incidental Tumor Tests (d)		P<0.001	P<0.001	P=0.038N
Fisher Exact Test (d)		P<0.001	P<0.001	P=0.185N
Liver: Hepatocellular Carcinoma				
Overall Rates (e)	1/117 (1%)	10/125 (8%)	8/175 (5%)	
Adjusted Rates (b)	1.1%	28.7%	12.8%	
Terminal Rates (c)	1/94 (1%)	3/15 (20%)	2/36 (6%)	
Week of First Observation	133	60	59	
Life Table Tests (d)		P<0.001	P=0.002	P=0.040N
Incidental Tumor Tests (d)		P=0.001	P=0.021	P=0.125N
Fisher Exact Test (d)		P=0.007	P=0.067	P=0.162N
Liver: Neoplastic Nodule or Hepatocellular Carcinoma				
Overall Rates (e)	5/117 (4%)	33/125 (26%)	38/175 (22%)	
Adjusted Rates (b)	5.2%	75.5%	54.8%	
Terminal Rates (c)	4/94 (4%)	9/15 (60%)	13/36 (36%)	
Week of First Observation	101	60	59	
Life Table Tests (d)		P<0.001	P<0.001	P=0.007N
Incidental Tumor Tests (d)		P<0.001	P<0.001	P=0.054N
Fisher Exact Test (d)		P<0.001	P<0.001	P=0.210N
Small Intestine: Adenocarcinoma				
Overall Rates (a)	0/117 (0%)	4/125 (3%)	11/175 (6%)	
Adjusted Rates (b)	0.0%	6.9%	15.1%	
Terminal Rates (c)	0/94 (0%)	0/15 (0%)	3/36 (8%)	
Week of First Observation		75	43	
Life Table Tests (d)		P=0.012	P<0.001	P=0.335
Incidental Tumor Tests (d)		P=0.233	P=0.025	P=0.184
Fisher Exact Test (d)		P=0.070	P=0.003	P=0.174
Small Intestine: Mucinous Cystadenocarcinoma				
Overall Rates (a)	0/117 (0%)	7/125 (6%)	2/175 (1%)	
Adjusted Rates (b)	0.0%	19.6%	2.0%	
Terminal Rates (c)	0/94 (0%)	2/15 (13%)	0/36 (0%)	
Week of First Observation		56	73	
Life Table Tests (d)		P<0.001	P=0.218	P=0.010N
Incidental Tumor Tests (d)		P=0.018	P=0.393	P=0.026N
Fisher Exact Test (d)		P=0.009	P=0.358	P=0.030N
Small Intestine: Adenocarcinoma, Mucinous Cystadenocarcinoma, or Adenocarcinoma in Adenomatous Polyp				
Overall Rates (a)	0/117 (0%)	11/125 (9%)	15/175 (9%)	
Adjusted Rates (b)	0.0%	25.1%	20.0%	
Terminal Rates (c)	0/94 (0%)	2/15 (13%)	4/36 (11%)	
Week of First Observation		56	43	
Life Table Tests (d)		P<0.001	P<0.001	P=0.287N
Incidental Tumor Tests (d)		P=0.005	P=0.005	P=0.513N
Fisher Exact Test (d)		P<0.001	P<0.001	P=0.551N
Small Intestine: Signet Ring Carcinoma				
Overall Rates (a)	0/117 (0%)	3/125 (2%)	8/175 (5%)	
Adjusted Rates (b)	0.0%	8.0%	7.8%	
Terminal Rates (c)	0/94 (0%)	0/15 (0%)	0/36 (0%)	
Week of First Observation		83	62	
Life Table Tests (d)		P=0.012	P=0.005	P=0.394
Incidental Tumor Tests (d)		P=0.070	P=0.121	P=0.242
Fisher Exact Test (d)		P=0.136	P=0.016	P=0.254

TABLE B3b. ANALYSIS OF PRIMARY TUMORS IN FEMALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS AND DIMETHYLHYDRAZINE (Continued)

	Untreated Control	DMH	1% Amosite + DMH	DMH vs. Amosite + DMH
Large Intestine: Signet Ring Carcinoma				
Overall Rates (a)	0/117 (0%)	7/125 (6%)	9/175 (5%)	
Adjusted Rates (b)	0.0%	8.5%	11.0%	
Terminal Rates (c)	0/94(0%)	0/15 (0%)	2/36 (6%)	
Week of First Observation		29	48	
Life Table Tests (d)		P=0.004	P=0.002	P=0.387N
Incidental Tumor Tests (d)		P=0.205	P=0.056	P=0.513
Fisher Exact Test (d)		P=0.009	P=0.009	P=0.529N
Large Intestine: Adenomatous Polyp				
Overall Rates (a)	1/117 (1%)	38/125 (30%)	59/175 (34%)	
Adjusted Rates (b)	1.1%	67.4%	66.1%	
Terminal Rates (c)	1/94 (1%)	6/15 (40%)	15/36 (42%)	
Week of First Observation	103	51	49	
Life Table Tests (d)		P<0.001	P<0.001	P=0.156N
Incidental Tumor Tests (d)		P<0.001	P<0.001	P=0.494
Fisher Exact Test (d)		P<0.001	P<0.001	P=0.316
Large Intestine: Adenocarcinoma				
Overall Rates (a)	0/117 (0%)	7/125 (6%)	9/175 (5%)	
Adjusted Rates (b)	0.0%	16.8%	12.2%	
Terminal Rates (c)	0/94 (0%)	1/15 (7%)	2/36 (6%)	
Week of First Observation		35	63	
Life Table Tests (d)		P<0.001	P<0.001	P=0.315N
Incidental Tumor Tests (d)		P=0.063	P=0.027	P=0.540N
Fisher Exact Test (d)		P=0.009	P=0.009	P=0.529N
Large Intestine: Mucinous Cystadenocarcinoma				
Overall Rates (a)	0/117 (0%)	7/125 (6%)	7/175 (4%)	
Adjusted Rates (b)	0.0%	14.5%	5.7%	
Terminal Rates (c)	0/94 (0%)	1/15 (7%)	0/36 (0%)	
Week of First Observation		35	60	
Life Table Tests (d)		P=0.001	P=0.015	P=0.236N
Incidental Tumor Tests (d)		P=0.063	P=0.265	P=0.453N
Fisher Exact Test (d)		P=0.009	P=0.026	P=0.352N
Large Intestine: Adenocarcinoma in Adenomatous Polyp				
Overall Rates (a)	0/117 (0%)	26/125 (21%)	46/175 (26%)	
Adjusted Rates (b)	0.0%	66.3%	48.4%	
Terminal Rates (c)	0/94 (0%)	6/15(40%)	7/36 (19%)	
Week of First Observation		67	55	
Life Table Tests (d)		P<0.001	P<0.001	P=0.390N
Incidental Tumor Tests (d)		P<0.001	P<0.001	P=0.277
Fisher Exact Test (d)		P<0.001	P<0.001	P=0.169
Large Intestine: Adenocarcinoma, Mucinous Adenocarcinoma, Mucinous Cystadenocarcinoma, or Adenocarcinoma in Adenomatous Polyp				
Overall Rates (a)	0/117 (0%)	39/125 (31%)	59/175 (34%)	
Adjusted Rates (b)	0.0%	77.6%	56.7%	
Terminal Rates (c)	0/94 (0%)	8/15 (53%)	9/36 (25%)	
Week of First Observation		35	55	
Life Table Tests (d)		P<0.001	P<0.001	P=0.153N
Incidental Tumor Tests (d)		P<0.001	P<0.001	P=0.462
Fisher Exact Test (d)		P<0.001	P<0.001	P=0.370

TABLE B3b. ANALYSIS OF PRIMARY TUMORS IN FEMALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS AND DIMETHYLHYDRAZINE (Continued)

	Untreated Control	DMH	1% Amosite + DMH	DMH vs. Amosite + DMH
Large Intestine: Adenomatous Polyp, Adenocarcinoma, Mucinous Adenocarcinoma, Mucinous Cystadenocarcinoma, or Adenocarcinoma in Adenomatous Polyp				
Overall Rates (a)	1/117 (1%)	66/125 (53%)	96/175 (55%)	
Adjusted Rates (b)	1.1%	92.0%	81.8%	
Terminal Rates (c)	1/94 (1%)	11/15 (73%)	20/36 (56%)	
Week of First Observation	136	35	49	
Life Table Tests (d)		P<0.001	P<0.001	P=0.039N
Incidental Tumor Tests (d)		P<0.001	P<0.001	P=0.477N
Fisher Exact Test (d)		P<0.001	P<0.001	P=0.407
Kidney: Tubular Cell Adenocarcinoma				
Overall Rates (e)	1/117 (1%)	3/125 (2%)	2/175 (1%)	
Adjusted Rates (b)	1.1%	10.6%	5.6%	
Terminal Rates (c)	1/94 (1%)	0/15 (0%)	2/36 (6%)	
Week of First Observation	127	78	106	
Life Table Tests (d)		P=0.018	P=0.192	P=0.180N
Incidental Tumor Tests (d)		P=0.183	P=0.386	P=0.258N
Fisher Exact Test (d)		P=0.333	P=0.648	P=0.346N
Kidney: Tubular Cell Adenoma or Adenocarcinoma				
Overall Rates (e)	1/117 (1%)	3/125 (2%)	3/175 (2%)	
Adjusted Rates (b)	1.1%	10.6%	8.3%	
Terminal Rates (c)	1/94 (1%)	0/15 (0%)	3/36 (8%)	
Week of First Observation	127	78	106	
Life Table Tests (d)		P=0.018	P=0.058	P=0.281N
Incidental Tumor Tests (d)		P=0.183	P=0.199	P=0.365N
Fisher Exact Test (d)		P=0.333	P=0.473	P=0.490N
Kidney: Sarcoma				
Overall Rates (e)	0/117 (0%)	23/125 (18%)	19/175 (11%)	
Adjusted Rates (b)	0.0%	27.5%	13.2%	
Terminal Rates (c)	0/94 (0%)	0/15 (0%)	0/36 (0%)	
Week of First Observation		52	39	
Life Table Tests (d)		P<0.001	P<0.001	P=0.019N
Incidental Tumor Tests (d)		P=0.018	P=0.210	P=0.142N
Fisher Exact Test (d)		P<0.001	P<0.001	P=0.046N
Kidney: Fibrosarcoma				
Overall Rates (e)	0/117 (0%)	4/125 (3%)	0/175 (0%)	
Adjusted Rates (b)	0.0%	5.7%	0.0%	
Terminal Rates (c)	0/94 (0%)	0/15 (0%)	0/36 (0%)	
Week of First Observation		67		
Life Table Tests (d)		P=0.021	(f)	P=0.019N
Incidental Tumor Tests (d)		P=0.609	(f)	P=0.036N
Fisher Exact Test (d)		P=0.068	(f)	P=0.029N
Kidney: Mixed Tumor Malignant				
Overall Rates (e)	0/117 (0%)	9/125 (7%)	35/175 (20%)	
Adjusted Rates (b)	0.0%	20.3%	34.0%	
Terminal Rates (c)	0/94 (0%)	1/15 (7%)	2/36 (6%)	
Week of First Observation		52	54	
Life Table Tests (d)		P<0.001	P<0.001	P=0.027
Incidental Tumor Tests (d)		P=0.017	P<0.001	P=0.001
Fisher Exact Test (d)		P=0.002	P<0.001	P=0.001

TABLE B3b. ANALYSIS OF PRIMARY TUMORS IN FEMALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS AND DIMETHYLHYDRAZINE (Continued)

	Untreated Control	DMH	1% Amosite + DMH	DMH vs. Amosite + DMH
Pituitary Gland: Adenoma				
Overall Rates (e)	50/117 (43%)	16/124 (13%)	19/175 (11%)	
Adjusted Rates (b)	48.8%	46.0%	34.0%	
Terminal Rates (c)	42/94 (45%)	5/15 (33%)	8/36 (22%)	
Week of First Observation	71	60	69	
Life Table Tests (d)		P=0.119	P=0.278N	P=0.063N
Incidental Tumor Tests (d)		P=0.015N	P<0.001N	P=0.184N
Fisher Exact Test (d)		P<0.001N	P<0.001N	P=0.357N
Pituitary Gland: Adenoma or Carcinoma				
Overall Rates (e)	52/117 (44%)	16/124 (13%)	20/175 (11%)	
Adjusted Rates (b)	50.3%	46.0%	34.8%	
Terminal Rates (c)	43/94 (46%)	5/15 (33%)	8/36 (22%)	
Week of First Observation	71	60	69	
Life Table Tests (d)		P=0.144	P=0.283N	P=0.084N
Incidental Tumor Tests (d)		P=0.007N	P<0.001N	P=0.235N
Fisher Exact Test (d)		P<0.001N	P<0.001N	P=0.416N
Adrenal Cortex: Adenoma				
Overall Rates (e)	3/117 (3%)	2/125 (2%)	4/175 (2%)	
Adjusted Rates (b)	3.1%	5.3%	8.7%	
Terminal Rates (c)	3/94 (3%)	0/15 (0%)	2/36 (6%)	
Week of First Observation	101	84	77	
Life Table Tests (d)		P=0.257	P=0.142	P=0.643N
Incidental Tumor Tests (d)		P=0.690N	P=0.480	P=0.586
Fisher Exact Test (d)		P=0.473N	P=0.583N	P=0.510
Adrenal Cortex: Adenoma or Carcinoma				
Overall Rates (e)	4/117 (3%)	2/125 (2%)	4/175 (2%)	
Adjusted Rates (b)	4.2%	5.3%	8.7%	
Terminal Rates (c)	3/94 (2%)	0/15 (0%)	2/36 (6%)	
Week of First Observation	101	84	77	
Life Table Tests (d)		P=0.324	P=0.215	P=0.643N
Incidental Tumor Tests (d)		P=0.570N	P=0.608	P=0.586
Fisher Exact Test (d)		P=0.311N	P=0.407N	P=0.510
Adrenal Medulla: Pheochromocytoma				
Overall Rates (e)	17/117 (15%)	0/125 (0%)	3/175 (2%)	
Adjusted Rates (b)	18.1%	0.0%	6.1%	
Terminal Rates (c)	17/94 (18%)	0/15 (0%)	1/36 (3%)	
Week of First Observation	103		82	
Life Table Tests (d)		P=0.080N	P=0.119N	
Incidental Tumor Tests (d)		P=0.007N	P=0.005N	
Fisher Exact Test (d)		P<0.001N	P<0.001N	
Adrenal Medulla: Pheochromocytoma or Malignant Pheochromocytoma				
Overall Rates (e)	18/117 (15%)	0/125 (0%)	4/175 (2%)	
Adjusted Rates (b)	18.8%	0.0%	8.8%	
Terminal Rates (c)	17/94 (18%)	0/15 (0%)	2/36 (6%)	
Week of First Observation	87		82	
Life Table Tests (d)		P=0.063N	P=0.166N	P=0.215
Incidental Tumor Tests (d)		P=0.006N	P=0.008N	P=0.166
Fisher Exact Test (d)		P<0.001N	P<0.001N	P=0.114

TABLE B3b. ANALYSIS OF PRIMARY TUMORS IN FEMALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS AND DIMETHYLHYDRAZINE (DMH) (Continued)

	Untreated Control	DMH	1% Amosite + DMH	DMH vs. Amosite + DMH
Thyroid Gland: Follicular Cell Adenoma				
Overall Rates (e)	2/116 (2%)	4/124 (3%)	6/174 (3%)	
Adjusted Rates (b)	2.1%	13.5%	10.5%	
Terminal Rates (c)	2/94 (2%)	1/15 (7%)	2/36 (6%)	
Week of First Observation	117	70	83	
Life Table Tests (d)		P=0.012	P=0.019	P=0.445N
Incidental Tumor Tests (d)		P=0.122	P=0.185	P=0.563N
Fisher Exact Test (d)		P=0.370	P=0.312	P=0.593
Thyroid Gland: Follicular Cell Carcinoma				
Overall Rates (e)	7/116 (6%)	2/124 (2%)	1/174 (1%)	
Adjusted Rates (b)	7.4%	9.4%	2.8%	
Terminal Rates (c)	7/94 (7%)	1/15 (7%)	1/36 (3%)	
Week of First Observation	111	92	106	
Life Table Tests (d)		P=0.441	P=0.281N	
Incidental Tumor Tests (d)		P=0.499N	P=0.087N	
Fisher Exact Test (d)		P=0.072N	P=0.008N	
Thyroid Gland: Follicular Cell Adenoma or Carcinoma				
Overall Rates (e)	9/116 (8%)	6/124 (5%)	7/174 (4%)	
Adjusted Rates (b)	9.6%	22.1%	13.2%	
Terminal Rates (c)	9/94 (10%)	2/15 (13%)	3/36 (8%)	
Week of First Observation	111	70	83	
Life Table Tests (d)		P=0.021	P=0.194	P=0.225N
Incidental Tumor Tests (d)		P=0.335	P=0.446N	P=0.319N
Fisher Exact Test (d)		P=0.258N	P=0.136N	P=0.473N
Thyroid Gland: C-Cell Adenoma				
Overall Rates (e)	14/116 (12%)	4/124 (3%)	8/174 (5%)	
Adjusted Rates (b)	14.9%	17.6%	14.8%	
Terminal Rates (c)	14/94 (15%)	2/15 (13%)	3/36 (8%)	
Week of First Observation	103	77	78	
Life Table Tests (d)		P=0.311	P=0.358	P=0.572N
Incidental Tumor Tests (d)		P=0.259N	P=0.203N	P=0.543
Fisher Exact Test (d)		P=0.009N	P=0.018N	P=0.390N
Thyroid Gland: C-Cell Carcinoma				
Overall Rates (e)	10/116 (9%)	1/124 (1%)	6/174 (3%)	
Adjusted Rates (b)	10.6%	6.7%	13.5%	
Terminal Rates (c)	10/94 (11%)	1/15 (7%)	3/36 (8%)	
Week of First Observation	107	103	91	
Life Table Tests (d)		P=0.495N	P=0.310	P=0.311
Incidental Tumor Tests (d)		P=0.139N	P=0.453N	P=0.246
Fisher Exact Test (d)		P=0.004N	P=0.053N	P=0.136
Thyroid Gland: C-Cell Adenoma or Carcinoma				
Overall Rates (e)	24/116 (21%)	5/124 (4%)	14/174 (8%)	
Adjusted Rates (b)	25.5%	23.9%	27.0%	
Terminal Rates (c)	24/94 (26%)	3/15 (20%)	6/36 (17%)	
Week of First Observation	107	77	78	
Life Table Tests (d)		P=0.455	P=0.205	P=0.423
Incidental Tumor Tests (d)		P=0.070N	P=0.178N	P=0.276
Fisher Exact Test (d)		P<0.001N	P=0.002N	P=0.122
Pancreatic Islets: Islet Cell Carcinoma				
Overall Rates (e)	3/116 (3%)	0/125 (0%)	0/175 (0%)	
Adjusted Rates (b)	3.2%	0.0%	0.0%	
Terminal Rates (c)	3/94 (3%)	0/15 (0%)	0/36 (0%)	
Week of First Observation	138			
Life Table Tests (d)		P=0.559N	P=0.334N	
Incidental Tumor Tests (d)		P=0.326N	P=0.186N	
Fisher Exact Test (d)		P=0.111N	P=0.062N	

TABLE B3b. ANALYSIS OF PRIMARY TUMORS IN FEMALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS AND DIMETHYLHYDRAZINE (DMH) (Continued)

	Untreated Control	DMH	1% Amosite + DMH	DMH vs. Amosite + DMH
Pancreatic Islets: Islet Cell Adenoma or Carcinoma				
Overall Rates (e)	5/116 (4%)	0/125 (0%)	2/175 (1%)	
Adjusted Rates (b)	5.3%	0.0%	5.2%	
Terminal Rates (c)	5/94 (5%)	0/15 (0%)	1/36 (3%)	
Week of First Observation	138		102	
Life Table Tests (d)		P=0.402N	P=0.653	
Incidental Tumor Tests (d)		P=0.402N	P=0.533N	
Fisher Exact Test (d)		P=0.025N	P=0.092N	
Mammary Gland: Adenoma				
Overall Rates (a) (g)	8/117 (7%)	1/125 (1%)	2/175 (1%)	
Adjusted Rates (b)	8.4%	6.7%	3.7%	
Terminal Rates (c)	7/94 (7%)	1/15 (7%)	0/36 (0%)	
Week of First Observation	96	103	94	
Life Table Tests (d)		P=0.584N	P=0.372N	
Incidental Tumor Tests (d)		P=0.216N	P=0.135N	
Fisher Exact Test (d)		P=0.014N	P=0.011N	
Mammary Gland: Fibroadenoma				
Overall Rates (a)	72/117 (62%)	13/125 (10%)	18/175 (10%)	
Adjusted Rates (b)	71.8%	45.1%	38.8%	
Terminal Rates (c)	66/94 (70%)	4/15 (27%)	12/36 (33%)	
Week of First Observation	70	67	77	
Life Table Tests (d)		P=0.428N	P=0.003N	P=0.126N
Incidental Tumor Tests (d)		P<0.001N	P<0.001N	P=0.252N
Fisher Exact Test (d)		P<0.001N	P<0.001N	P=0.560
Mammary Gland: Adenocarcinoma				
Overall Rates (a) (h)	6/117 (5%)	3/125 (2%)	(i) 1/175 (1%)	
Adjusted Rates (b)	6.1%	15.3%	1.2%	
Terminal Rates (c)	5/94 (5%)	2/15 (13%)	0/36 (0%)	
Week of First Observation	71	87	84	
Life Table Tests (d)		P=0.224	P=0.239N	P=0.098N
Incidental Tumor Tests (d)		P=0.605N	P=0.016N	P=0.126N
Fisher Exact Test (d)		P=0.218N	P=0.018N	P=0.197N
Clitoral Gland: Carcinoma				
Overall Rates (e)	6/117 (5%)	1/125 (1%)	3/175 (2%)	
Adjusted Rates (b)	6.3%	4.0%	8.3%	
Terminal Rates (c)	5/94 (5%)	0/15 (0%)	3/36 (8%)	
Week of First Observation	101	95	106	
Life Table Tests (d)		P=0.698N	P=0.503	
Incidental Tumor Tests (d)		P=0.344N	P=0.428N	
Fisher Exact Test (d)		P=0.050N	P=0.097N	
Uterus: Endometrial Stromal Polyp				
Overall Rates (a)	13/117 (11%)	10/125 (8%)	19/175 (11%)	
Adjusted Rates (b)	13.2%	27.5%	30.0%	
Terminal Rates (c)	10/94 (11%)	2/15 (13%)	7/36 (19%)	
Week of First Observation	86	65	69	
Life Table Tests (d)		P=0.008	P=0.003	P=0.536N
Incidental Tumor Tests (d)		P=0.552N	P=0.502	P=0.404
Fisher Exact Test (d)		P=0.279N	P=0.545N	P=0.267
Uterus: Endometrial Stromal Sarcoma				
Overall Rates (a)	5/117 (4%)	4/125 (3%)	2/175 (1%)	
Adjusted Rates (b)	5.0%	7.8%	4.9%	
Terminal Rates (c)	3/94 (3%)	0/15 (0%)	1/36 (3%)	
Week of First Observation	88	57	99	
Life Table Tests (d)		P=0.186	P=0.595N	P=0.098N
Incidental Tumor Tests (d)		P=0.513N	P=0.370N	P=0.206N
Fisher Exact Test (d)		P=0.464N	P=0.094N	P=0.201N

TABLE B3b. ANALYSIS OF PRIMARY TUMORS IN FEMALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS AND DIMETHYLHYDRAZINE (DMH) (Continued)

	Untreated Control	DMH	1% Amosite + DMH	DMH vs. Amosite + DMH
Brain: Astrocytoma				
Overall Rates (e)	4/117 (3%)	1/125 (1%)	0/175 (0%)	
Adjusted Rates (b)	4.0%	3.3%	0.0%	
Terminal Rates (c)	2/94 (2%)	0/15 (0%)	0/36 (0%)	
Week of First Observation	75	93		
Life Table Tests (d)		P=0.707N	P=0.171N	
Incidental Tumor Tests (d)		P=0.283N	P=0.029N	
Fisher Exact Test (d)		P=0.165N	P=0.025N	
Ear Canal: Squamous Cell Papilloma or Carcinoma				
Overall Rates (e)	0/117 (0%)	0/125 (0%)	4/175 (2%)	
Adjusted Rates (b)	0.0%	0.0%	7.3%	
Terminal Rates (c)	0/94 (0%)	0/15 (0%)	1/36 (3%)	
Week of First Observation			82	
Life Table Tests (d)		(f)	P=0.015	P=0.210
Incidental Tumor Tests (d)		(f)	P=0.069	P=0.145
Fisher Exact Test (d)		(f)	P=0.127	P=0.114
Zymbal Gland: Squamous Cell Papilloma				
Overall Rates (e)	0/117 (0%)	12/125 (10%)	14/175 (8%)	
Adjusted Rates (b)	0.0%	30.9%	20.2%	
Terminal Rates (c)	0/94 (0%)	2/15 (13%)	4/36(11%)	
Week of First Observation		54	49	
Life Table Tests (d)		P<0.001	P<0.001	P=0.144N
Incidental Tumor Tests (d)		P<0.001	P=0.005	P=0.336N
Fisher Exact Test (d)		P<0.001	P<0.001	P=0.388N
Zymbal Gland: Carcinoma				
Overall Rates (e)	3/117 (3%)	20/125 (16%)	23/175 (13%)	
Adjusted Rates (b)	3.1%	41.3%	23.5%	
Terminal Rates (c)	2/94 (2%)	1/15 (7%)	1/36 (3%)	
Week of First Observation	99	40	49	
Life Table Tests (d)		P<0.001	P<0.001	P=0.082
Incidental Tumor Tests (d)		P<0.001	P=0.016	P=0.374N
Fisher Exact Test (d)		P<0.001	P=0.001	P=0.297N
Zymbal Gland: Carcinoma or Squamous Cell Papilloma				
Overall Rates (e)	3/117 (3%)	31/125 (25%)	37/175 (21%)	
Adjusted Rates (b)	3.1%	59.4%	39.2%	
Terminal Rates (c)	2/94 (2%)	3/15 (20%)	5/36 (14%)	
Week of First Observation	99	40	49	
Life Table Tests (d)		P<0.001	P<0.001	P=0.041N
Incidental Tumor Tests (d)		P<0.001	P<0.001	P=0.297N
Fisher Exact Test (d)		P<0.001	P<0.001	P=0.271N
All Sites: Benign Tumors				
Overall Rates (a)	99/117 (85%)	74/125 (59%)	102/175 (58%)	
Adjusted Rates (b)	90.8%	96.5%	91.1%	
Terminal Rates (c)	84/94 (89%)	13/15 (87%)	28/36 (78%)	
Week of First Observation	70	51	49	
Life Table Test (d)		P<0.001	P<0.001	P=0.007N
Incidental Tumor Test (d)		P=0.032N	P<0.001N	P=0.167N
Fisher Exact Test (d)		P<0.001N	P<0.001N	P=0.485N
All Sites: Malignant Tumors				
Overall Rates (a)	74/117 (63%)	111/125 (89%)	164/175 (94%)	
Adjusted Rates (b)	69.6%	98.0%	98.1%	
Terminal Rates (c)	62/94 (66%)	13/15 (87%)	33/36 (92%)	
Week of First Observation	71	29	39	
Life Table Test (d)		P<0.001	P<0.001	P=0.023N
Incidental Tumor Test (d)		P<0.001	P<0.001	P=0.082
Fisher Exact Test (d)		P<0.001	P<0.001	P=0.096

TABLE B3b. ANALYSIS OF PRIMARY TUMORS IN FEMALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS AND DIMETHYLHYDRAZINE (DMH) (Continued)

	Untreated Control	DMH	1% Amosite + DMH	DMH vs. Amosite + DMH
All Sites: All Tumors				
Overall Rates (a)	113/117 (97%)	121/125 (97%)	175/175 (100%)	
Adjusted Rates (b)	98.3%	100.0%	100.0%	
Terminal Rates (c)	92/94 (98%)	15/15 (100%)	36/36 (100%)	
Week of First Observation	70	29	39	
Life Table Test (d)		P<0.001	P<0.001	P=0.010N
Incidental Tumor Test (d)		P=0.366	P=0.028	P=0.046
Fisher Exact Test (d)		P=0.602	P=0.025	P=0.029

(a) Number of tumor-bearing animals/number of animals examined grossly at the site
(b) Kaplan-Meier estimated tumor incidences at the end of the study after adjusting for intercurrent mortality
(c) Observed tumor incidence in animals killed at the end of the study
(d) Beneath the dosed group incidence are the P values corresponding to pairwise comparisons between that dosed group and the controls. The life table analysis regards tumors in animals dying prior to terminal kill as being (directly or indirectly) the cause of death. The incidental tumor test regards these lesions as nonfatal. The Fisher exact test compares directly the overall incidence rates. A lower incidence in a dosed group than in controls is indicated by (N). The P values for the comparison of the DMH group with the 1% amosite + DMH group are presented in the last column for sites with a tumor incidence of at least 2% in at least one of the two groups.
(e) Number of tumor-bearing animals/number of animals examined microscopically at the site
(f) No P value is reported because no tumors were observed in the dosed and control groups.
(g) Includes one papillary cystadenoma
(h) Includes one carcinoma in situ, NOS, and one carcinoma, NOS
(i) Papillary adenocarcinoma

TABLE B3c. ANALYSIS OF PRIMARY TUMORS IN FEMALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS: AMOSITE vs. AMOSITE + DIMETHYLHYDRAZINE (DMH)

	1% Amosite	1% Amosite + DMH
Subcutaneous Tissue: Fibroma		
Overall Rates (a)	8/250 (3%)	0/175 (0%)
Adjusted Rates (b)	3.8%	0.0%
Terminal Rates (c)	6/206 (3%)	0/36 (0%)
Week of First Observation	90	
Life Table Tests (d)		P=0.216N
Incidental Tumor Tests (d)		P=0.065N
Fisher Exact Test (d)		P=0.014N
Subcutaneous Tissue: Fibroma or Neurofibroma		
Overall Rates (a)	9/250 (4%)	0/175 (0%)
Adjusted Rates (b)	4.2%	0.0%
Terminal Rates (c)	7/206 (3%)	0/36 (0%)
Week of First Observation	90	
Life Table Tests (d)		P=0.189N
Incidental Tumor Tests (d)		P=0.058N
Fisher Exact Test (d)		P=0.008N
Subcutaneous Tissue: Fibrosarcoma		
Overall Rates (a)	5/250 (2%)	1/175 (1%)
Adjusted Rates (b)	2.4%	1.1%
Terminal Rates (c)	5/206 (2%)	0/36 (0%)
Week of First Observation	103	83
Life Table Tests (d)		P=0.702N
Incidental Tumor Tests (d)		P=0.463N
Fisher Exact Test (d)		P=0.214N
Subcutaneous Tissue: Fibroma or Fibrosarcoma		
Overall Rates (a)	12/250 (5%)	1/175 (1%)
Adjusted Rates (b)	5.7%	1.1%
Terminal Rates (c)	10/206 (5%)	0/36 (0%)
Week of First Observation	90	83
Life Table Tests (d)		P=0.302N
Incidental Tumor Tests (d)		P=0.060N
Fisher Exact Test (d)		P=0.009N
Subcutaneous Tissue: Sarcoma		
Overall Rates (a)	6/250 (2%)	0/175 (0%)
Adjusted Rates (b)	2.9%	0.0%
Terminal Rates (c)	6/206 (3%)	0/36 (0%)
Week of First Observation	103	
Life Table Tests (d)		P=0.325N
Incidental Tumor Tests (d)		P=0.325N
Fisher Exact Test (d)		P=0.040N
Subcutaneous Tissue: Sarcoma, Fibrosarcoma, or Neurofibrosarcoma		
Overall Rates (a)	11/250 (4%)	1/175 (1%)
Adjusted Rates (b)	5.3%	1.1%
Terminal Rates (c)	11/206 (5%)	0/36 (0%)
Week of First Observation	103	83
Life Table Tests (d)		P=0.370N
Incidental Tumor Tests (d)		P=0.211N
Fisher Exact Test (d)		P=0.015N
Subcutaneous Tissue: Fibroma, Neurofibroma, Sarcoma, Fibrosarcoma, or Neurofibrosarcoma		
Overall Rates (a)	19/250 (8%)	1/175 (1%)
Adjusted Rates (b)	9.1%	1.1%
Terminal Rates (c)	17/206 (8%)	0/36 (0%)
Week of First Observation	90	83
Life Table Tests (d)		P=0.139N
Incidental Tumor Tests (d)		P=0.026N
Fisher Exact Test (d)		P<0.001N

TABLE B3c. ANALYSIS OF PRIMARY TUMORS IN FEMALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS: AMOSITE vs. AMOSITE + DIMETHYLHYDRAZINE (DMH) (Continued)

	1% Amosite	1% Amosite + DMH
Integumentary System or Salivary Gland: Sarcoma, Fibrosarcoma, or Neurofibrosarcoma		
Overall Rates (e)	12/250 (5%)	1/175 (1%)
Adjusted Rates (b)	5.8%	1.1%
Terminal Rates (c)	12/206 (6%)	0/36 (0%)
Week of First Observation	103	83
Life Table Tests (d)		P=0.331N
Incidental Tumor Tests (d)		P=0.187N
Fisher Exact Test (d)		P=0.009N
Integumentary System or Salivary Gland: Fibroma, Neurofibroma, Sarcoma, Fibrosarcoma, or Neurofibrosarcoma		
Overall Rates (e)	20/250 (8%)	1/175 (1%)
Adjusted Rates (b)	9.5%	1.1%
Terminal Rates (c)	18/206 (9%)	0/36 (0%)
Week of First Observation	90	83
Life Table Tests (d)		P=0.125N
Incidental Tumor Tests (d)		P=0.023N
Fisher Exact Test (d)		P<0.001N
Hematopoietic System: Leukemia		
Overall Rates (a)	83/250 (33%)	61/175 (35%)
Adjusted Rates (b)	38.3%	79.7%
Terminal Rates (c)	73/206 (35%)	23/36 (64%)
Week of First Observation	80	62
Life Table Tests (d)		P<0.001
Incidental Tumor Tests (d)		P<0.001
Fisher Exact Test (d)		P=0.400
Liver: Neoplastic Nodule		
Overall Rates (e)	10/250 (4%)	32/175 (18%)
Adjusted Rates (b)	4.9%	48.7%
Terminal Rates (c)	10/206 (5%)	11/36 (31%)
Week of First Observation	103	69
Life Table Tests (d)		P<0.001
Incidental Tumor Tests (d)		P<0.001
Fisher Exact Test (d)		P=0.
Liver: Hepatocellular Carcinoma		
Overall Rates (e)	0/250 (0%)	8/175 (5%)
Adjusted Rates (b)	0.0%	12.8%
Terminal Rates (c)	0/206 (0%)	2/36 (6%)
Week of First Observation		59
Life Table Tests (d)		P<0.001
Incidental Tumor Tests (d)		P=0.006
Fisher Exact Test (d)		P<0.001
Liver: Neoplastic Nodule or Hepatocellular Carcinoma		
Overall Rates (e)	10/250 (4%)	38/175 (22%)
Adjusted Rates (b)	4.9%	54.8%
Terminal Rates (c)	10/206 (5%)	13/36 (36%)
Week of First Observation	103	59
Life Table Tests (d)		P<0.001
Incidental Tumor Tests (d)		P<0.001
Fisher Exact Test (d)		P<0.001

TABLE B3b. ANALYSIS OF PRIMARY TUMORS IN FEMALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS: AMOSITE vs. AMOSITE + DIMETHYLHYDRAZINE (DMH) (Continued)

	1% Amosite	1% Amosite + DMH
Small Intestine: Adenocarcinoma		
Overall Rates (a)	0/250 (0%)	11/175 (6%)
Adjusted Rates (b)	0.0%	15.1%
Terminal Rates (c)	0/206 (0%)	3/36 (8%)
Week of First Observation		43
Life Table Tests (d)		P<0.001
Incidental Tumor Tests (d)		P=0.02
Fisher Exact Test (d)		P<0.001
Small Intestine: Signet Ring Carcinoma		
Overall Rates (e)	0/250 (0%)	8/175 (5%)
Adjusted Rates (b)	0.0%	7.8%
Terminal Rates (c)	0/206 (0%)	0/36 (0%)
Week of First Observation		62
Life Table Tests (d)		P<0.001
Incidental Tumor Tests (d)		P=0.137
Fisher Exact Test (d)		P<0.001
Small Intestine: Adenocarcinoma or Mucinous Cystadenocarcinoma		
Overall Rates (e)	1/250 (0%)	13/175 (7%)
Adjusted Rates (b)	0.5%	16.8%
Terminal Rates (c)	1/206 (0%)	3/36 (8%)
Week of First Observation	103	43
Life Table Tests (d)		P<0.001
Incidental Tumor Tests (d)		P=0.003
Fisher Exact Test (d)		P<0.001
Small Intestine: Adenomatous Polyp, Adenocarcinoma, Mucinous Cystadenocarcinoma, or Adenocarcinoma in Adenomatous Polyp		
Overall Rates (e)	2/250 (1%)	15/175 (9%)
Adjusted Rates (b)	1.0%	20.0%
Terminal Rates (c)	2/206 (1%)	4/36 (11%)
Week of First Observation	103	43
Life Table Tests (d)		P<0.001
Incidental Tumor Tests (d)		P<0.001
Fisher Exact Test (d)		P<0.001
Large Intestine: Signet Ring Carcinoma		
Overall Rates (e)	0/250 (0%)	8/175 (5%)
Adjusted Rates (b)	0.0%	7.8%
Terminal Rates (c)	0/206 (0%)	0/36 (0%)
Week of First Observation		62
Life Table Tests (d)		P<0.001
Incidental Tumor Tests (d)		P=0.137
Fisher Exact Test (d)		P<0.001
Large Intestine: Adenomatous Polyp		
Overall Rates (e)	0/250 (0%)	59/175 (34%)
Adjusted Rates (b)	0.0%	66.1%
Terminal Rates (c)	0/206 (0%)	15/36 (42%)
Week of First Observation		49
Life Table Tests (d)		P<0.001
Incidental Tumor Tests (d)		P<0.001
Fisher Exact Test (d)		P<0.001

TABLE B3c. ANALYSIS OF PRIMARY TUMORS IN FEMALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS: AMOSITE vs. AMOSITE + DIMETHYLHYDRAZINE (DMH) (Continued)

	1% Amosite	1% Amosite + DMH
Large Intestine: Adenocarcinoma		
Overall Rates (e)	0/250 (0%)	9/175 (5%)
Adjusted Rates (b)	0.0%	12.2%
Terminal Rates (c)	0/206 (0%)	2/36 (6%)
Week of First Observation		63
Life Table Tests (d)		P<0.001
Incidental Tumor Tests (d)		P=0.009
Fisher Exact Test (d)		P<0.001
Large Intestine: Mucinous Cystadenocarcinoma		
Overall Rates (e)	0/250 (0%)	7/175 (4%)
Adjusted Rates (b)	0.0%	5.7%
Terminal Rates (c)	0/206 (0%)	0/36 (0%)
Week of First Observation		60
Life Table Tests (d)		P<0.001
Incidental Tumor Tests (d)		P=0.199
Fisher Exact Test (d)		P=0.002
Large Intestine: Adenocarcinoma in Adenomatous Polyp		
Overall Rates (e)	0/250 (0%)	46/175 (26%)
Adjusted Rates (b)	0.0%	48.4%
Terminal Rates (c)	0/206 (0%)	7/36 (19%)
Week of First Observation		55
Life Table Tests (d)		P<0.001
Incidental Tumor Tests (d)		P<0.001
Fisher Exact Test (d)		P<0.001
Large Intestine: Adenocarcinoma, Mucinous Cystadenocarcinoma, or Adenocarcinoma in Adenomatous Polyp		
Overall Rates (e)	0/250 (0%)	59/175 (34%)
Adjusted Rates (b)	0.0%	56.7%
Terminal Rates (c)	0/206 (0%)	9/36 (25%)
Week of First Observation		55
Life Table Tests (d)		P<0.001
Incidental Tumor Tests (d)		P<0.001
Fisher Exact Test (d)		P<0.001
Large Intestine: Adenomatous Polyp, Adenocarcinoma, Mucinous Cystadenocarcinoma, or Adenocarcinoma in Adenomatous Polyp		
Overall Rates (e)	0/250 (0%)	96/175 (55%)
Adjusted Rates (b)	0.0%	81.8%
Terminal Rates (c)	0/206 (0%)	20/36 (56%)
Week of First Observation		49
Life Table Tests (d)		P<0.001
Incidental Tumor Tests (d)		P<0.001
Fisher Exact Test (d)		P<0.001
Kidney: Sarcoma		
Overall Rates (e)	1/250 (0%)	19/175 (11%)
Adjusted Rates (b)	0.5%	13.2%
Terminal Rates (c)	1/206 (0%)	0/36 (0%)
Week of First Observation	103	39
Life Table Tests (d)		P<0.001
Incidental Tumor Tests (d)		P=0.047
Fisher Exact Test (d)		P<0.001

TABLE B3c. ANALYSIS OF PRIMARY TUMORS IN FEMALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS: AMOSITE vs. AMOSITE + DIMETHYLHYDRAZINE (DMH) (Continued)

	1% Amosite	1% Amosite + DMH
Kidney: Malignant Mixed Tumor		
Overall Rates (e)	1/250 (0%)	35/175 (20%)
Adjusted Rates (b)	0.5%	34.0%
Terminal Rates (c)	0/206 (0%)	2/36 (6%)
Week of First Observation	101	54
Life Table Tests (d)		P<0.001
Incidental Tumor Tests (d)		P<0.001
Fisher Exact Test (d)		P<0.001
Kidney: Mixed Tumor Benign or Malignant		
Overall Rates (e)	2/250 (1%)	35/175 (20%)
Adjusted Rates (b)	1.0%	34.0%
Terminal Rates (c)	1/206 (0%)	2/36 (6%)
Week of First Observation	101	54
Life Table Tests (d)		P<0.001
Incidental Tumor Tests (d)		P<0.001
Fisher Exact Test (d)		P<0.001
Pituitary Gland: Adenoma		
Overall Rates (e)	107/249 (43%)	19/175 (11%)
Adjusted Rates (b)	49.4%	34.0%
Terminal Rates (c)	96/205 (47%)	8/36 (22%)
Week of First Observation	73	69
Life Table Tests (d)		P=0.335N
Incidental Tumor Tests (d)		P<0.001N
Fisher Exact Test (d)		P<0.001N
Pituitary Gland: Carcinoma		
Overall Rates (e)	11/249 (4%)	1/175 (1%)
Adjusted Rates (b)	5.1%	1.2%
Terminal Rates (c)	7/205 (3%)	0/36 (0%)
Week of First Observation	85	85
Life Table Tests (d)		P=0.310N
Incidental Tumor Tests (d)		P=0.010N
Fisher Exact Test (d)		P=0.015N
Pituitary Gland: Adenoma or Carcinoma		
Overall Rates (e)	118/249 (47%)	20/175 (11%)
Adjusted Rates (b)	53.5%	34.8%
Terminal Rates (c)	103/205 (50%)	8/36 (22%)
Week of First Observation	73	69
Life Table Tests (d)		P=0.231N
Incidental Tumor Tests (d)		P<0.001N
Fisher Exact Test (d)		P<0.001N
Adrenal Cortex: Cortical Adenoma		
Overall Rates (e)	13/249 (5%)	4/175 (2%)
Adjusted Rates (b)	6.3%	8.7%
Terminal Rates (c)	13/205 (6%)	2/36 (6%)
Week of First Observation	103	77
Life Table Tests (d)		P=0.299
Incidental Tumor Tests (d)		P=0.557
Fisher Exact Test (d)		P=0.101N
Adrenal Cortex: Cortical Adenoma or Carcinoma		
Overall Rates (e)	14/249 (6%)	4/175 (2%)
Adjusted Rates (b)	6.8%	8.7%
Terminal Rates (c)	14/205 (7%)	2/36 (6%)
Week of First Observation	103	77
Life Table Tests (d)		P=0.340
Incidental Tumor Tests (d)		P=0.594
Fisher Exact Test (d)		P=0.073N

TABLE B3c. ANALYSIS OF PRIMARY TUMORS IN FEMALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS: AMOSITE vs. AMOSITE + DIMETHYLHYDRAZINE (DMH) (Continued)

	1% Amosite	1% Amosite + DMH
Adrenal Medulla: Pheochromocytoma		
Overall Rates (e)	27/249 (11%)	3/175 (2%)
Adjusted Rates (b)	13.2%	6.1%
Terminal Rates (c)	27/205 (13%)	1/36 (3%)
Week of First Observation	103	82
Life Table Tests (d)		P=0.273N
Incidental Tumor Tests (d)		P=0.126N
Fisher Exact Test (d)		P<0.001N
Adrenal Medulla: Pheochromocytoma or Malignant Pheochromocytoma		
Overall Rates (e)	30/249 (12%)	4/175 (2%)
Adjusted Rates (b)	14.6%	8.8%
Terminal Rates (c)	30/205 (15%)	2/36 (6%)
Week of First Observation	103	82
Life Table Tests (d)		P=0.356N
Incidental Tumor Tests (d)		P=0.188N
Fisher Exact Test (d)		P<0.001N
Thyroid Gland: Follicular Cell Adenoma		
Overall Rates (e)	10/247 (4%)	6/174 (3%)
Adjusted Rates (b)	4.9%	10.5%
Terminal Rates (c)	10/204 (5%)	2/36 (6%)
Week of First Observation	103	83
Life Table Tests (d)		P=0.034
Incidental Tumor Tests (d)		P=0.303
Fisher Exact Test (d)		P=0.482N
Thyroid Gland: Follicular Cell Adenoma or Carcinoma		
Overall Rates (e)	13/247 (5%)	7/174 (4%)
Adjusted Rates (b)	6.4%	13.2%
Terminal Rates (c)	13/204 (6%)	3/36 (8%)
Week of First Observation	103	83
Life Table Tests (d)		P=0.028
Incidental Tumor Tests (d)		P=0.237
Fisher Exact Test (d)		P=0.365N
Thyroid Gland: C-Cell Adenoma		
Overall Rates (e)	37/247 (15%)	8/174 (5%)
Adjusted Rates (b)	18.0%	14.8%
Terminal Rates (c)	36/204 (18%)	3/36 (8%)
Week of First Observation	73	78
Life Table Tests (d)		P=0.489
Incidental Tumor Tests (d)		P=0.223N
Fisher Exact Test (d)		P<0.001N
Thyroid Gland: C-Cell Carcinoma		
Overall Rates (e)	29/247 (12%)	6/174 (3%)
Adjusted Rates (b)	14.0%	13.5%
Terminal Rates (c)	27/204 (13%)	3/36 (8%)
Week of First Observation	75	91
Life Table Tests (d)		P=0.518
Incidental Tumor Tests (d)		P=0.257N
Fisher Exact Test (d)		P<0.001N
Thyroid Gland: C-Cell Adenoma or Carcinoma		
Overall Rates (e)	65/247 (26%)	14/174 (8%)
Adjusted Rates (b)	31.3%	27.0%
Terminal Rates (c)	62/204 (30%)	6/36 (17%)
Week of First Observation	73	78
Life Table Tests (d)		P=0.414
Incidental Tumor Tests (d)		P=0.114N
Fisher Exact Test (d)		P<0.001N

TABLE B3b. ANALYSIS OF PRIMARY TUMORS IN FEMALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS: AMOSITE vs. AMOSITE + DIMETHYLHYDRAZINE (DMH) (Continued)

	1% Amosite	1% Amosite + DMH
Pancreatic Islets: Islet Cell Adenoma		
Overall Rates (e)	7/249 (3%)	2/175 (1%)
Adjusted Rates (b)	3.4%	5.2%
Terminal Rates (c)	7/205 (3%)	1/36 (3%)
Week of First Observation	103	102
Life Table Tests (d)		P=0.445
Incidental Tumor Tests (d)		P=0.617
Fisher Exact Test (d)		P=0.206N
Pancreatic Islets: Islet Cell Carcinoma		
Overall Rates (e)	7/249 (3%)	0/175 (0%)
Adjusted Rates (b)	3.4%	0.0%
Terminal Rates (c)	7/205 (3%)	0/36 (0%)
Week of First Observation	103	
Life Table Tests (d)		P=0.279N
Incidental Tumor Tests (d)		P=0.279N
Fisher Exact Test (d)		P=0.023N
Pancreatic Islets: Islet Cell Adenoma or Carcinoma		
Overall Rates (e)	14/249 (6%)	2/175 (1%)
Adjusted Rates (b)	6.8%	5.2%
Terminal Rates (c)	14/205 (7%)	1/36 (3%)
Week of First Observation	103	102
Life Table Tests (d)		P=0.529N
Incidental Tumor Tests (d)		P=0.397N
Fisher Exact Test (d)		P=0.013N
Mammary Gland: Adenoma		
Overall Rates (a)	14/250 (6%)	2/175 (1%)
Adjusted Rates (b)	6.6%	3.7%
Terminal Rates (c)	12/206 (6%)	0/36 (0%)
Week of First Observation	70	94
Life Table Tests (d)		P=0.397N
Incidental Tumor Tests (d)		P=0.066N
Fisher Exact Test (d)		P=0.013N
Mammary Gland: Fibroadenoma		
Overall Rates (a)	135/250 (54%)	18/175 (10%)
Adjusted Rates (b)	64.2%	38.8%
Terminal Rates (c)	131/206 (64%)	12/36 (33%)
Week of First Observation	70	77
Life Table Tests (d)		P=0.042N
Incidental Tumor Tests (d)		P<0.001N
Fisher Exact Test (d)		P<0.001N
Mammary Gland: Adenocarcinoma		
Overall Rates (a)	25/250 (10%)	1/175 (1%)
Adjusted Rates (b)	11.9%	1.2%
Terminal Rates (c)	23/206 (11%)	0/36 (0%)
Week of First Observation	85	84
Life Table Tests (d)		P=0.068N
Incidental Tumor Tests (d)		P=0.009N
Fisher Exact Test (d)		P<0.001N
Clitoral Gland: Carcinoma		
Overall Rates (e)	14/250 (6%)	3/175 (2%)
Adjusted Rates (b)	6.6%	8.3%
Terminal Rates (c)	12/206 (6%)	3/36 (8%)
Week of First Observation	69	103
Life Table Tests (d)		P=0.577
Incidental Tumor Tests (d)		P=0.446N
Fisher Exact Test (d)		P=0.035N

TABLE B3c. ANALYSIS OF PRIMARY TUMORS IN FEMALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS: AMOSITE vs. AMOSITE + DIMETHYLHYDRAZINE (DMH) (Continued)

	1% Amosite	1% Amosite + DMH
Clitoral Gland: Adenoma or Carcinoma		
Overall Rates (e)	15/250 (6%)	3/175 (2%)
Adjusted Rates (b)	7.1%	8.3%
Terminal Rates (c)	13/206 (6%)	3/36 (8%)
Week of First Observation	69	103
Life Table Tests (d)		P=0.613
Incidental Tumor Tests (d)		P=0.408N
Fisher Exact Test (d)		P=0.024N
Uterus: Endometrial Stromal Polyp		
Overall Rates (e)	31/250 (12%)	19/175 (11%)
Adjusted Rates (b)	14.5%	30.0%
Terminal Rates (c)	26/206 (13%)	7/36 (19%)
Week of First Observation	68	69
Life Table Tests (d)		P<0.001
Incidental Tumor Tests (d)		P=0.470
Fisher Exact Test (d)		P=0.372N
Brain: Glioma or Astrocytoma		
Overall Rates (e)	5/250 (2%)	0/175 (0%)
Adjusted Rates (b)	2.3%	0.0%
Terminal Rates (c)	2/206 (1%)	0/36 (0%)
Week of First Observation	82	
Life Table Tests (d)		P=0.320N
Incidental Tumor Tests (d)		P=0.020N
Fisher Exact Test (d)		P=0.069N
Ear Canal: Squamous Cell Papilloma or Carcinoma		
Overall Rates (e)	0/250 (0%)	4/175 (2%)
Adjusted Rates (b)	0.0%	7.3%
Terminal Rates (c)	0/206 (0%)	1/36 (3%)
Week of First Observation		82
Life Table Tests (d)		P<0.001
Incidental Tumor Tests (d)		P=0.071
Fisher Exact Test (d)		P=0.028
Zymbal Gland: Squamous Cell Papilloma		
Overall Rates (e)	3/250 (1%)	14/175 (8%)
Adjusted Rates (b)	1.5%	20.2%
Terminal Rates (c)	3/206 (1%)	4/36 (11%)
Week of First Observation	103	49
Life Table Tests (d)		P<0.001
Incidental Tumor Tests (d)		P=0.002
Fisher Exact Test (d)		P<0.001
Zymbal Gland: Carcinoma		
Overall Rates (e)	4/250 (2%)	23/175 (13%)
Adjusted Rates (b)	1.9%	23.5%
Terminal Rates (c)	4/206 (2%)	1/36 (3%)
Week of First Observation	103	49
Life Table Tests (d)		P<0.001
Incidental Tumor Tests (d)		P=0.007
Fisher Exact Test (d)		P<0.001
Zymbal Gland: Carcinoma or Squamous Cell Papilloma		
Overall Rates (e)	7/250 (3%)	37/175 (21%)
Adjusted Rates (b)	3.4%	39.2%
Terminal Rates (c)	7/206 (3%)	5/36 (14%)
Week of First Observation	103	49
Life Table Tests (d)		P<0.001
Incidental Tumor Tests (d)		P<0.001
Fisher Exact Test (d)		P<0.001

TABLE B3c. ANALYSIS OF PRIMARY TUMORS IN FEMALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS: AMOSITE vs. AMOSITE + DIMETHYLHYDRAZINE (DMH) (Continued)

	1% Amosite	1% Amosite + DMH
All Sites: Benign Tumors		
Overall Rates (a)	213/250 (85%)	102/175 (58%)
Adjusted Rates (b)	93.8%	91.1%
Terminal Rates (c)	192/206 (93%)	28/36 (78%)
Week of First Observation	68	49
Life Table Tests (d)		P<0.001
Incidental Tumor Tests (d)		P=0.194N
Fisher Exact Test (d)		P<0.001N
All Sites: Malignant Tumors		
Overall Rates (a)	166/250 (66%)	164/175 (94%)
Adjusted Rates (b)	71.2%	98.1%
Terminal Rates (c)	139/206 (67%)	33/36 (92%)
Week of First Observation	69	39
Life Table Test (d)		P<0.001
Incidental Tumor Test (d)		P<0.001
Fisher Exact Test (d)		P<0.001
All Sites: All Tumors		
Overall Rates (a)	240/250 (96%)	175/175 (100%)
Adjusted Rates (b)	98.4%	100.0%
Terminal Rates (c)	202/206 (98%)	36/36 (100%)
Week of First Observation	68	39
Life Table Test (d)		P<0.001
Incidental Tumor Test (d)		P<0.001
Fisher Exact Test (d)		P=0.005

(a) Number of tumor-bearing animals/number of animals examined grossly at the site
(b) Kaplan-Meier estimated tumor incidences at the end of the study after adjusting for intercurrent mortality
(c) Observed tumor incidence in animals killed at the end of the study
(d) Beneath the 1% amosite + DMH group incidence are the P values corresponding to pairwise comparisons between that dosed group and the 1% amosite group. The life table analysis regards tumors in animals dying prior to terminal kill as being (directly or indirectly) the cause of death. The incidental tumor test regards these lesions as nonfatal. The Fisher exact test compares directly the overall incidence rates. A lower incidence in a dosed group than in controls is indicated by (N).
(e) Number of tumor-bearing animals/number of animals examined microscopically at the site

TABLE B4a. INCIDENCE OF EPITHELIAL TUMORS OF THE LARGE INTESTINE IN FEMALE F344/N RATS RECEIVING NO TREATMENT IN LIFETIME STUDIES

Asbestos Studies	Incidence	Diagnosis
SR Chrysotile	0/87 (0%)	
IR Chrysotile	0/87 (0%)	
Tremolite	1/118 (1%)	Adenomatous polyp, NOS
Crocidolite	1/118 (1%)	Muscinous cystadenocarcinoma
Amosite	0/117 (0%)	
TOTAL	2/527 (0.4%)	
SD (b)	0.46%	

(a) Standard deviation

TABLE B4b. INCIDENCE OF EPITHELIAL TUMORS OF THE SMALL INTESTINE IN FEMALE F344/N RATS RECEIVING NO TREATMENT IN LIFETIME STUDIES

Asbestos Studies	Incidence	Diagnosis
SR Chrysotile	1/87 (1%)	Adenomatous polyp
IR Chrysotile	0/87 (0%)	
Tremolite	0/118 (0%)	
Crocidolite	0/118 (0%)	
Amosite	1/117 (1%)	Adenomatous polyp
TOTAL	2/527 (0.4%)	
SD (a)	0.56%	

(a) Standard deviation

TABLE B4c. INCIDENCE OF LEUKEMIA IN FEMALE F344/N RATS RECEIVING NO TREATMENT IN LIFETIME STUDIES

Asbestos Studies	Incidence
SR Chrysotile	28/88 (32%)
IR Chrysotile	34/88 (39%)
Tremolite	56/118 (47%)
Crocidolite	43/118 (36%)
Amosite	40/117 (34%)
TOTAL	201/529 (38.0%)
SD (a)	6.01%

(a) Standard deviation

TABLE B4d. INCIDENCE OF PITUITARY GLAND TUMORS IN FEMALE F344/N RATS RECEIVING NO TREATMENT IN LIFETIME STUDIES

Asbestos Studies	Adenoma	Carcinoma	Adenoma or Carcinoma
SR Chrysotile	39/87 (45%)	6/87 (7%)	45/87 (52%)
IR Chrysotile	49/87 (56%)	4/87 (5%)	53/87 (61%)
Tremolite	51/117 (44%)	5/117 (4%)	56/117 (48%)
Crocidolite	42/116 (36%)	9/116 (8%)	51/116 (44%)
Amosite	50/117 (43%)	2/117 (2%)	52/117 (44%)
TOTAL	231/524 (44.1%)	26/524 (5.0%)	257/524 (49.0%)
SD (a)	7.29%	2.38%	6.96%

(a) Standard deviation

TABLE B4e. INCIDENCE OF THYROID GLAND FOLLICULAR CELL TUMORS IN FEMALE F344/N RATS RECEIVING NO TREATMENT IN LIFETIME STUDIES

Asbestos Studies	Adenoma	Carcinoma	Adenoma or Carcinoma
SR Chrysotile	1/87 (1%)	4/87 (5%)	5/87 (6%)
IR Chrysotile	6/87 (7%)	1/87 (1%)	7/87 (8%)
Tremolite	3/118 (3%)	5/118 (4%)	7/118 (6%)
Crocidolite	8/117 (7%)	3/117 (3%)	11/117 (9%)
Amosite	2/116 (2%)	7/116 (6%)	9/116 (8%)
TOTAL	20/525 (3.8%)	20/525 (3.8%)	39/525 (7.4%)
SD (a)	2.82%	1.89%	1.54%

(a) Standard deviation

TABLE B4f. INCIDENCE OF LIVER TUMORS IN FEMALE F344/N RATS RECEIVING NO TREATMENT IN LIFETIME STUDIES

Asbestos Studies	Neoplastic Nodule	Hepatocellular Carcinoma	Neoplastic Nodule or Hepatocellular Carcinoma
SR Chrysotile	3/87 (3%)	0/87 (0%)	3/87 (3%)
IR Chrysotile	3/87 (3%)	1/87 (1%)	4/87 (5%)
Tremolite	2/118 (3%)	0/118 (0%)	2/118 (2%)
Crocidolite	3/118 (3%)	0/118 (0%)	3/118 (3%)
Amosite	4/117 (3%)	1/117 (1%)	5/117 (4%)
TOTAL	15/527 (2.8%)	2/527 (0.4%)	17/527 (3.2%)
SD (a)	0.78%	0.56%	1.20%

(a) Standard deviation

TABLE B4g. INCIDENCE OF KIDNEY SARCOMAS AND MIXED TUMORS IN FEMALE F344/N RATS RECEIVING NO TREATMENT IN LIFETIME STUDIES

	0/526

TABLE B4h. INCIDENCE OF CLITORAL GLAND TUMORS IN FEMALE F344/N RATS RECEIVING NO TREATMENT IN LIFETIME STUDIES

Asbestos Studies	Adenoma	Carcinoma	Adenoma or Carcinoma
SR Chrysotile	1/88 (1%)	2/88 (2%)	3/88 (3%)
IR Chrysotile	0/88 (0%)	1/88 (1%)	1/88 (1%)
Tremolite	0/118 (0%)	6/118 (5%)	6/118 (5%)
Crocidolite	1/118 (1%)	4/118 (4%)	5/118 (4%)
Amosite	0/117 (0%)	6/117 (5%)	6/117 (5%)
TOTAL	2/529 (0.4%)	19/529 (3.6%)	21/529 (4.0%)
SD (a)	0.55%	1.75%	1.65%

(a) Standard deviation

TABLE B4i. INCIDENCE OF ZYMBAL GLAND TUMORS IN FEMALE F344/N RATS RECEIVING NO TREATMENT IN LIFETIME STUDIES

Asbestos Studies	Incidence
SR Chrysotile	3/88 (3%)
IR Chrysotile	1/88 (1%)
Tremolite	3/118 (3%)
Crocidolite	0/118 (0%)
Amosite	3/117 (3%)
TOTAL	10/529 (1.9%)
SD (a)	1.35%

(a) Standard deviation

TABLE B5a. SUMMARY OF THE INCIDENCE OF NONNEOPLASTIC LESIONS IN FEMALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS AND DMH: UNTREATED CONTROL, DMH, 1% AMOSITE (a)

	Untreated Control	DMH	1% Amosite
Animals initially in study	117	125	250
Animals necropsied	117	125	250
Animals examined histopathologically	117	124	250
INTEGUMENTARY SYSTEM			
*Skin	(117)	(125)	(250)
Epidermal inclusion cyst	1 (1%)		3 (1%)
Abscess, NOS		1 (1%)	2 (1%)
Inflammation, chronic focal	1 (1%)		2 (1%)
Necrosis, focal			1 (0%)
Hyperkeratosis	1 (1%)		4 (2%)
Acanthosis			2 (1%)
*Subcut tissue	(117)	(125)	(250)
Inflammation, chronic		1 (1%)	
RESPIRATORY SYSTEM			
*Nasal turbinate	(117)	(125)	(250)
Inflammation, acute			1 (0%)
Inflammation, chronic	1 (1%)		
Inflammation, chronic focal			1 (0%)
#Trachea	(116)	(122)	(249)
Inflammation, chronic	1 (1%)		
#Lung/bronchus	(116)	(124)	(250)
Bronchiectasis			1 (0%)
Inflammation, chronic	1 (1%)		
#Lung/bronchiole	(116)	(124)	(250)
Foreign body, NOS			1 (0%)
#Lung	(116)	(124)	(250)
Congestion, NOS	1 (1%)		11 (4%)
Edema, NOS	1 (1%)		1 (0%)
Hemorrhage	3 (3%)	2 (2%)	7 (3%)
Inflammation, interstitial	1 (1%)		4 (2%)
Inflammation, acute		1 (1%)	
Inflammation, acute focal	1 (1%)		
Inflammation, chronic	02 (88%)	89 (71%)	30 (92%)
Granuloma, NOS			1 (0%)
Pigmentation, NOS	4 (3%)	2 (2%)	4 (2%)
Hyperplasia, alveolar epithelium		1 (1%)	6 (2%)
#Lung/alveoli	(116)	(124)	(250)
Histiocytosis	4 (3%)		6 (2%)
HEMATOPOIETIC SYSTEM			
#Bone marrow	(116)	(124)	(250)
Hypoplasia, NOS	3 (3%)		4 (2%)
Hyperplasia, NOS	1 (1%)		
Histiocytosis			1 (0%)
Myelofibrosis	1 (1%)		
#Spleen	(117)	(124)	(249)
Hemorrhage	1 (1%)	1 (1%)	1 (0%)
Fibrosis, focal	1 (1%)		6 (2%)
Fibrosis, multifocal	1 (1%)		3 (1%)
Fibrosis, diffuse			1 (0%)
Necrosis, NOS	1 (1%)	1 (1%)	2 (1%)
Necrosis, focal			2 (1%)
Pigmentation, NOS			1 (0%)
Hemosiderosis	15 (13%)	4 (3%)	81 (33%)
Atrophy, NOS		1 (1%)	1 (0%)
Hyperplasia, reticulum cell	1 (1%)		1 (0%)

TABLE B5a. SUMMARY OF THE INCIDENCE OF NONNEOPLASTIC LESIONS IN FEMALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS AND DMH: UNTREATED CONTROL, DMH, 1% AMOSITE (Continued)

	Untreated Control	DMH	1% Amosite
HEMATOPOIETIC SYSTEM			
#Spleen (Continued)	(117)	(124)	(249)
Hematopoiesis	33 (28%)	20 (16%)	46 (18%)
Myelopoiesis		1 (1%)	
#Splenic capsule	(117)	(124)	(249)
Hemorrhage		1 (1%)	
#Splenic follicles	(117)	(124)	(249)
Atrophy, NOS	5 (4%)		7 (3%)
#Mandibular l. node	(117)	(124)	(250)
Congestion, NOS			1 (0%)
Hemorrhage		3 (2%)	5 (2%)
Abscess, NOS			1 (0%)
Pigmentation, NOS			1 (0%)
Hyperplasia, lymphoid	30 (26%)	12 (10%)	31 (12%)
#Cervical lymph node	(117)	(124)	(250)
Hemorrhage			2 (1%)
Erythrophagocytosis	1 (1%)		
Hyperplasia, reticulum cell	1 (1%)		
Hyperplasia, lymphoid	1 (1%)		2 (1%)
#Mediastinal l. node	(117)	(124)	(250)
Congestion, NOS	1 (1%)		
Hemorrhage	2 (2%)	4 (3%)	10 (4%)
Pigmentation, NOS	11 (9%)	3 (2%)	34 (14%)
Hemosiderosis			2 (1%)
Erythrophagocytosis	4 (3%)		4 (2%)
Hyperplasia, reticulum cell	2 (2%)		3 (1%)
Hyperplasia, lymphoid		4 (3%)	5 (2%)
Hematopoiesis	1 (1%)		
#Pancreatic lymph node	(117)	(124)	(250)
Hemorrhage		2 (2%)	
Pigmentation, NOS		2 (2%)	13 (5%)
Atrophy, NOS			1 (0%)
Hyperplasia, reticulum cell	5 (4%)	1 (1%)	5 (2%)
Hyperplasia, lymphoid	1 (1%)	1 (1%)	1 (0%)
#Mesenteric lymph node	(117)	(124)	(250)
Hemorrhage	2 (2%)	1 (1%)	5 (2%)
Inflammation, chronic			1 (0%)
Amyloidosis	1 (1%)		
Pigmentation, NOS	5 (4%)	3 (2%)	25 (10%)
Atrophy, NOS			2 (1%)
Erythrophagocytosis		1 (1%)	4 (2%)
Hyperplasia, reticulum cell	55 (47%)	16 (13%)	20 (48%)
Hyperplasia, lymphoid			9 (4%)
#Ileocolic lymph node	(117)	(124)	(250)
Atrophy, NOS			1 (0%)
Hyperplasia, reticulum cell	1 (1%)		
Hyperplasia, lymphoid		1 (1%)	
#Renal lymph node	(117)	(124)	(250)
Hemorrhage	1 (1%)		1 (0%)
Pigmentation, NOS	1 (1%)	1 (1%)	3 (1%)
Erythrophagocytosis	1 (1%)		
Hyperplasia, reticulum cell	1 (1%)		1 (0%)
Hyperplasia, lymphoid	1 (1%)		
#Liver	(117)	(124)	(250)
Leukocytosis, NOS	1 (1%)	1 (1%)	5 (2%)
Hematopoiesis	1 (1%)		1 (0%)
#Bile duct	(117)	(124)	(250)
Hyperplasia, lymphoid	1 (1%)		
#Peyer's patch	(117)	(124)	(249)
Hyperplasia, lymphoid		1 (1%)	1 (0%)

TABLE B5a. SUMMARY OF THE INCIDENCE OF NONNEOPLASTIC LESIONS IN FEMALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS AND DMH: UNTREATED CONTROL, DMH, 1% AMOSITE (Continued)

	Untreated Control	DMH	1% Amosite
HEMATOPOIETIC SYSTEM (Continued)			
#Perirenal tissue	(117)	(124)	(250)
Hematopoiesis			1 (0%)
#Thymus	(79)	(95)	(210)
Cyst, NOS		1 (1%)	1 (0%)
Multilocular cyst			1 (0%)
Hemorrhage	1 (1%)	2 (2%)	
Hyperplasia, epithelial			1 (0%)
Hematopoiesis	1 (1%)		
CIRCULATORY SYSTEM			
#Mediastinal l. node	(117)	(124)	(250)
Lymphangiectasis	1 (1%)		1 (0%)
#Mesenteric lymph node	(117)	(124)	(250)
Lymphangiectasis	1 (1%)		4 (2%)
#Ileocolic lymph node	(117)	(124)	(250)
Lymphangiectasis		1 (1%)	4 (2%)
#Renal lymph node	(117)	(124)	(250)
Lymphangiectasis	4 (3%)	2 (2%)	1 (0%)
#Lung	(116)	(124)	(250)
Thrombosis, NOS		1 (1%)	
Thrombus, fibrin	1 (1%)		
#Heart/atrium	(116)	(122)	(250)
Thrombosis, NOS	4 (3%)		4 (2%)
#Myocardium	(116)	(122)	(250)
Mineralization			1 (0%)
Inflammation, chronic	1 (1%)		1 (0%)
Inflammation, chronic focal	37 (32%)	8 (7%)	96 (38%)
Inflammation, chronic diffuse	25 (22%)	2 (2%)	46 (18%)
Fibrosis, focal	4 (3%)	2 (2%)	2 (1%)
Fibrosis, diffuse			1 (0%)
Degeneration, NOS			1 (0%)
#Cardiac valve	(116)	(122)	(250)
Inflammation, chronic	1 (1%)		
Inflammation, chronic focal	1 (1%)		
*Aorta	(117)	(125)	(250)
Mineralization			1 (0%)
*Coronary artery	(117)	(125)	(250)
Mineralization			1 (0%)
*Mesenteric artery	(117)	(125)	(250)
Thrombosis, NOS	1 (1%)		
Inflammation, acute/chronic	1 (1%)		
Necrosis, NOS	1 (1%)		
#Liver	(117)	(124)	(250)
Thrombosis, NOS	2 (2%)	1 (1%)	
#Pancreas	(116)	(124)	(249)
Periarteritis	1 (1%)		
#Uterus	(117)	(124)	(250)
Thrombosis, NOS	1 (1%)		
#Uterus/endometrium	(117)	(124)	(250)
Thrombosis, NOS	1 (1%)		
#Adrenal	(117)	(124)	(249)
Thrombosis, NOS	2 (2%)		

TABLE B5a. SUMMARY OF THE INCIDENCE OF NONNEOPLASTIC LESIONS IN FEMALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS AND DMH: UNTREATED CONTROL, DMH, 1% AMOSITE (Continued)

	Untreated Control	DMH	1% Amosite
DIGESTIVE SYSTEM			
*Hard palate	(117)	(125)	(250)
Foreign body, NOS			1 (0%)
Inflammation, chronic focal			1 (0%)
Necrosis, focal			1 (0%)
*Tongue	(117)	(125)	(250)
Hyperkeratosis			1 (0%)
Acanthosis			3 (1%)
#Salivary gland	(116)	(123)	(246)
Edema, NOS	1 (1%)		
Inflammation, chronic	1 (1%)		
Inflammation, chronic focal	1 (1%)		1 (0%)
Fibrosis, focal			1 (0%)
#Parotid gland	(116)	(124)	(246)
Atrophy, focal			2 (1%)
#Liver	(117)	(124)	(250)
Congestion, NOS	1 (1%)		4 (2%)
Hemorrhage		2 (2%)	6 (2%)
Inflammation, chronic			5 (2%)
Granuloma, NOS	31 (26%)	15 (12%)	65 (26%)
Fibrosis, focal		1 (1%)	
Fibrosis, multifocal			1 (0%)
Hepatitis, toxic	12 (10%)	30 (24%)	28 (11%)
Degeneration, NOS			1 (0%)
Necrosis, NOS	1 (1%)		
Necrosis, focal	14 (12%)	22 (18%)	39 (16%)
Metamorphosis fatty	44 (38%)	37 (30%)	76 (30%)
Pigmentation, NOS	16 (14%)	7 (6%)	61 (24%)
Mitotic alteration			1 (0%)
Focal cellular change	55 (47%)	65 (52%)	29 (52%)
Angiectasis		4 (3%)	13 (5%)
#Liver/kupffer cell	(117)	(124)	(250)
Hyperplasia, NOS			1 (0%)
#Bile duct	(117)	(124)	(250)
Cyst, NOS	1 (1%)	7 (6%)	
Multilocular cyst		2 (2%)	
Cystic ducts			2 (1%)
Inflammation, chronic	7 (6%)	3 (2%)	10 (4%)
Fibrosis	5 (4%)	2 (2%)	1 (0%)
Hyperplasia, NOS	15 (13%)	16 (13%)	15 (6%)
Hyperplasia, focal	1 (1%)		1 (0%)
#Pancreas	(116)	(124)	(249)
Ectopia	8 (7%)	4 (3%)	11 (4%)
Inflammation, acute diffuse			1 (0%)
Inflammation, chronic		1 (1%)	
Inflammation, chronic focal		2 (2%)	1 (0%)
Atrophy, NOS		1 (1%)	
Atrophy, focal	8 (7%)	3 (2%)	28 (11%)
Atrophy, diffuse			3 (1%)
#Pancreatic acinus	(116)	(124)	(249)
Hyperplasia, focal	1 (1%)		2 (1%)
#Esophagus	(117)	(119)	(246)
Inflammation, chronic diffuse	1 (1%)		
Parasitism			1 (0%)
Necrosis, NOS	1 (1%)		
Hyperkeratosis	7 (6%)	3 (3%)	7 (3%)
#Stomach	(117)	(124)	(250)
Mineralization	3 (3%)		2 (1%)
Cyst, NOS	1 (1%)		1 (0%)

TABLE B5a. SUMMARY OF THE INCIDENCE OF NONNEOPLASTIC LESIONS IN FEMALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS AND DMH: UNTREATED CONTROL, DMH, 1% AMOSITE (Continued)

	Untreated Control	DMH	1% Amosite
DIGESTIVE SYSTEM			
#Stomach (Continued)	(117)	(124)	(250)
Edema, NOS	1 (1%)		
Hemorrhage	1 (1%)		
Ulcer, NOS		1 (1%)	
Inflammation, acute focal			1 (0%)
Inflammation, chronic	4 (3%)	7 (6%)	4 (2%)
Inflammation, chronic focal	7 (6%)		20 (8%)
Inflammation, chronic diffuse	11 (9%)	3 (2%)	35 (14%)
Ulcer, perforated	4 (3%)		30 (12%)
Necrosis, NOS	1 (1%)		
Necrosis, focal	13 (11%)	10 (8%)	37 (15%)
Necrosis, diffuse			3 (1%)
Hyperkeratosis	24 (21%)	5 (4%)	56 (22%)
Acanthosis	26 (22%)	14 (11%)	72 (29%)
#Gastric mucosa	(117)	(124)	(250)
Hyperplasia, focal			2 (1%)
#Gastric submucosa	(117)	(124)	(250)
Edema, NOS	1 (1%)		1 (0%)
#Gastric muscularis	(117)	(124)	(250)
Degeneration, NOS	2 (2%)		3 (1%)
#Gastric fundus	(117)	(124)	(250)
Hyperplasia, diffuse	2 (2%)		1 (0%)
#Small intestine	(117)	(124)	(249)
Inflammation, chronic focal			1 (0%)
Necrosis, focal			2 (1%)
#Duodenum	(117)	(124)	(249)
Hemorrhage			1 (0%)
Necrosis, focal	1 (1%)		
#Jejunum	(117)	(124)	(249)
Hyperplasia, epithelial		1 (1%)	
#Large intestine	(117)	(124)	(250)
Parasitism	1 (1%)		
#Colon	(117)	(124)	(250)
Mineralization			1 (0%)
Inflammation, chronic focal	1 (1%)		
Parasitism	2 (2%)	3 (2%)	6 (2%)
Necrosis, focal			1 (0%)
Hyperplasia, epithelial			2 (1%)
Hyperplasia, focal		1 (1%)	
#Colonic muscularis propria	(117)	(124)	(250)
Degeneration, NOS			1 (0%)
#Cecum	(117)	(124)	(250)
Inflammation, acute diffuse			1 (0%)
Inflammation, chronic			1 (0%)
Inflammation, chronic focal		2 (2%)	1 (0%)
Inflammation, chronic diffuse		1 (1%)	1 (0%)
Parasitism	1 (1%)		2 (1%)
Necrosis, focal		1 (1%)	1 (0%)
Necrosis, diffuse			1 (0%)
#Ascending colon	(117)	(124)	(250)
Necrosis, focal		1 (1%)	
#Descending colon	(117)	(124)	(250)
Inflammation, chronic focal		1 (1%)	
Hyperplasia, epithelial		1 (1%)	

TABLE B5a. SUMMARY OF THE INCIDENCE OF NONNEOPLASTIC LESIONS IN FEMALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS AND DMH: UNTREATED CONTROL, DMH, 1% AMOSITE (Continued)

	Untreated Control	DMH	1% Amosite
URINARY SYSTEM			
#Kidney	(117)	(124)	(250)
Mineralization	69 (59%)	5 (4%)	76 (70%)
Hydronephrosis	1 (1%)	1 (1%)	1 (0%)
Congestion, NOS			1 (0%)
Hemorrhage			1 (0%)
Inflammation, acute focal	1 (1%)		
Inflammation, chronic	07 (91%)	68 (54%)	29 (92%)
Inflammation, chronic focal			1 (0%)
Inflammation, chronic diffuse		1 (1%)	1 (0%)
Fibrosis, diffuse	1 (1%)		1 (0%)
Infarct, NOS		1 (1%)	
Calcification, NOS	2 (2%)	20 (16%)	
Pigmentation, NOS			1 (0%)
Atrophy, NOS			1 (0%)
Angiectasis			1 (0%)
#Kidney/cortex	(117)	(124)	(250)
Cyst, NOS	4 (3%)		2 (1%)
Abscess, NOS	1 (1%)		
#Kidney/tubule	(117)	(124)	(250)
Mineralization			2 (1%)
Inflammation, chronic	1 (1%)		
Metamorphosis fatty			1 (0%)
Pigmentation, NOS	70 (60%)	29 (23%)	79 (72%)
Nuclear enlargement	1 (1%)		
Cytoplasmic vacuolization			1 (0%)
*Ureter	(117)	(125)	(250)
Dilatation, NOS			1 (0%)
Hemorrhage			1 (0%)
#Urinary bladder	(117)	(121)	(248)
Calculus, unkn gross or micro			1 (0%)
Hemorrhage			1 (0%)
Inflammation, chronic	1 (1%)		
Inflammation, chronic focal			1 (0%)
Pigmentation, NOS			1 (0%)
Hyperplasia, epithelial	2 (2%)		1 (0%)
Hyperplasia, papillary	2 (2%)		
Acanthosis			1 (0%)
ENDOCRINE SYSTEM			
#Pituitary	(117)	(123)	(249)
Cyst, NOS	9 (8%)	3 (2%)	13 (5%)
Hemorrhage	1 (1%)	1 (1%)	1 (0%)
Hemorrhagic cyst			4 (2%)
Pigmentation, NOS			4 (2%)
Hyperplasia, NOS	1 (1%)		
Hyperplasia, focal	9 (8%)	13 (10%)	18 (7%)
Angiectasis	20 (17%)	2 (2%)	41 (16%)
#Adrenal	(117)	(124)	(249)
Ectopia	1 (1%)		
Cyst, NOS			1 (0%)
Congestion, NOS			1 (0%)
Hemorrhage	1 (1%)		
Necrosis, focal	1 (1%)		
Metamorphosis fatty	2 (2%)	2 (2%)	2 (1%)
Hyperplasia, focal	1 (1%)		2 (1%)
Angiectasis			4 (2%)
Metaplasia, osseous			1 (0%)

TABLE B5a. SUMMARY OF THE INCIDENCE OF NONNEOPLASTIC LESIONS IN FEMALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS AND DMH: UNTREATED CONTROL, DMH, 1% AMOSITE (Continued)

	Untreated Control	DMH	1% Amosite
ENDOCRINE SYSTEM (Continued)			
#Adrenal cortex	(117)	(124)	(249)
Hemorrhage		1 (1%)	1 (0%)
Degeneration, NOS	1 (1%)		1 (0%)
Necrosis, NOS		1 (1%)	
Metamorphosis fatty	49 (42%)	5 (4%)	14 (46%)
Pigmentation, NOS			2 (1%)
Hyperplasia, NOS			1 (0%)
Hyperplasia, focal	8 (7%)	1 (1%)	14 (6%)
Angiectasis			4 (2%)
#Adrenal medulla	(117)	(124)	(249)
Hyperplasia, NOS	1 (1%)		2 (1%)
Hyperplasia, focal	18 (15%)	9 (7%)	50 (20%)
Hyperplasia, diffuse		1 (1%)	
#Periadrenal tissue	(117)	(124)	(249)
Hemorrhage	1 (1%)		
#Thyroid	(116)	(123)	(247)
Follicular cyst, NOS	2 (2%)	3 (2%)	17 (7%)
Pigmentation, NOS	1 (1%)		
Hyperplasia, C-cell	22 (19%)	17 (14%)	71 (29%)
Hyperplasia, follicular cell	1 (1%)		
#Parathyroid	(109)	(118)	(240)
Hyperplasia, NOS	7 (6%)		18 (8%)
Hyperplasia, focal			1 (0%)
Angiectasis			1 (0%)
#Pancreatic islets	(116)	(124)	(249)
Hyperplasia, focal			1 (0%)
REPRODUCTIVE SYSTEM			
*Mammary gland	(117)	(125)	(250)
Galactocele	18 (15%)		36 (14%)
Cyst, NOS		1 (1%)	2 (1%)
Cystic ducts	40 (34%)	4 (3%)	14 (46%)
Inflammation, diffuse			1 (0%)
Abscess, NOS	1 (1%)		
Fibrosis, focal			1 (0%)
Hyperplasia, NOS	17 (15%)	5 (4%)	33 (13%)
Hyperplasia, focal			2 (1%)
Hyperplasia, diffuse	3 (3%)		13 (5%)
*Preputial gland	(117)	(125)	(250)
Cyst, NOS	1 (1%)		
Cystic ducts	2 (2%)		9 (4%)
Inflammation, acute	1 (1%)		
Abscess, NOS			1 (0%)
Hyperplasia, NOS	1 (1%)		1 (0%)
Hyperplasia, diffuse	1 (1%)		2 (1%)
Hyperkeratosis			2 (1%)
*Vagina	(117)	(125)	(250)
Inflammation, acute			1 (0%)
Acanthosis		1 (1%)	
#Uterus	(117)	(124)	(250)
Hydrometra	5 (4%)	5 (4%)	12 (5%)
Hemorrhage	3 (3%)		
Pyometra		1 (1%)	
Abscess, NOS	1 (1%)		
Inflammation, chronic	1 (1%)	1 (1%)	
Inflammation, chronic focal			2 (1%)
Fibrosis			1 (0%)
Pigmentation, NOS			1 (0%)

TABLE B5a. SUMMARY OF THE INCIDENCE OF NONNEOPLASTIC LESIONS IN FEMALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS AND DMH: UNTREATED CONTROL, DMH, 1% AMOSITE (Continued)

	Untreated Control	DMH	1% Amosite
REPRODUCTIVE SYSTEM (Continued)			
#Cervix uteri	(117)	(124)	(250)
Cyst, NOS			2 (1%)
Abscess, NOS			2 (1%)
Inflammation, chronic	1 (1%)		1 (0%)
Inflammation, chronic focal			1 (0%)
Fibrosis	1 (1%)	2 (2%)	2 (1%)
Fibrosis, diffuse			1 (0%)
Necrosis, focal			1 (0%)
Hyperkeratosis	2 (2%)		3 (1%)
Acanthosis	3 (3%)		4 (2%)
#Uterus/endometrium	(117)	(124)	(250)
Cyst, NOS	2 (2%)	5 (4%)	7 (3%)
Hyperplasia, NOS		1 (1%)	1 (0%)
Hyperplasia, papillary			1 (0%)
#Endometrial gland	(117)	(124)	(250)
Cyst, NOS		2 (2%)	
#Ovary	(117)	(124)	(250)
Cyst, NOS	7 (6%)	5 (4%)	8 (3%)
Follicular cyst, NOS	2 (2%)		2 (1%)
Parovarian cyst	3 (3%)	7 (6%)	9 (4%)
Hyperplasia, papillary	2 (2%)		
NERVOUS SYSTEM			
#Cerebrum	(117)	(124)	(250)
Hydrocephalus, NOS		1 (1%)	
Hemorrhage			2 (1%)
Inflammation, chronic focal	1 (1%)		
Necrosis, NOS		1 (1%)	
Necrosis, focal			2 (1%)
#Cerebellum	(117)	(124)	(250)
Hemorrhage			3 (1%)
Gliosis		1 (1%)	
SPECIAL SENSE ORGANS			
*Eye	(117)	(125)	(250)
Hemorrhage	8 (7%)		9 (4%)
Inflammation, chronic	1 (1%)		
Inflammation, chronic focal	2 (2%)		1 (0%)
Synechia, anterior		1 (1%)	1 (0%)
Synechia, posterior	2 (2%)		2 (1%)
Degeneration, NOS	1 (1%)		
Cataract	15 (13%)	3 (2%)	26 (10%)
Phthisis bulbi	1 (1%)	1 (1%)	1 (0%)
*Eye anterior chamber	(117)	(125)	(250)
Empyema			2 (1%)
*Eye/cornea	(117)	(125)	(250)
Inflammation, necrotizing			1 (0%)
Inflammation, chronic		2 (2%)	
Inflammation, chronic focal			4 (2%)
Inflammation, chronic diffuse	2 (2%)		3 (1%)
*Eye/retina	(117)	(125)	(250)
Degeneration, NOS	30 (26%)	5 (4%)	78 (31%)
*Eye/crystalline lens	(117)	(125)	(250)
Rupture	1 (1%)		1 (0%)
*Nasolacrimal duct	(117)	(125)	(250)
Inflammation, acute			1 (0%)
Hyperkeratosis			1 (0%)

TABLE B5a. SUMMARY OF THE INCIDENCE OF NONNEOPLASTIC LESIONS IN FEMALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS AND DMH: UNTREATED CONTROL, DMH, 1% AMOSITE (Continued)

	Untreated Control	DMH	1% Amosite
SPECIAL SENSE ORGANS (Continued)			
*Harderian gland	(117)	(125)	(250)
Hyperplasia, focal			1 (0%)
*Ear	(117)	(125)	(250)
Abscess, NOS		1 (1%)	
*Ear canal	(117)	(125)	(250)
Hyperkeratosis		1 (1%)	
*Zymbal gland	(117)	(125)	(250)
Cystic ducts	15 (13%)	1 (1%)	22 (9%)
Abscess, NOS	1 (1%)		
Hyperplasia, NOS			1 (0%)
Hyperplasia, focal			1 (0%)
MUSCULOSKELETAL SYSTEM			
*Skull	(117)	(125)	(250)
Osteopetrosis	6 (5%)	1 (1%)	13 (5%)
Exostosis		1 (1%)	
*Sternum	(117)	(125)	(250)
Osteopetrosis	9 (8%)		13 (5%)
Exostosis		1 (1%)	
*Rib	(117)	(125)	(250)
Degeneration, NOS			8 (3%)
*Intercostal muscle	(117)	(125)	(250)
Inflammation, chronic			1 (0%)
BODY CAVITIES			
*Mediastinum	(117)	(125)	(250)
Inflammation, chronic		1 (1%)	
Inflammation, chronic focal			1 (0%)
*Abdominal cavity	(117)	(125)	(250)
Steatitis		2 (2%)	1 (0%)
Necrosis, NOS	1 (1%)		
Necrosis, fat	4 (3%)	3 (2%)	8 (3%)
*Mesentery	(117)	(125)	(250)
Inflammation, acute/chronic			1 (0%)
Inflammation, chronic focal	2 (2%)		13 (5%)

TABLE B5a. SUMMARY OF THE INCIDENCE OF NONNEOPLASTIC LESIONS IN FEMALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS AND DMH: UNTREATED CONTROL, DMH, 1% AMOSITE (Continued)

	Untreated Control	DMH	1% Amosite
ALL OTHER SYSTEMS			
Multiple sites			
Inflammation, chronic	1		
*Multiple organs	(117)	(125)	(250)
Mineralization	1 (1%)		1 (0%)
Inflammation, chronic	6 (5%)		11 (4%)
Necrosis, NOS	1 (1%)		
Pigmentation, NOS	1 (1%)		1 (0%)
Head			
Abscess, NOS		1	
Diaphragm			
Hernia, NOS	1	2	5
Inflammation, acute focal	1		
Inflammation, acute diffuse			1
Adipose tissue			
Hemorrhage			1
SPECIAL MORPHOLOGY SUMMARY			
Auto/necropsy/histo perf		1	

(a) DMH indicates a group receiving five doses of 15 mg/kg 1,2-dimethylhydrazine dihydrochloride by gavage in pH 5 acetate buffer.
* Number of animals receiving complete necropsy examination; all gross lesions including masses examined microscopically
# Number of animals examined microscopically at this site

TABLE B5b. SUMMARY OF THE INCIDENCE OF NONNEOPLASTIC LESIONS IN FEMALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS AND DMH: 1% AMOSITE + PW, 1% AMOSITE + DMH (a)

	1% Amosite + PW	1% Amosite + DMH
Animals initially in study	100	175
Animals necropsied	100	175
Animals examined histopathologically	100	175
INTEGUMENTARY SYSTEM		
*Skin	(100)	(175)
Epidermal inclusion cyst	1 (1%)	2 (1%)
Abscess, NOS	1 (1%)	1 (1%)
Acanthosis		1 (1%)
*Subcut tissue	(100)	(175)
Abscess, NOS	1 (1%)	2 (1%)
Necrosis, fat		1 (1%)
RESPIRATORY SYSTEM		
#Lung	(100)	(175)
Congestion, NOS	4 (4%)	2 (1%)
Hemorrhage		1 (1%)
Inflammation, interstitial	2 (2%)	
Pneumonia, aspiration	1 (1%)	
Inflammation, acute focal	1 (1%)	
Inflammation, acute diffuse	1 (1%)	
Inflammation, chronic	88 (88%)	57 (90%)
Granuloma, NOS	4 (4%)	
Necrosis, focal		1 (1%)
Necrosis, diffuse	1 (1%)	
Pigmentation, NOS	1 (1%)	
Hyperplasia, alveolar epithelium	3 (3%)	1 (1%)
Metaplasia, squamous	2 (2%)	
#Lung/alveoli	(100)	(175)
Histiocytosis	2 (2%)	
HEMATOPOIETIC SYSTEM		
#Brain	(100)	(175)
Hematopoiesis		1 (1%)
#Bone marrow	(100)	(174)
Osteopetrosis		1 (1%)
Hypoplasia, NOS	1 (1%)	1 (1%)
Hyperplasia, NOS	1 (1%)	
Myelofibrosis	1 (1%)	
#Spleen	(100)	(175)
Ectopia	1 (1%)	
Congestion, NOS		1 (1%)
Hemorrhage	1 (1%)	2 (1%)
Fibrosis		1 (1%)
Fibrosis, focal	6 (6%)	
Fibrosis, diffuse	2 (2%)	
Hepatitis, toxic		1 (1%)
Necrosis, focal		3 (2%)
Pigmentation, NOS	2 (2%)	4 (2%)
Hemosiderosis	32 (32%)	13 (7%)
Hematopoiesis	27 (27%)	48 (27%)
Myelopoiesis		1 (1%)
#Splenic follicles	(100)	(175)
Atrophy, NOS	5 (5%)	2 (1%)
#Mandibular l. node	(100)	(175)
Hemorrhage		3 (2%)
Hyperplasia, lymphoid	16 (16%)	30 (17%)

TABLE B5b. SUMMARY OF THE INCIDENCE OF NONNEOPLASTIC LESIONS IN FEMALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS AND DMH: 1% AMOSITE + PW, 1% AMOSITE + DMH (Continued)

	1% Amosite + PW	1% Amosite + DMH
HEMATOPOIETIC SYSTEM (Continued)		
#Thoracic lymph node	(100)	(175)
Hemorrhage		1 (1%)
#Mediastinal l. node	(100)	(175)
Congestion, NOS	1 (1%)	
Hemorrhage	4 (4%)	21 (12%)
Inflammation, chronic		1 (1%)
Pigmentation, NOS	19 (19%)	26 (15%)
Atrophy, NOS		1 (1%)
Hyperplasia, reticulum cell		2 (1%)
Hyperplasia, lymphoid	1 (1%)	4 (2%)
Mastocytosis		1 (1%)
#Pancreatic lymph node	(100)	(175)
Pigmentation, NOS	4 (4%)	7 (4%)
Hyperplasia, reticulum cell	3 (3%)	5 (3%)
#Mesenteric lymph node	(100)	(175)
Hemorrhage	1 (1%)	
Pigmentation, NOS	6 (6%)	10 (6%)
Erythrophagocytosis	1 (1%)	
Hyperplasia, reticulum cell	49 (49%)	55 (31%)
Hyperplasia, lymphoid	3 (3%)	4 (2%)
#Ileocolic lymph node	(100)	(175)
Abscess, NOS		1 (1%)
#Renal lymph node	(100)	(175)
Hemorrhage		1 (1%)
Hyperplasia, reticulum cell		1 (1%)
#Liver	(100)	(175)
Leukocytosis, NOS		1 (1%)
Hyperplasia, reticulum cell		1 (1%)
Hematopoiesis		1 (1%)
#Hepatic sinusoid	(100)	(175)
Leukocytosis, NOS		1 (1%)
#Adrenal	(100)	(175)
Hematopoiesis		2 (1%)
#Thymus	(81)	(139)
Atrophy, NOS	1 (1%)	
Hyperplasia, epithelial	3 (4%)	
Hyperplasia, reticulum cell	1 (1%)	
CIRCULATORY SYSTEM		
#Mandibular l. node	(100)	(175)
Lymphangiectasis	1 (1%)	2 (1%)
#Mediastinal l. node	(100)	(175)
Lymphangiectasis	1 (1%)	1 (1%)
#Mesenteric lymph node	(100)	(175)
Lymphangiectasis	2 (2%)	2 (1%)
#Ileocolic lymph node	(100)	(175)
Lymphangiectasis		5 (3%)
#Heart	(100)	(175)
Inflammation, chronic diffuse		1 (1%)
#Myocardium	(100)	(175)
Inflammation, chronic focal	48 (48%)	36 (21%)
Inflammation, chronic diffuse	23 (23%)	27 (15%)
Fibrosis, focal		3 (2%)
Fibrosis, multifocal		2 (1%)
Degeneration, NOS	2 (2%)	1 (1%)
#Cardiac valve	(100)	(175)
Inflammation, chronic		1 (1%)
Inflammation, chronic focal		2 (1%)

TABLE B5b. SUMMARY OF THE INCIDENCE OF NONNEOPLASTIC LESIONS IN FEMALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS AND DMH: 1% AMOSITE + PW, 1% AMOSITE + DMH (Continued)

	1% Amosite + PW	1% Amosite + DMH
CIRCULATORY SYSTEM (Continued)		
*Pulmonary artery	(100)	(175)
Granuloma, NOS		1 (1%)
*Mesentery	(100)	(175)
Periarteritis	1 (1%)	
#Kidney	(100)	(175)
Thrombosis, NOS		1 (1%)
Thrombus, organized		1 (1%)
#Uterus	(100)	(175)
Thrombosis, NOS	1 (1%)	
Thrombus, organized		1 (1%)
#Adrenal	(100)	(175)
Thrombosis, NOS		1 (1%)
DIGESTIVE SYSTEM		
*Hard palate	(100)	(175)
Acanthosis	1 (1%)	
*Tongue	(100)	(175)
Hyperkeratosis		1 (1%)
Acanthosis		1 (1%)
#Salivary gland	(100)	(174)
Inflammation, chronic		1 (1%)
Inflammation, chronic diffuse		1 (1%)
Atrophy, diffuse		1 (1%)
#Parotid gland	(100)	(174)
Hyperplasia, focal	1 (1%)	
#Liver	(100)	(175)
Congestion, NOS	3 (3%)	
Hemorrhage	1 (1%)	1 (1%)
Inflammation, acute focal	1 (1%)	
Inflammation, chronic focal		1 (1%)
Granuloma, NOS	32 (32%)	25 (14%)
Hepatitis, toxic	9 (9%)	33 (19%)
Degeneration, NOS	1 (1%)	
Necrosis, focal	12 (12%)	19 (11%)
Infarct, NOS	1 (1%)	
Metamorphosis fatty	28 (28%)	32 (18%)
Pigmentation, NOS	24 (24%)	8 (5%)
Focal cellular change	47 (47%)	13 (65%)
Angiectasis	1 (1%)	6 (3%)
#Hepatic capsule	(100)	(175)
Granuloma, foreign body	1 (1%)	
#Bile duct	(100)	(175)
Cyst, NOS		31 (18%)
Multiple cysts		3 (2%)
Inflammation, chronic	10 (10%)	28 (16%)
Fibrosis	1 (1%)	2 (1%)
Hyperplasia, NOS	11 (11%)	35 (20%)
Hyperplasia, focal		1 (1%)
#Pancreas	(100)	(175)
Ectopia	5 (5%)	3 (2%)
Inflammation, chronic		1 (1%)
Inflammation, chronic focal		3 (2%)
Atrophy, focal	7 (7%)	7 (4%)
Atrophy, diffuse	3 (3%)	1 (1%)
#Esophagus	(100)	(175)
Hyperkeratosis	6 (6%)	6 (3%)

TABLE B5b. SUMMARY OF THE INCIDENCE OF NONNEOPLASTIC LESIONS IN FEMALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS AND DMH: 1% AMOSITE + PW, 1% AMOSITE + DMH (Continued)

	1% Amosite + PW	1% Amosite + DMH
DIGESTIVE SYSTEM (Continued)		
#Stomach	(100)	(175)
Embryonal rest	1 (1%)	
Edema, NOS	1 (1%)	
Inflammation, acute focal		1 (1%)
Inflammation, chronic	1 (1%)	5 (3%)
Inflammation, chronic focal	9 (9%)	2 (1%)
Inflammation, chronic diffuse	8 (8%)	2 (1%)
Ulcer, perforated	10 (10%)	
Necrosis, NOS	1 (1%)	
Necrosis, focal	11 (11%)	9 (5%)
Hyperkeratosis	17 (17%)	12 (7%)
Acanthosis	23 (23%)	18 (10%)
#Small intestine	(100)	(175)
Parasitism		1 (1%)
#Peyer's patch	(100)	(175)
Hyperplasia, NOS		1 (1%)
#Ileum	(100)	(175)
Hyperplasia, diffuse		1 (1%)
#Colon	(100)	(175)
Cyst, NOS		1 (1%)
Inflammation, acute focal	1 (1%)	
Inflammation, chronic diffuse		1 (1%)
Fibrosis, focal	1 (1%)	
Parasitism	8 (8%)	7 (4%)
Necrosis, focal	1 (1%)	
Hyperplasia, focal		6 (3%)
#Colonic submucosa	(100)	(175)
Fibrosis, focal	1 (1%)	
#Cecum	(100)	(175)
Hemorrhage	2 (2%)	
Inflammation, chronic diffuse		1 (1%)
Parasitism	1 (1%)	
Necrosis, focal	1 (1%)	2 (1%)
#Ascending colon	(100)	(175)
Parasitism		1 (1%)
Necrosis, focal		1 (1%)
#Transverse colon	(100)	(175)
Hemorrhage		1 (1%)
Parasitism		1 (1%)
Necrosis, focal		1 (1%)
Hyperplasia, focal		1 (1%)
#Descending colon	(100)	(175)
Parasitism		1 (1%)
*Rectum	(100)	(175)
Abscess, NOS		1 (1%)
URINARY SYSTEM		
#Kidney	(100)	(175)
Mineralization	81 (81%)	58 (33%)
Hydronephrosis		1 (1%)
Congestion, NOS	3 (3%)	
Inflammation, chronic	96 (96%)	13 (65%)
Fibrosis, focal		1 (1%)
Fibrosis, diffuse	1 (1%)	
Calcification, NOS	1 (1%)	
Pigmentation, NOS		2 (1%)
Hyperplasia, tubular cell	1 (1%)	

TABLE B5b. SUMMARY OF THE INCIDENCE OF NONNEOPLASTIC LESIONS IN FEMALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS AND DMH: 1% AMOSITE + PW, 1% AMOSITE + DMH (Continued)

	1% Amosite + PW	1% Amosite + DMH
URINARY SYSTEM (Continued)		
#Kidney/cortex	(100)	(175)
Cyst, NOS	4 (4%)	
#Kidney/tubule	(100)	(175)
Pigmentation, NOS	85 (85%)	73 (42%)
#Urinary bladder	(99)	(173)
Calculus, unkn gross or micro		1 (1%)
Hemorrhage		1 (1%)
Inflammation, chronic		1 (1%)
Hyperplasia, epithelial		1 (1%)
Hyperplasia, papillary	1 (1%)	1 (1%)
ENDOCRINE SYSTEM		
#Pituitary	(100)	(175)
Cyst, NOS	4 (4%)	7 (4%)
Hemorrhage	4 (4%)	
Hemorrhagic cyst	3 (3%)	1 (1%)
Necrosis, focal	1 (1%)	
Pigmentation, NOS	3 (3%)	1 (1%)
Hyperplasia, focal	6 (6%)	4 (2%)
Angiectasis	28 (28%)	17 (10%)
#Adrenal	(100)	(175)
Cyst, NOS	1 (1%)	
Congestion, NOS		1 (1%)
Hemorrhage	1 (1%)	2 (1%)
Necrosis, NOS		1 (1%)
Atrophy, NOS		1 (1%)
Angiectasis		2 (1%)
#Adrenal cortex	(100)	(175)
Congestion, NOS		1 (1%)
Hemorrhage		1 (1%)
Degeneration, NOS		2 (1%)
Necrosis, NOS	1 (1%)	3 (2%)
Necrosis, focal		3 (2%)
Metamorphosis fatty	46 (46%)	28 (16%)
Hyperplasia, focal	12 (12%)	2 (1%)
Angiectasis		1 (1%)
#Adrenal medulla	(100)	(175)
Hyperplasia, focal	13 (13%)	10 (6%)
#Thyroid	(100)	(174)
Cystic follicles	1 (1%)	
Follicular cyst, NOS	2 (2%)	8 (5%)
Hyperplasia, C-cell	26 (26%)	24 (14%)
#Parathyroid	(96)	(172)
Ectopia	1 (1%)	
Hyperplasia, NOS	7 (7%)	
REPRODUCTIVE SYSTEM		
*Mammary gland	(100)	(175)
Galactocele	15 (15%)	
Cystic ducts	63 (63%)	21 (12%)
Abscess, NOS	1 (1%)	
Hyperplasia, NOS	7 (7%)	4 (2%)
Hyperplasia, focal	1 (1%)	
Hyperplasia, diffuse	9 (9%)	

TABLE B5b. SUMMARY OF THE INCIDENCE OF NONNEOPLASTIC LESIONS IN FEMALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS AND DMH: 1% AMOSITE + PW, 1% AMOSITE + DMH (Continued)

	1% Amosite + PW	1% Amosite + DMH
REPRODUCTIVE SYSTEM (Continued)		
*Preputial gland	(100)	(175)
Cystic ducts	2 (2%)	
Abscess, NOS	2 (2%)	
Necrosis, focal	1 (1%)	
Hyperkeratosis	1 (1%)	
*Vagina	(100)	(175)
Inflammation, acute	1 (1%)	
Abscess, NOS	1 (1%)	
Hyperkeratosis		1 (1%)
Acanthosis		2 (1%)
#Uterus	(100)	(175)
Hydrometra	6 (6%)	10 (6%)
Inflammation, acute		1 (1%)
Pigmentation, NOS	2 (2%)	
#Uterine serosa	(100)	(175)
Abscess, NOS	1 (1%)	
#Cervix uteri	(100)	(175)
Cyst, NOS	3 (3%)	
Inflammation, acute focal	1 (1%)	
Fibrosis	2 (2%)	3 (2%)
Hyperkeratosis	3 (3%)	
Acanthosis	3 (3%)	
#Uterus/endometrium	(100)	(175)
Cyst, NOS	5 (5%)	13 (7%)
Hyperplasia, NOS		3 (2%)
Hyperplasia, focal		3 (2%)
Hyperplasia, papillary	1 (1%)	
#Ovary	(99)	(175)
Cyst, NOS	5 (5%)	
Follicular cyst, NOS	1 (1%)	3 (2%)
Parovarian cyst		12 (7%)
NERVOUS SYSTEM		
#Cerebrum	(100)	(175)
Hydrocephalus, NOS		2 (1%)
Hemorrhage	3 (3%)	
Abscess, NOS	1 (1%)	1 (1%)
Gliosis		2 (1%)
#Cerebellum	(100)	(175)
Hemorrhage	1 (1%)	
Necrosis, focal	1 (1%)	
#Medulla oblongata	(100)	(175)
Hemorrhage		1 (1%)
SPECIAL SENSE ORGANS		
*Eye	(100)	(175)
Synechia, anterior		1 (1%)
Cataract	9 (9%)	6 (3%)
Phthisis bulbi		1 (1%)
*Eye anterior chamber	(100)	(175)
Empyema	1 (1%)	1 (1%)
*Eye/cornea	(100)	(175)
Inflammation, acute		1 (1%)
Inflammation, chronic		1 (1%)
Inflammation, chronic focal	1 (1%)	
Inflammation, chronic diffuse	1 (1%)	
Necrosis, NOS		1 (1%)
Necrosis, focal	1 (1%)	

TABLE B5b. SUMMARY OF THE INCIDENCE OF NONNEOPLASTIC LESIONS IN FEMALE RATS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS AND DMH: 1% AMOSITE + PW, 1% AMOSITE + DMH (Continued)

	1% Amosite + PW	1% Amosite + DMH
SPECIAL SENSE ORGANS (Continued)		
*Eye/retina	(100)	(175)
Degeneration, NOS	28 (28%)	9 (5%)
*Eyelid	(100)	(175)
Abscess, NOS	1 (1%)	
*Zymbal gland	(100)	(175)
Cystic ducts	6 (6%)	2 (1%)
Abscess, NOS		2 (1%)
Hyperplasia, NOS		2 (1%)
Hyperkeratosis		1 (1%)
MUSCULOSKELETAL SYSTEM		
*Skull	(100)	(175)
Osteopetrosis	4 (4%)	5 (3%)
*Sternum	(100)	(175)
Osteopetrosis	4 (4%)	3 (2%)
BODY CAVITIES		
*Mediastinum	(100)	(175)
Congenital malformation, NOS	1 (1%)	
*Abdominal cavity	(100)	(175)
Steatitis		1 (1%)
Inflammation, chronic focal		1 (1%)
Necrosis, fat		2 (1%)
*Mesentery	(100)	(175)
Hemorrhage		1 (1%)
Inflammation, chronic focal	1 (1%)	
ALL OTHER SYSTEMS		
*Multiple organs	(100)	(175)
Hemorrhage	1 (1%)	
Inflammation, chronic	1 (1%)	5 (3%)
Pigmentation, NOS	1 (1%)	1 (1%)
Diaphragm		
Hernia, NOS	2	7
Necrosis, focal	1	
Pigmentation, NOS	1	
SPECIAL MORPHOLOGY SUMMARY		
None		

(a) DMH indicates a group receiving five doses of 15 mg/kg 1,2-dimethylhydrazine dihydrochloride by gavage in pH 5 acetate buffer.
PW indicates a group administered 0.47 mg/g chrysotile asbestos daily by gavage for 3 weeks beginning at birth.
* Number of animals receiving complete necropsy examination; all gross lesions including masses examined microscopically
# Number of animals examined microscopically at this site

APPENDIX C

PATHOGEN BURDEN SURVEY

TABLE C1. INITIAL MICROSCOPIC EXAMINATION FOR ENDOPARASITES AND BACTERIA IN F_0 RATS IN THE LIFETIME FEED STUDIES OF AMOSITE ASBESTOS

Animal/Specimen Number (a)	Micro-organisms Identified (b)
181/3812	None
182/3813	None
183/3814	1 + Coliform; 1 + *Proteus vulgaris*
184/3815	3 + Coliform; 2 + *Proteus vulgaris*
185/3816	1 + Coliform
186/3817	1 + Coliform; 1 + *Proteus vulgaris*
187/3818	None
188/3819	3 + Coliform
189/3820	1 + Coliform; 1 + *Proteus vulgaris*
190/3821	2 + Coliform; 1 + *Proteus vulgaris*
191/3822	1 + Coliform
192/3823	3 + Coliform; 2 + *Proteus vulgaris*
193/3824	1 + Coliform; 1 + *Proteus vulgaris*
194/3825	2 + Coliform
195/3826	2 + Coliform; 3 + *Proteus vulgaris*
196/3827	3 + Coliform; 3 + *Proteus vulgaris*

(a) Date of specimen: 12/18/77
(b) Lung, spleen, feces, and tracheal wash were examined for each specimen; no growth observed in the spleen or lungs; no mycoplasma isolated from tracheal washings.

TABLE C2. MURINE VIRUS ANTIBODY DETERMINATION IN F_0 RATS IN THE LIFETIME FEED STUDIES OF AMOSITE ASBESTOS

Sample Number	Complement Fixation	
	Sendai	LCM
3812	–	–
3813	–	–
3814	–	–
3815	–	–
3816	–	–
3817	–	–
3818	–	–
3819	–	–
3820	–	–
3821	–	–
3822	–	–
3823	–	–
3824	–	–
3825	–	–
3826	–	–
Significant titer	10	10

TABLE C3. REPEATED MICROSCOPIC EXAMINATION FOR ENDOPARASITES AND BACTERIA IN F_0 RATS IN THE LIFETIME FEED STUDIES OF AMOSITE ASBESTOS

Animal/Specimen Number (a)	Micro-organisms Identified (b)
297/4031	4+ Group D *Streptococcus*; 1+ *Micrococcus* sp.; 1+ Coliform
298/4032	4+ Group D *Streptococcus*; 3+ *Micrococcus* sp.; 2+ *Pseudomonas aeruginosa*
299/4033	4+ Group D *Streptococcus*; 2+ Coliform; 2+ *Pseudomonas aeruginosa*
300/4034	4+ Group D *Streptococcus*; 2+ Coliform; 2+ *Pseudomonas aeruginosa*; 2+ *Proteus vulgaris*
301/4035	4+ Group D *Streptococcus*
302/4036	4+ Group D *Streptococcus*; 2+ *Micrococcus* sp.; 1+ Coliform;
303/4037	4+ Group D *Streptococcus*; 2+ *Micrococcus* sp.; 2+ Coliform; 1+ *Candida brumptii*
304/4038	4+ Group D *Streptococcus*; 2+ Coliform; 3+ *Proteus vulgaris*
305/4039	4+ Group D *Streptococcus*; 2+ *Micrococcus* sp.; 2+ Coliform; 1+ *Pseudomonas aeruginosa*

(a) Date of specimen: 6/14/78
(b) Lung, spleen, feces, and tracheal wash were examined for each specimen; no growth observed in the spleen or lung; no mycoplasma isolated from tracheal washings.

TABLE C4. REPEATED MURINE VIRUS ANTIBODY DETERMINATION IN F_0 RATS IN THE LIFETIME FEED STUDIES OF AMOSITE ASBESTOS

Sample Number	Complement Fixation	
	Sendai	LCM
4031	320	—
4032	160	—
4033	40	—
4034	40	—
4035	40	—
4036	80	—
4037	40	—
4038	320	—
4039	80	—
Significant titer	10	10

Pathogen Burden Summary (F_0 Initial)

The tissues evaluated were remarkably free of spontaneous disease. The mild peribronchial accumulation of lymphocytes frequently seen was within normal limits for non-germfree rats. The extramedullary hematopoiesis is also normally present.

Pathogen Burden Summary (F_0 Repeated)

Sections of brain, heart, lung, spleen, liver, kidney, small intestine, large intestine, salivary gland, urinary bladder, harderian gland, skin, anus, and larynx or trachea were examined from nine rats in the parental generation killed for pathology burden. These consisted of two rats of each sex in Group 1 (control) and three males and two females in Group 2 (DMH).

Evidence of early spontaneous respiratory disease was noted in all rats. This was characterized by minimal-to-moderate peribronchial lymphoid hyperplasia in all rats and minimal perivascular lymphoid hyperplasia in two Group 2 males. Agonal hemorrhage was noted in the lungs of a single Group 1 male.

Minimal focal nonsuppurative myocarditis was noted in two Group 2 males. Minimal focal chronic interstitial nephritis was noted in three males. Focal mineralization was noted at the corticomedullary junction in all four females and foci of regenerative tubule epithelium were noted in one female.

Congestion occurred in the large intestine of one Group 1 female. Presumptive infection with sialoadenitis virus was noted in three rats by the presence of chronic nonsuppurative inflammation in the salivary gland and/or harderian gland.

TABLE C5. REPEATED INDIVIDUAL HISTOPATHOLOGIC FINDINGS IN F_0 RATS IN THE LIFETIME FEED STUDIES OF AMOSITE ASBESTOS

Site/Lesion	Animal Number:	Group 1 (Control) Male		Female		Group 2 (Amosite Asbestos) Male			Female	
		2 9 7	2 9 8	3 0 2	3 0 3	2 9 9	3 0 0	3 0 1	3 0 4	3 0 5
Brain		X	X	X	X	X	X	X	X	X
Heart		X	X	X	X	X			X	X
Focal nonsuppurative myocarditis							1	1		
Lung										
Peribronchial lymphoid hyperplasia		2	2	2	2	1	2	3	1	3
Perivascular lymphoid hyperplasia						1	1			
Angonal hemorrhage		P								
Spleen		X	O	X	X	X	X	X	X	X
Liver		X	O	X	X	X	X	X	X	X
Kidney						X		X		O
Chronic interstitial nephritis		1					1	1		
Focal mineralization				P	P				P	P
Foci of regenerative epithelium					P					
Small intestine		X	X	X	X	X	X	X	X	X
Large intestine		X	X	X		X	X	O	X	X
Congestion					P					
Salivary gland			O	X	X	X	X	O		X
Nonsuppurative sialoadenitis		P							P	
Urinary bladder		X	O	X	O	X	X	X	X	X
Harderian gland		O	O		O	X	X	X		X
Chronic inflammation				P					P	
Skin		X	X	X	X	X	X	X	X	X
Anus		O	O	X	X	X	X	X	X	X
Larynx-Trachea		X	X	X	X	X	O	X	X	X

Type of Finding:

O = Tissue absent
X = Tissue examined and not remarkable
P = Finding present

Degree of Finding:

1 = Minimal
2 = Slight
3 = Moderate
4 = Moderately severe

Pathogen Burden Summary (F_1 Initial)

Sections of brain, heart, lung, spleen, liver, kidney, small intestine, salivary gland, urinary bladder, eye, skin, anus, and cecum were examined from 16 rats in the F_1 generation killed for pathology burden. These consisted of one Group 1 (control) male, seven Group 2 (DMH) males, three Group 1 females, and five Group 2 females.

Evidence of respiratory disease was noted in all rats. This was characterized by minimal-to-moderate peribronchial lymphoid hyperplasia in all rats, focal hyperplasia of the bronchiolar epithelium in 6 rats, accumulation of mucous exudate and inflammatory cells (mostly macrophages) within the tracheo-bronchial tree in 10 rats and focal pneumonitis in 1 rat. Accumulated mucus and scattered inflammatory cells were noted in the trachea of one male. Aspirated blood was noted in one rat, and agonal hemmorhage occurred in two. The consistent evidence of bronchiolitis with a hyperplastic response in affected bronchiolar epithelium is characteristic of Sendai virus infection, and this conclusion was supported serologically. The disease is usualy mild and self-limiting in rats.

In sections of liver, foci of mononuclear cells were noted in two rats and focal pleocellular infiltrate occurred in one.

In sections of kidney, foci of regenerative tubules were noted in three rats, foci of mineralization in five rats (four were females), and focal accumulation of mononuclear cells in one male.

Focal hemmorhage within the tips of the villi in the duodenum in one male was noted as an apparent agonal change.

TABLE C6. INITIAL INDIVIDUAL HISTOPATHOLOGIC FINDINGS IN F_1 RATS IN THE LIFETIME FEED STUDIES OF AMOSITE ASBESTOS

Site/Lesion	Group 1 (Control)				Group 2 (Control and DMH)											
	Male	Female			Male							Female				
Animal Number:	2 6 1	2 6 9	2 7 0	2 7 1	2 6 2	2 6 3	2 6 4	2 6 5	2 6 6	2 6 7	2 6 8	2 7 2	2 7 3	2 7 4	2 7 5	2 7 6
Brain	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Heart	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Lung																
Peribronchial lymphoid hyperplasia	1	3	2	1	3	3	2	2	2	2	3	1	2	3	1	2
Focal pneumonitis							P									
Focal hyperplasia of bronchiolar epithelium	P				P	P		P		P				P		
Exudate	P	P	P	P	P	P		P	P	P						
Inflammatory cells (bronchial tree)		P	P	P	P	P			P	P		P		P		
Aspirated blood		P														
Agonal hemorrhage								P								P
Spleen	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Liver	X			X	X	X	X	X	X	X	X		X	X	X	X
Mononuclear cells		P	P													
Pleocellular infiltrate												P				
Kidney				X	X	X			X	X	X	X	X	X		
Foci of regenerative tubules	P			P				P								
Mononuclear cells	P															
Foci of mineralization		P	P				P								P	P
Small intestine	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Focal hemorrhage		P														
Salivary gland	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X
Lymphoid hyperplasia (cervical lymph node)							P									
Urinary bladder	X	X	X	X	X	X	X	X	X	X	X	O	X	X	X	X
Harderian gland	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X
Harderian gland porphyrins							P									
Skin	X	O	X	X	X	X	X	X	X	X	X	X	X	X	X	O
Anus	X	X	X	X	X	X	O	X	X	X	X	X	X	X	X	X
Cecum	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Trachea																
Foci of mucus with inflammatory cells occurring just over the epithelium	P															

Type of Finding:

O = Tissue absent
X = Tissue examined and not remarkable
P = Finding present

Degree of Finding:

1 = Minimal
2 = Slight
3 = Moderate
4 = Moderately severe
5 = Severe

TABLE C7. MICROSCOPIC EXAMINATION FOR ENDOPARASITES AND BACTERIA IN F_1 RATS IN THE LIFETIME FEED STUDIES OF AMOSITE ASBESTOS

Animal/Specimen Number (a)	Micro-organisms Identified (b)
261/3983	4+ Group D *Streptococcus*; 3+ *Staphylococcus aureus;* 3+ Coliform
262/3984	4+ Group D *Streptococcus*; 1+ Coliform; 2+ *Micrococcus* sp.; 1+ *Proteus vulgaris*
263/3985	4+ Group D *Streptococcus*; 2+ *Micrococcus* sp.; 3+ *Proteus vulgaris*
264/3986	4+ Group D *Streptococcus*; 1+ Coliform; 1+ *Pseudomonas aeruginosa*
265/3987	4+ Group D *Streptococcus*; 3+ *Micrococcus* sp.; 3+ Coliform
266/3988	4+ Group D *Streptococcus*; 3+ Coliform; 3+ *Proteus morganii*
267/3989	4+ Group D *Streptococcus*; 2+ Coliform; 1+ *Micrococcus* sp.
268/3990	3+ Group D *Streptococcus*; 4+ *Proteus vulgaris*
269/3991	4+ Group D *Streptococcus*; 3+ *Micrococcus* sp.; 4+ *Proteus vulgaris*
270/3992	4+ Group D *Streptococcus*; 4+ Coliform; 1+ *Pseudomonas aeruginosa*
271/3993	4+ Group D *Streptococcus*; 4+ Coliform
272/3994	4+ Group D *Streptococcus*; 3+ Coliform; 2+ *Micrococcus* sp.
273/3995	4+ Group D *Streptococcus*; 2+ Coliform; 1+ *Pseudomonas aeruginosa*; 4+ *Staphylococcus aureus*
274/3996	3+ Group D *Streptococcus*
275/3997	3+ Group D *Streptococcus*; 3+ Coliform; 3+ *Pseudomonas aeruginosa*
276/3998	3+ Group D *Streptococcus*; 2+ Coliform; 3+ *Micrococcus* sp.; 2+ *Proteus vulgaris*

(a) Date of specimen: 5/11/78
(b) Lung, spleen, feces, and tracheal wash were examined for each specimen; no growth observed in the spleen or lung; no mycoplasma isolated from tracheal washings.

TABLE C8. INITIAL MURINE VIRUS ANTIBODY DETERMINATION IN F_1 RATS IN THE LIFETIME FEED STUDIES OF AMOSITE ASBESTOS

Sample Number	Complement Fixation	
	Sendai	LCM
261	≥1280	—
262	160	—
263	80	—
264	—	—
265	—	—
266	—	—
267	80	—
268	80	—
269	160	—
270	40	—
272	640	—
276	—	—
Significant titer	10	10

Pathogen Burden Summary (F_1 Repeated)

Accumulation of porphyrins within the harderian gland occurred in two rats. This was accompanied by hyperplasia of the cervical lymph nodes in one rat.

Sections of the liver and lung were examined from 12 rats in the F_1 generation killed for pathogen burden determination. These consisted of three males and three females in Group 1 (control) and three males and three females in Group 2 (DMH).

Evidence of early spontaneous respiratory disease was noted in all animals. This lesion consisted of minimal-to-moderate peribronchial lymphoid hyperplasia in all rats and minimal-to-slight perivascular lymphoid hyperplasia in two Group 1 males. These two males also had focal areas of pneumonitis, and one of them also had a fibrinous exudate in the areas of pneumonitis.

Minimal nonsuppurative pericholangitis was noted in single male and female rats in Group 1.

TABLE C9. REPEATED INDIVIDUAL HISTOPATHOLOGIC FINDINGS IN F_1 RATS IN THE LIFETIME FEED STUDIES OF AMOSITE ASBESTOS

Site/Lesion	Animal Number:	Group 1 (Control) Male			Group 1 (Control) Female			Group 2 (DMH) Male			Group 2 (DMH) Female		
		3	3	3	3	3	3	3	3	3	3	3	3
		0	0	0	1	1	1	0	1	1	1	1	1
		6	7	8	2	3	4	9	0	1	5	6	7
Lung													
Peribronchial lymphoid hyperplasia		2	2	2	2	2	1	2	2	3	1	2	2
Perivascular lymphoid hyperplasia		1		2									
Focal pneumonitis		P		P									
Fibrinous exudate				P									
Liver		X	X			X	X	X	X	X	X	X	X
Nonsuppurative pericholangitis				1	1								

Type of Finding:

O = Tissue absent
X = Tissue examined and not remarkable
P = Finding present

Degree of Finding:

1 = Minimal
2 = Slight
3 = Moderate
4 = Moderately severe

TABLE C10. REPEATED MURINE VIRUS ANTIBODY DETERMINATION IN F_1 RATS IN THE LIFETIME FEED STUDIES OF AMOSITE ASBESTOS

Sample Number	Complement Fixation Sendai
47	10
48	20
49	40
50	40
51	40
52	10
53	40
54	40
55	10
56	40
57	40
58	40
Significant titer	10

APPENDIX D

ANALYSIS OF BEDDING SAMPLES IN THE LIFETIME FEED STUDIES OF AMOSITE ASBESTOS

TABLE D1. ANALYSIS OF BEDDING SAMPLES AT HAZLETON LABORATORIES

Collection Date	Desired Level (ppm)	Determined Level of Pentachlorophenol (ppm)	Determined Level of Polychlorinated Biphenyls (ppm)
07/78	<1.0	6.0	<0.5
08/78	<1.0	<0.5	<0.5
08/79	<1.0	<0.2	<0.5
01/80	<1.0	<0.2	<0.5
08/80	<1.0	<0.2	<0.5

TABLE D2. ANALYSIS OF BEDDING SAMPLES AT ILLINOIS INSTITUTE OF TECHNOLOGY RESEARCH INSTITUTE

Collection Date	Fiber Concentration	
	Total (a)	Asbestos (a)
03/77	110/g	ND
03/79	90/g	ND
02/80	130/g	ND
08/80	40/g	ND

(a) ND = less than detection limit (~ 25,000 fibers per liter or 25 fibers per gram)

APPENDIX E

WATER ANALYSIS IN THE LIFETIME FEED STUDIES OF AMOSITE ASBESTOS

APPENDIX E. WATER ANALYSIS

Samples of drinking water were submitted to the Water Supply Research Laboratory, U.S. Environmental Protection Agency, Cincinnati, OH, for baseline asbestos determinations. The samples were collected on November 8, 1976, and November 11, 1980.

The results of the first analysis determined the concentration of chrysotile asbestos and amphibole asbestos to be below detectable limits of 10,000 fibers per liter.

The second analysis detected one chrysotile asbestos fiber, equivalent to 50,000 fibers per liter, but a count based on a single fiber is not statistically significant. The chrysotile asbestos fiber was probably a contaminant from the study diet.

APPENDIX F

AIR ANALYSIS IN THE LIFETIME FEED STUDIES OF AMOSITE ASBESTOS

APPENDIX F. ANALYSIS OF AIR SAMPLES

Results of air sample analyses are presented in Table F1.

Initially, 6-hour samplings of air were taken for baseline asbestos determinations from clean and dirty corridors and two rooms. Samples were sent for analysis to the Illinois Institute of Technology Research Institute (IITRI). Additional 6-hour air samplings of rooms and corridors were taken when each asbestos diet was introduced into a room and thereafter approximately every 6 months.

Air samples were obtained with a portable pump Model G (part no. 456058) from Mining Safety Appliances Co. (Pittsburgh, PA), which was connected by Tygon tubing to a Millipore Filter Field Monitor (pore size, 5 μ).

TABLE F1. RESULTS OF ANALYSES OF AIR SAMPLES IN LIFETIME FEED STUDIES OF AMOSITE ASBESTOS IN RATS (a)

Date	Room No. 32 (next to return hall door)	Service Hall (outside room no. 30)	Room No. 35 (next to service hall door)	Return Hall Intersection of Nos. 45 and 44	Room No. 36 (next to return hall door)
	Total Fiber Concentration (no./cc of air)				
6/78	0.06	0	0	0	0
1/79	0.17	0.04	0.04		0.30
2/80	0.095		0.048		
7/80	0.11	0.09	0.03		0
	Asbestos Fiber Concentration (no./cc of air)				
6/78	0.06	0	0	0	0
1/79	0.13	0.04	0.00		0.17
2/80	0.095		0.048		
7/80	0.03	0.03	0.03		
	>5 μm (no./cc of air)				
6/78	0	0		0	0
1/79	0	0	0		0
2/80	0		0		
7/80	0	0	0		0
	>1 μm (no./cc of air)				
6/78	0	0		0	0
1/79	0.13	0	0		0.14
2/80	0		0		
7/80	0	0	0.03		0

Date	Service Hall Intersection of Nos. 29 and 55	Room No. 33 (next to return hall door)	Return Hall (No. 20) Outside of Women's Locker Room	Room No. 30 (next to return hall door)	Service Hall
	Total Fiber Concentration (no./cc of air)				
6/78	0.12	(b) 0	0	0	
1/79		0.11		0.04	0.04
2/80		0.00			
7/80		0.11		0.34	
	Asbestos Fiber Concentration (no./cc of air)				
6/78	0.06	(b) 0	0	0	
1/79		0.04		0.04	0
2/80		0.00			
7/80		0.03		0.23	
	>5 μm (no./cc of air)				
6/78	0	(b) 0	0	0	
1/79		0		0	0
2/80		0			
7/80		0		0	
	>1 μm (no./cc of air)				
6/78	0	(b) 0	0	0	
1/79		0		0	0
2/80		0			
7/80		0.03		0.11	

TABLE F1. RESULTS OF ANALYSES OF AIR SAMPLES IN LIFETIME FEED STUDIES OF AMOSITE ASBESTOS IN RATS (Continued)

Date	Return Hall	Service Hall (halls 55 and 56)	Room 31	Room 34	Blank
	Total Fiber Concentration (no./cc of air)				
6/78					
1/79	0.07		0.13	0.17	0.04
2/80	0.048	0.048	0.048	0.24	
7/80		0.26	0.03	0.20	0.03
	Asbestos Fiber Concentration (no./cc of air)				
6/78					
1/79	0.04		0.04	0.04	0
2/80	0.048	0.048	0.00	0.14	
7/80		0.20	0.03	0.09	0
	>5 µm (no./cc of air)				
6/78					
1/79	0		0	0	0
2/80	0	0	0	0	
7/80		0.06	0	0	0
	>1 µm (no./cc of air)				
6/78					
1/79	0		0	0.04	0
2/80	0	0	0	0.05	
7/80		0.14	0	0.06	0

Date	Service Hall	Wash Area Room 48	Change Area	Room 56
	Total Fiber Concentration (no./cc of air)			
6/78				
1/79	0			
2/80				
7/80		0.06	0.11	0.09
	Asbestos Fiber Concentration (no./cc of air)			
6/78				
1/79	0			
2/80				
7/80		0	0.03	0.09
	>5 µm (no./cc of air)			
6/78				
1/79	0			
2/80				
7/80		0	0	0
	>1 µm (no./cc of air)			
6/78				
1/79	0			
2/80				
7/80		0	0.03	0.09

(a) Samples analyzed by IITRI; the computations are based on a 1 liter/min sample rate and a 6-h sample period = 360 min.
(b) Sample holder was damaged.

APPENDIX G

SUMMARY OF CLINICAL SIGNS OBSERVED IN RATS PRIOR TO MORIBUND KILL IN THE LIFETIME FEED STUDIES OF AMOSITE ASBESTOS

TABLE G1. SUMMARY OF CLINICAL SIGNS OBSERVED IN RATS BEFORE MORIBUND KILL IN THE LIFETIME FEED STUDIES OF AMOSITE ASBESTOS: UNTREATED CONTROL (a)

	Weeks 71-76		Weeks 77-81		Weeks 82-86		Weeks 87-91	
	Male	Female	Male	Female	Male	Female	Male	Female
Number of animals killed in moribund condition	2	3	1	1	1	1	3	3
Pale							2	1
Thin				1	1		2	
Head tilt		1						
Eye small and opaque		1						
Pale eyes			1					1
Eyes dark					1			
Depressed							1	1
Labored respiration					1		1	
Rapid respiration							1	
Tissue mass (abscessed)--right ear, axilla, head, neck, chest, inguinal	1	2	1		1	1	2	
Wheezing				1				
Palpable mass in abdomen					1			3
Hunched				1				
Cold to touch								1
Anal nodule	1							
Loss of righting reflex							1	
Muscle tone flaccid							1	
Circling				1				

	Weeks 92-96		Weeks 97-101	
	Male	Female	Male	Female
Number of animals killed in moribund condition	3	3	3	2
Pale	2	2	2	1
Thin	2		1	
Depressed			1	1
Tissue mass (abscessed)--right ear, axilla, head, neck, chest, inguinal	2		1	1
Malocclusion	1			
Palpable mass in abdomen	1	3	2	
Abdomen firm and dark	1			
Abdomen distended	1			
Loss of equilibrium				1
Red discharge from vagina		1		

(a) The intervals were arbitrarily selected based on weeks when a large percentage of moribund kills occurred. Clinical signs observed after the last interval selected were believed not to be readily discernible from signs of aging.

TABLE G2. SUMMARY OF CLINICAL SIGNS OBSERVED IN RATS BEFORE MORIBUND KILL IN THE LIFETIME FEED STUDIES OF AMOSITE ASBESTOS: DMH (a)

	Weeks 71-76		Weeks 77-81		Weeks 82-86		Weeks 87-91	
	Male	Female	Male	Female	Male	Female	Male	Female
Number of animals killed in moribund condition	27	17	8	14	8	9	5	7
Pale	1		1	1	1	2	2	4
Thin	1		1	2	2	1		2
Hunched	1		1	3		1		
Head tilt	1			1	1	1		
Pale eyes	3		3	1	2	2		
Eyes squinted								1
Cloudy or opaque eye(s)		2	1		1			
Face swollen			1					
Dark stains around perineal region		1						
Unkempt or rough hair coat					1			
Yellowish appearance			1					
Cold to touch					1	1		
Labored respiration		1	1		1		1	
Wheezing		1					1	
Rapid respiration								2
Depressed	1			1	1	1	4	5
Inactive extremities or flaccid paralysis (hindquarters)			1		1			
Unable to stand							1	
Loss of righting reflex								1
Loss of coordination	1			1				
Malocclusion							1	
Red discharge or discharge from anus	5		4	1	2	2	1	1
Soft (watery) feces	1							
Abdomen firm	1							
Abdomen distended and dark		1						
Palpable mass				1				
Palpable mass in abdomen	2		3	2	4	6	1	6
Tissue mass--side of head, side of body, ear, anus								
< 1.0 cm				1			2	
1.0-5.0 cm	3	6	1	2		2	1	
5.0-10.0 cm	2	1		1				2
Swollen area--lower midline	1							
Ear--protruding red or dark material and/or discharge	1				1		1	
Ear--dark soft lesion	1							
Ear--protruding yellow cheesy material	1							
Yellow urine stains					1			
Vaginal discharge				1				
Nodule	1		1		1	1		
Anal nodule			1	2	1	2		1
Muscle tone flaccid						1		
Ataxia			1					

	Weeks 92-96		Weeks 97-101	
	Male	Female	Male	Female
Number of animals killed in moribund condition	7	13	4	7
Pale	3	10	2	2
Thin	1	3		2
Head tilt		1		
Eyes squinted				1
Unkempt or rough hair coat		1		
Wheezing		2	1	1
Depressed		5		2
Loss of equilibrium			1	
Loss of righting reflex				1
Malocclusion				1
Red discharge or discharge from anus	1	1		1
Soft (watery) feces		1		
Abdomen distended and dark		2	1	
Palpable mass in abdomen	5	6	1	3
Tissue mass--side of head, side of body, ear, anus				
< 1.0 cm			1	
1.0-5.0 cm				1
5.0-10.0 cm				1
Nodule		2		
Anal nodule	4	4	1	1
Prostrate position		1		

(a) The intervals were arbitrarily selected based on weeks when a large percentage of moribund kills occurred. Clinical signs observed after the last interval selected were believed not to be readily discernible from signs of aging.

TABLE G3. SUMMARY OF CLINICAL SIGNS OBSERVED IN RATS BEFORE MORIBUND KILL IN THE *LIFETIME FEED STUDIES OF AMOSITE ASBESTOS*: 1% AMOSITE (a)

	Weeks 71-76		Weeks 77-81		Weeks 82-86		Weeks 87-91	
	Male	Female	Male	Female	Male	Female	Male	Female
Number of animals killed in moribund condition	3	4	0	5	5	3	2	4
Pale					1	2		
Thin					1			
Hunched	1							
Head tilt					1			1
Pale eyes					2			
Cloudy or opaque eye(s)	1							
Face swollen	1							
Wheezing						1		
Labored respiration	2							
Rapid respiration						1		
Depressed							1	1
Circling					1			
Loss of equilibrium				1				
Loss of or slow righting reflex							1	
Ataxia				1				
Weakness in hindlegs							1	
Inactive						1		1
Muscle tone flaccid						1		
Agressive-like behavior					1			
Red discharge--perineal region				1				
Palpable mass				1				
Palpable mass in abdomen					2	1	1	1
Tissue mass (abscessed)--thorax, back, axilla, cervical, inguinal, flank, shoulder, perineum, neck, midline, base of tail								
1.0-5.0 cm	1	2			2			1
5.0-10.0 cm				1	1	1		1
Nodule		1			1			

	Weeks 92-96		Weeks 97-101		Weeks 102-106		Weeks 107-111	
	Male	Female	Male	Female	Male	Female	Male	Female
Number of animals killed in moribund condition	0	2	4	8	3	11	13	10
Pale		2	1	5	1	4	3	3
Thin		1	1	2	1	3	7	7
Hunched								1
Pale eyes				1	1			
Eyes squinted			1					
Cloudy or opaque eye(s)							1	
Alopecia (over most of body)								1
Yellowish appearance			2					
Labored respiration		1						
Rapid respiration						1		
Unkempt							3	
Depressed		1	1	5		5	3	3
Loss of equilibrium						1		2
Loss or slow righting reflex				1				
Unable to hold head up								1
Abdomen firm							1	
Abdomen distended and/or dark							1	
Palpable mass in abdomen		2	3	4	3	3	4	4
Tissue mass (abscessed)--thorax, back, axilla, cervical, inguinal, flank, shoulder, perineum, neck, midline, base of tail								
1.0-5.0 cm				1			3	1
5.0-10.0 cm		1	1	1	1	1	3	3

(a) The intervals were arbitrarily selected based on weeks when a large percentage of moribund kills occurred. Clinical signs observed after the last interval selected were believed not to be readily discernible from signs of aging.

TABLE G4. SUMMARY OF CLINICAL SIGNS OBSERVED IN RATS BEFORE MORIBUND KILL IN THE LIFETIME FEED STUDIES OF AMOSITE ASBESTOS: 1% AMOSITE + DMH (a)

	Weeks 71-76		Weeks 77-81		Weeks 82-86		Weeks 87-91	
	Male	Female	Male	Female	Male	Female	Male	Female
Number of animals killed in moribund condition	33	17	17	24	11	6	8	12
Pale		1	2	1	1	1	1	3
Thin			1	2	1	1	2	1
Hunched				1		2		
Head tilt			1	1	1			
Pale eyes		1	4	3	1	1		2
Eye(s) squinted						1	1	
Unkempt or rough hair coat					1		1	
Salivating						1		
Labored respiration			1					1
Rapid respiration		2		1				1
Wheezing			2		1		2	1
Lacking movement or inactive			2			1		
Depressed			1		1		1	4
Yellowish appearance of extremities								1
Cold to touch			1			1		
Tissue mass (abscessed)--lower midline, cervical, anus, neck, inguinal, axilla, side of head, ear, tail								
<1.0 cm	1		5					
1.0-5.0 cm	8	3	2	2			1	1
5.0-10.0 cm			1					2
Abdomen dark							2	
Abdomen bloated or distended				1			2	2
Palpable mass					1			
Palpable mass in abdomen	2	3	3	10	3	3	2	6
Dark red or red discharge from ear	1			1				
Dark red, red discharge, or discharge from anus	3		5	4	5	1	3	2
Red stains around anus	1				1			
Dark crust perineal region		1						
Soft (watery) feces	4		2	2	1		1	
Anal nodule		1	1	7	4	1	1	3
Muscle tone flaccid			1					
Loss of equilibrium		1						
Loss of righting reflex						1		1
Circling				1				
Fecal stains							1	
Yellow crust around nose							1	
Malocclusion			1					
Twitching						1		
Alopecia					1		1	
Ear--green cheesy material		1						
Dark crust inner left ear		1						
Protruding eye					1			
Nodule	1				1		1	

TABLE G4. SUMMARY OF CLINICAL SIGNS OBSERVED IN RATS BEFORE MORIBUND KILL IN THE LIFETIME FEED STUDIES OF AMOSITE ASBESTOS: 1% AMOSITE + DMH (*Continued*)

	Weeks 92-96		Weeks 97-101		Weeks 102-106	
	Male	Female	Male	Female	Male	Female
Number of animals killed in moribund condition	6	17	15	10	9	13
Pale	2	9	4	3	4	8
Thin	2	4	4		2	6
Hunched		1				
Head tilt	1					
Pale eyes	1	2	1			
Lacrimating eye(s)		2				
Unkempt or rough hair coat	1		1			
Labored respiration			2			1
Rapid respiration		1				
Wheezing		1				
Depressed	1	4	4	1	1	4
Yellowish appearance of extremities		2				
Cold to touch		1	1			
Tissue mass (abscessed)--lower midline, cervical, anus, neck, inguinal, axilla, side of head, ear, tail						
<1.0 cm	3	1	2		1	
1.0-5.0 cm		2	2	3		3
5.0-10.0 cm		2				
Abdomen dark			1			
Abdomen firm			1			
Abdomen bloated or distended			1			
Palpable mass in abdomen	1	10	7	6	4	7
Dark red, red discharge, or discharge from anus	2		2		1	
Soft (watery) feces		1				
Anal nodule	2	3	2	4		2
Muscle tone flaccid		2				
Loss of equilibrium					1	1
Circling	1					
Malocclusion	1	1	1		1	
Paralysis in hindlegs			1			
Red discharge from vagina		1				
Nodule			1			
Animal prostrate in cage					1	

(a) The intervals were arbitrarily selected based on weeks when a large percentage of moribund kills occurred. Clinical signs observed after the last interval selected were believed not to be readily discernible from signs of aging.

TABLE G5. SUMMARY OF CLINICAL SIGNS OBSERVED IN RATS BEFORE MORIBUND KILL IN THE LIFETIME FEED STUDIES OF AMOSITE ASBESTOS: 1% AMOSITE + PW (a)

	Weeks 71-76		Weeks 77-81		Weeks 82-86		Weeks 87-91	
	Male	Female	Male	Female	Male	Female	Male	Female
Number of animals killed in moribund condition	1		4		3		1	
Pale			1					
Thin			3		2		1	
Hunched					1			
Head tilt			1		1			
Pale eyes							1	
Wheezing			2		1			
Depressed			1				1	
Abdomen distended (with firm mass)	1							
Palpable mass in abdomen			1		1			
Tissue mass (abscessed)--cervical, shoulder, mouth, axilla, head, neck, chest, back, inguinal, perineal								
1.0-5.0 cm			2				1	
5.0-10.0 cm					1			
Red discharge from anus					1			

	Weeks 92-96		Weeks 97-101		Weeks 102-106		Weeks 107-111	
	Male	Female	Male	Female	Male	Female	Male	Female
Number of animals killed in moribund condition	2	2	5	4	4	3	13	9
Pale		1	1	2	3	1	4	2
Thin			1	1	1	1	3	5
Hunched								1
Pale eyes	1		1				1	
Rapid respiration								1
Labored respiration	1						2	1
Wheezing			1	1			1	
Unkempt			1					1
Depressed	2	1	1	2	2	1	2	1
Cyanotic	1		1			1	1	
Inactive		1						1
Abdomen distended (with firm mass)			1					
Palpable mass in abdomen	1	2	1	2	3		4	3
Palpable mass in chest								1
Tissue mass--cervical, shoulder, mouth, axilla, head, neck, chest, back, inguinal, perineal								
1.0-5.0 cm			1	1		1	2	2
5.0-10.0 cm					1	1	3	3
Cold to touch	1							
Loss of equilibrium	1			1			3	1
Yellowish appearance of extremities		1		1				
Prostrate in cage				1				
Dark stains on urogenitals								1

(a) The intervals were arbitrarily selected based on weeks when a large percentage of moribund kills occurred. Clinical signs observed after the last interval selected were believed not to be readily discernible from signs of aging.

APPENDIX H

FEED AND COMPOUND CONSUMPTION BY RATS IN THE LIFETIME FEED STUDIES OF AMOSITE ASBESTOS

TABLE H1. FEED AND COMPOUND CONSUMPTION BY MALE RATS FOR REPRESENTATIVE WEEKS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS

	Control		1% Amosite			1% Amosite + PW		
Week	Grams Feed/ Day (a)	Body Weight (grams)	Grams Feed/ Day (a)	Body Weight (grams)	Dose/ Day (b)	Grams Feed/ Day (a)	Body Weight (grams)	Dose/ Day (b)
17	16	303	17	259	656	18	279	645
27	16	369	17	318	535	18	338	533
37	18	403	18	356	506	19	376	505
48	19	425	17	375	453	18	390	462
57	17	450	17	393	433	17	416	409
67	18	471	18	411	438	17	438	388
77	17	477	17	429	396	17	443	384
87	16	475	17	424	401	18	439	410
97	17	471	18	417	432	17	440	386
107	16	459	17	410	415	19	420	452
117	16	423	17	390	436	18	391	460
127	17	393	18	358	503	19	370	514
137	17	340	16	334	479	17	327	520
Mean	16.9	420	17.2	375	468	17.8	390	467
SD (c)	1.0		0.6		70.6	0.8		75.9
CV (d)	5.6		3.5		15.1	4.5		16.3

(a) Average grams of feed removed from feeder per animal per day; not corrected for scatter.
(b) Estimated milligrams of amosite consumed per day per kilogram of body weight
(c) Standard deviation
(d) Coefficient of variation = (standard deviation/mean) × 100

TABLE H2. FEED AND COMPOUND CONSUMPTION BY MALE RATS FOR REPRESENTATIVE WEEKS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS AND 1,2-DIMETHYLHYDRAZINE DIHYDROCHLORIDE (DMH)

	Control		DMH		1% Amosite + DMH		
Week	Grams Feed/ Day (a)	Body Weight (grams)	Grams Feed/ Day (a)	Body Weight (grams)	Grams Feed/ Day (a)	Body Weight (grams)	Dose/ Day (b)
17	16	303	16	306	17	254	669
27	16	369	17	372	17	322	528
37	18	403	17	394	18	354	508
48	19	425	18	417	18	370	486
57	17	450	18	444	18	396	455
67	18	471	17	459	17	417	408
77	17	477	16	464	17	425	400
87	16	475	17	457	17	424	401
97	17	471	15	432	18	402	448
107	16	459	20	419	19	397	479
Mean	17.0	430	17.1	416	17.6	376	478
SD (c	1.1		1.4		0.7		80.5
CV (d	6.2		8.0		4.0		16.8

(a) Average grams of feed removed from feeder per animal per day; not corrected for scatter.
(b) Estimated milligrams of amosite consumed per day per kilogram of body weight
(c) Standard deviation
(d) Coefficient of variation = (standard deviation/mean) × 100

TABLE H3. FEED AND COMPOUND CONSUMPTION BY FEMALE RATS FOR REPRESENTATIVE WEEKS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS

	Control		1% Amosite			1% Amosite + PW		
Week	Grams Feed/ Day (a)	Body Weight (grams)	Grams Feed/ Day (a)	Body Weight (grams)	Dose/ Day (b)	Grams Feed/ Day (a)	Body Weight (grams)	Dose/ Day (b)
17	11	185	12	168	714	13	176	739
27	11	212	12	192	625	13	198	657
37	12	222	13	204	637	13	211	616
48	13	241	13	221	588	12	224	536
57	12	260	14	241	581	14	247	567
67	13	295	13	271	480	13	275	473
77	13	321	13	294	442	14	294	476
87	13	334	13	298	436	14	296	473
97	14	336	14	300	467	16	303	528
107	14	340	15	306	490	19	305	623
117	15	331	14	293	478	14	287	488
127	16	326	15	282	532	16	278	576
137	14	294	13	250	520	15	269	558
Mean	13.2	284	13.4	255	538	14.3	259	562
SD (c)	1.5		1.0		85.1	1.8		80.5
CV (d)	11.1		7.2		15.8	12.9		14.3

(a) Average grams of feed removed from feeder per animal per day; not corrected for scatter.
(b) Estimated milligrams of amosite consumed per day per kilogram of body weight
(c) Standard deviation
(d) Coefficient of variation = (standard deviation/mean) × 100

TABLE H4. FEED AND COMPOUND CONSUMPTION BY FEMALE RATS FOR REPRESENTATIVE WEEKS IN THE LIFETIME FEED STUDY OF AMOSITE ASBESTOS AND 1,2-DIMETHYLHYDRAZINE DIHYDROCHLORIDE (DMH)

	Control		DMH		1% Amosite + DMH		
Week	Grams Feed/ Day (a)	Body Weight (grams)	Grams Feed/ Day (a)	Body Weight (grams)	Grams Feed/ Day (a)	Body Weight (grams)	Dose/ Day (b)
17	11	185	12	181	12	162	741
27	11	212	11	209	13	195	667
37	12	222	12	217	13	200	650
48	13	241	12	239	13	217	599
57	12	260	13	260	15	236	636
67	13	295	13	281	13	260	500
77	13	321	14	300	13	281	463
87	13	334	13	294	14	281	498
97	14	336	12	293	14	284	493
Mean	12.4	267	12.4	253	13.3	235	583
SD (c)	1.0		0.9		0.9		97.6
CV (d)	8.1		7.1		6.5		16.7

(a) Average grams of feed removed from feeder per animal per day; not corrected for scatter.
(b) Estimated milligrams of amosite consumed per day per kilogram of body weight
(c) Standard deviation
(d) Coefficient of variation = (standard deviation/mean) × 100