NATIONAL TOXICOLOGY PROGRAM
Technical Report Series
No. 246

LIFETIME CARCINOGENESIS STUDIES

OF

CHRYSOTILE ASBESTOS

(CAS NO. 12001-29-5)

IN SYRIAN GOLDEN HAMSTERS

(FEED STUDIES)

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

NATIONAL TOXICOLOGY PROGRAM

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 chemically induced 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 comprised of four charter DHHS agencies: the National Cancer Institute, National Institutes of Health; the National Institute of Environmental Health Sciences, National Institutes of Health; the National Center for Toxicological Research, Food and Drug Administration; and the National Institute for Occupational Safety and Health, Centers for Disease Control. In July 1981, the Carcinogenesis Bioassay Testing Program, NCI, was transferred to the NIEHS.

Special Note: This Technical Report was peer reviewed in public session and approved by the NTP Board of Scientific Counselor's Technical Reports Review Subcommittee on June 23, 1981 [see page 10]. 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. All errors detected in the audit of the draft report were corrected in this final Technical Report. 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 has 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

LIFETIME CARCINOGENESIS STUDIES OF CHRYSOTILE ASBESTOS (CAS NO. 12001-29-5) IN SYRIAN GOLDEN HAMSTERS (FEED STUDIES)

NATIONAL TOXICOLOGY PROGRAM
Research Triangle Park
Box 12233
North Carolina 27709

July 1990

NTP TR 246
NIH Publication No. 90-2502

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

NOTE TO THE READER

This is one in a series of experiments designed to determine whether selected chemicals produce cancer in animals. Chemicals selected for testing in the NTP carcinogenesis program are chosen primarily on the bases of human exposure, level of production, and chemical structure. Selection per se is not an indicator of a chemical's carcinogenic potential. Negative results, in which the test animals do not have a greater incidence of cancer than control animals, do not necessarily mean that a test chemical is not a carcinogen, inasmuch as the experiments are conducted under a limited set of conditions. Positive results demonstrate that a test chemical is carcinogenic for animals under the conditions of the test and indicate that exposure to the chemical has the potential for hazard to humans. The determination of the risk to humans from chemicals found to be carcinogenic in animals requires a wider analysis which extends beyond the purview of this study.

This study was designed and conducted at the National Institute of Environmental Health Sciences, National Toxicology Program.

Comments and questions about the National Toxicology Program Technical Reports on Carcinogenesis Studies should be directed to the National Toxicology Program, located at Research Triangle Park, North Carolina 27709 (919-541-3991) or at Room 835B, Westwood Towers, 5401 Westbard Ave., Bethesda, Maryland 20205 (301-496-1152).

Although every effort is made to prepare the Technical Reports as accurately as possible, mistakes may occur. Readers are requested to communicate any mistakes to the Deputy Director, NTP (P.O. Box 12233, Research Triangle Park, NC 27709), so that corrective action may be taken. Further, anyone who is aware of related ongoing or published studies not mentioned in this report is encouraged to make this information known to the NTP.

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 carcinogenesis studies technical report are available without change (while supplies last) for the NTP Public Information Office, National Toxicity Program, P.O. Box 12233, Research Triangle Park, NC 27709.

TABLE OF CONTENTS

TABLES

FIGURES

APPENDIXES

CARCINOGENESIS STUDIES OF CHRYSOTILE ASBESTOS

ABSTRACT

Carcinogenesis studies of short range (SR), intermediate range (IR), or intermediate range chrysotile asbestos in combination with the intestinal carcinogen 1,2-dimethylhydrazine dihydrochloride (DMH) were conducted with male and female Syrian golden hamsters. Both forms of chrysotile asbestos were administered at the concentration of 1% in pelleted diet for the entire lifetime of the hamsters starting with mothers of the test animals. Group sizes varied from 125 to 253. Starting at 6 weeks of age, male and female hamsters in the intermediate range chrysotile/DMH study were given oral doses of DMH (4 mg/kg) every other week for a total of 5 doses. There was no adverse effect on body weight gain or survival by either form of asbestos or by asbestos in combination with DMH.

A significant increase ($P<0.05$) in adrenal cortical adenomas was observed in male hamsters exposed to SR and IR chrysotile asbestos and in females treated with IR chrysotile asbestos when compared to the pooled control groups (males: pooled controls, 25/466, 5%; SR chrysotile, 26/229, 11%; IR chrysotile, 24/244, 10%; females: pooled controls, 15/468, 3%; IR chrysotile, 18/234, 8%). However, statistical significance was lost when these dosed groups were compared with concurrent control groups (males: SR control, 7/115, 6%; IR control, 7/115, 6%; females: SR control, 4/112, 4%; IR control, 6/118, 5%).

The results of the combination study (IR chrysotile plus DMH) did not yield a significant increase in tumors above the background level observed in the DMH group alone or in the untreated control group. The DMH failed to yield a background level of intestinal tumors high enough to provide a valid test of the cocarcinogenic potential of chrysotile asbestos. For this reason, the cocarcinogenic potential of orally administered asbestos should be considered untested.

Under the conditions of these studies, neither short range chrysotile nor intermediate range chrysotile asbestos was carcinogenic when ingested at 1% levels in the diet by male and female Syrian golden hamsters. While there were increases in the rates of adrenal cortical adenomas in male and female hamsters exposed to intermediate range chrysotile asbestos compared with pooled control groups, these incidence rates were not different when compared with the concurrent control groups. Additionally, the biologic importance of adrenal tumors in the absence of target organ (gastrointestinal tract) neoplasia is questionable. The cocarcinogenesis studies using IR chrysotile asbestos and 1,2-dimethylhydrazine dihydrochloride were considered inadequate because there was no increase in intestinal neoplasia in the DMH group.

CONTRIBUTORS

National Toxicology Program
P.O. Box 12233
Research Triangle Park
North Carolina 27709

- Evaluation of experiments, interpretation of results, and report of findings:

  Dr. Ernest E. McConnell (Chemical Manager)
  Dr. Joseph K. Haseman
  Dr. James Huff
  Dr. John A. Moore

- Conduct of Study:

  Illinois Institute of Technology Research Institute

  The carcinogenesis bioassay using Syrian golden hamsters was begun in 1977 and terminated in 1979.

  Dr. Patricia Holmes-Principal Investigator
  Ms. Josephine Reed—Quality Assurance

- Pathology Evaluation:

  Illinois Institute of Technology Research Institute

  Dr. John Rust

- Pathology Quality Assurance:

  Experimental Pathology Laboratory

  Dr. W.M. Busey
  Dr. James Proctor

  NTP Pathology Working Group
  (14 November 1980)

  Dr. Gary A. Boorman
  Dr. Bhola N. Gupta
  Dr. Larry Lomax
  Dr. Ernest E. McConnell
  Dr. Gerd Reznik
  Dr. J. Stinson
  Dr. J. Ward

- Format, Typing, and Collation:

  Ms. Beth H. deBrito
  Ms. Ethel Gilchrist
  Ms. Sheridan Jameson
  Ms. Geraldine Wandrisco

- Report Review:

  NTP/NIH Staff Peer Review Committee

  Dr. J. F. Douglas
  Dr. C. K. Grieshaber
  Dr. L. Hart
  Dr. J. K. Haseman
  Dr. J. E. Huff
  Dr. E. E. McConnell
  Dr. J. A. Moore
  Dr. R. W. Tennant

REVIEWERS

National Toxicology Program Board of Scientific Counselors' Technical Reports Review Subcommittee

Margaret Hitchcock, Ph.D. (Chairperson)
John B. Pierce Foundation Laboratory
New Haven, Connecticut

Curtis Harper, Ph. D.
Associate Professor of Pharmacology
University of North Carolina
Chapel Hill, North Carolina

Alice S. Whittemore, Ph.D.
Biostatistics
Stanford University School of Medicine
Palo Alto, California

Subcommittee Panel of Experts

Roy Shore, Ph.D.
New York University Medical Center
New York, New York

Norman Breslow, Ph.D.
University of Washington
Seattle, Washington

Joseph Highland, Ph.D.
Environmental Defense Fund
Washington, D.C.

Frank Mirer, Ph.D. (Principal Reviewer)
International Union,
United Auto Workers
Detroit, Michigan

Sheldon D. Murphy, Ph.D.
Professor of Toxicology
University of Texas Medical School
Houston, Texas

Svend Nielsen, D.V.M., Ph.D.
Professor of Pathology
The University of Connecticut
Storrs, Connecticut

Bernard A. Schwetz, D.V.M., Ph.D.
Toxicology Research Laboratory
Dow Chemical U.S.A.
Midland, Michigan

James Swenberg, D.V.M., Ph.D. (Principal Reviewer)
Chief of Pathology
Chemical Industry Institute of Toxicology
Research Triangle Park, North Carolina

Gary M. Williams, M.D.
Chief of Experimental Pathology
American Health Foundation
Valhalla, New York

SUMMARY OF PEER REVIEW COMMENTS

On June 23, 1981, this technical report on the carcinogenesis studies of chrysotile asbestos underwent peer review and was approved by the National Toxicology Program Board of Scientific Counselors' Technical Report Review Subcommittee and associated Panel of Experts at an open meeting held in Building 101, National Toxicology Program, Research Triangle Park, North Carolina.

Dr. Swenberg, as a principal reviewer, agreed with the conclusions that the ingestion via the diet of short range (SR) or intermediate range (IR) chrysotile asbestos was not carcinogenic in male and female Syrian golden hamsters. The asbestos was made available in pelleted diet, 1%, for the lifetime of the hamsters. While there were significant increases in the rates of adrenal cortical adenomas in male (SR or IR) and female (IR) hamsters exposed to chrysotile asbestos compared to pooled control groups, they were no longer significant when contrasted to the concurrent control groups. Additionally, the biologic importance of adrenal tumors in the absence of intestinal or mesothelial neoplasia is questionable. Combination studies using IR chrysotile and 1,2-dimethylhydrazine (DMH) were considered inadequate because of the lack of an increase in intestinal neoplasia in the DMH group.

Dr. Swenberg said that several aspects of the study conduct and reporting could use more attention: missexed animals; fluctuations in animal body weights; information on the DMH experiment; non-tumor pathology; and more detailed review of the clinical records for autolyzed or cannibalized animals.

As a second principal reviewer, Dr. Mirer emphasized the variations in duration of exposure in the absence of terminal sacrifice, which differs from past or standard experimental design. He noted there were large differences in median fiber length for both SR and IR as measured by electron microscopy versus light microscopy; this difference may relate to the distribution of fiber sizes found in the diet samples. He reiterated the inadequacy of the DMH studies in that a literature report indicated a higher incidence of hemangiomas and hemangiosarcomas in DMH-treated hamsters than were seen in the current study. Dr. Mirer asked for available references to studies in hamsters of asbestos exposure by other routes of administration. He emphasized again that the nature of the test material is most important before meaningful conclusions can be made.

Dr. Williams suggested that the DMH studies may have been inadequate because the DMH was not appropriately buffered to prevent decomposition. He asked that summary data be included from an EPA report showing various forms of asbestos to be inactive genetically (Reiss et al., 1979). Dr. Mirer elaborated further on experiments not done which might have aided interpretation of the results. One had to do with uptake and translocation of asbestos fibers in the body, while the other related to whether asbestos pelleted in diet is available to be absorbed and/or translocated in the same way that asbestos suspended in drinking water would be.

Dr. Moore, NTP, said there was disagreement between the original pathologist and the Pathology Working Group for both this report and the amosite asbestos report. Dr. Swenberg felt that this was handled well in the reports. He said that the quality assurance review findings should also be included in the report or there should at least be a statement to the effect that the findings are available on request.

Dr. Swenberg moved that the technical report on the carcinogenesis studies of chrysotile asbestos be approved following the insertion of the minor revisions indicated. Dr. Mirer seconded the motion and the technical report was approved unanimously by the Peer Review Panel.

I. INTRODUCTION

I. INTRODUCTION

The term asbestos has a commercial/industrial derivation limited to naturally occurring fibrous minerals of the serpentine or amphibole series. Chrysotile is the only 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. The gross fibers which are visible to the naked eye are actually bundles of much finer fibrils that are submicroscopic in size.

Studies during the past 25 years have clearly established an association between occupational exposure to asbestos and increased risk of cancer. Human studies have shown that increased tumor risk is associated with chrysotile, amosite, and anthophyllite exposure; animal studies also implicate crocidolite.

Excellent reviews of the carcinogenic and public health effects associated with asbestos are those by Selikoff (1980), the Environmental Protection Agency (1980), Selikoff and Hammond (1979), and the International Agency for Research on Cancer (1977).

Lung cancer and mesothelioma are neoplasms most frequently observed in people exposed to asbestos, with the latter tumor perhaps unique in its association with these fibers. A modest increase in the incidence of gastrointestinal tumors has also been observed among asbestos insulation workers, miners, and factory workers. The increased incidence of gastrointestinal cancer and possible peritoneal mesothelioma in occupationally exposed populations may be a consequence of direct fiber ingestion or ingestion of inhaled fibers cleared from the nasal or tracheobronchus portions of the respiratory system by mucociliary processes.

Large portions of the population ingest asbestos through consumption of food and water. Analysis of water samples from 365 cities found 45% to have detectable levels of asbestos (Millette, 1979). Forty-one cities had asbestos concentrations in water that exceeded 10 million fibers per liter. Asbestos or asbestos-like fibers may gain access to water supplies as a result of mining (Lake Superior), presence of natural serpentine or amphibole deposits in water sheds (Seattle, Washington, and San Francisco, California), or, under certain conditions, through the use of asbestos-cement pipe by municipal water supplies (EPA, 1980). In the latter instance erosion of fibers is associated with the "aggressiveness" of the water, a term representing a mathematical expression of pH, alkalinity, and calcium content. Approximately 69% of U.S. water systems utilize water that is potentially capable of eroding asbestos-cement pipe (EPA, 1980).

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

Furthermore, beers and wines could contain asbestos, possibly as a consequence of the use of asbestos filters in the preparation of these products (Cunningham and Pontefract, 1971). The ingestion of rice treated with talc that contains asbestos has been hypothesized to be associated with an increased incidence of stomach cancer (Merliss, 1971a and 1971b).

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 distant organ sites in humans (Carter and Taylor, 1980), in rats (Cunningham et al., 1977), and in baboons (Storeygard and Brown, 1977). Electron microscopic studies confirmed the presence of amphibole mineral fibers in the urine of people who ingested water containing these fibers (Cook and Olson, 1979).

Studies in animals have shown that the inhalation of asbestos can produce lung carcinoma and mesothelioma in the pleural cavity. Intrapleural, intratracheal, and intraperitoneal injection of asbestos will also produce neoplasia in several species of laboratory animals. A review of these studies is given by Levine (1978).

Asbestos (chrysotile, amosite, and crocidolite) has been shown to be cytotoxic *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 the amphobile fibers, and effects were more pronounced in the intestine-derived cells than in those from the

liver. Asbestos was also found to be 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 the above three forms of asbestos were not mutagenic. In addition, no mutagenic activity was demonstrated using chrysotile, amosite, or crocidolite asbestos in *Escherichia coli* or *Salmonella typhimurium* systems (Chamberlain and Tarmy, 1977). From these data, asbestos is not likely to be genotoxic, but rather a carcinogen of the solid state type (Weisburger and Williams, 1979).

In 1973 the National Institute of Environmental Health Sciences and the Environmental Protection Agency cosponsored a symposium on the possible biological effects of ingested asbestos (EHP, 1974). This conference concluded that a paucity of data existed concerning the effects of ingested asbestos and that specific research was needed.

A Subcommittee of the DHEW Committee to Coordinate Toxicology and Related Programs subsequently reviewed existing data and prepared a draft research protocol that the Committee felt was responsive to the major public health consensus. The protocol was widely distributed for comment within and outside the government. On the basis of the comments received, a revised protocol was developed which required long-term animal toxicology and carcinogenesis studies to evaluate the ingestion of several forms of asbestos for carcinogenic effect. The forms of asbestos to be studied included chrysotile (a serpentine asbestos) (NTP TR 246), amosite (NTP TR 249 for studies in Syrian golden hamsters and TR 279 for studies in F344/N rats) and crocidolite (representative of amphibole asbestos) (NTP TR 280), and a nonfibrous tremolite (NTP TR 267), which contained low levels of asbestiform fibers.

All materials were to be tested in the Fischer 344 strain of rat, whereas two forms of asbestos were to be tested in hamsters. All studies were to encompass the lifetime of the animal, defined as the period from which the animal commences eating solid food until death.

This technical report presents the results of those studies undertaken to determine the effects of short range and intermediate range chrysotile asbestos in the diet fed to male and female Syrian golden hamsters.

II. MATERIALS AND METHODS

TEST MATERIALS

TEST DIETS

SOURCE AND SPECIFICATIONS OF TEST ANIMALS

ANIMAL MAINTENANCE

CLINICAL EXAMINATIONS AND PATHOLOGY

DATA RECORDING AND STATISTICAL METHODS

PILOT STUDY FOR DOSE SETTING OF INTESTINAL CARCINOGEN

TEST MATERIALS

Asbestos is a general term applied to certain natural mineral silicates when they appear in a fibrous form. Chrysotile is the fibrous member of the serpentine mineral group; its chemical structure is $Mg_3Si_2O_5(OH)_4$. Two chrysotile test materials were selected for testing and are referred to as short range (SR) and intermediate range (IR) chrysotile. Intermediate range chrysotile differs from short range chrysotile in that the former contains fibers extending into relatively large sizes both with respect to length and diameter.

The short range chrysotile was purchased from the Union Carbide Corporation, Niagara Falls, New York, which referred to the material as COF-25. The chrysotile was mined from the New Idria serpentine mass located in the southern part of the Diablo Range in the southwestern San Benito and western Fresno counties of California.

The intermediate range chrysotile was purchased from the Johns Manville Company, which referred to the material as Plastobest-20. This is a particularly clean grade of chrysotile used in the plastics industry. The chrysotile was obtained from the Jeffrey Mine, Asbestos, Quebec, Canada.

The two chrysotile test materials were each purchased in quantities of about 1,000 pounds. Each material was packaged in new fiberboard drums in quantities of 25 (short range) or 50 pounds (intermediate range) and stored with other forms of asbestos in a special warehouse room at Research Triangle Park, North Carolina. Each drum received a color marking unique to the specific asbestos type.

The homogeneity of the samples and the physical and chemical properties of the materials were extensively characterized by the Bureau of Mines, U.S. Department of the Interior (Supt. of Documents No. I 28.23:8452) and by the Fine Particle Laboratories, Illinois Institute of Technology Research Institute, Chicago, Illinois (Special Report and Addendum on project L6085, contract NO1-ES-5-3157). Copies of these reports are available upon request from the National Toxicology Program.

Selected chemical and physical properties which define differences between the two chrysotile samples are given below and in Table 1.

Short range chrysotile was detected at greater than 96% by volume; minor amounts of calcite, brucite, talc, feldspar, quartz, and opaques were present.

Intermediate range chrysotile was detected at greater than 96% by volume; minor amounts of platy serpentine, calcite, brucite, pyroxene, talc, magnetite, and other opaques were present.

TEST DIETS

The feed used was NIH-31 open formula rodent diet prepared by Zeigler Brothers Inc., Gardners, PA. The appropriate chrysotile asbestos was incorporated to a level of 1% by weight into the test diet. Pilot studies determined that homogeneous mixing of asbestos and feed would occur when a 55 cu. ft. Patterson Kelly "V" blender was loaded by alternate layering of feed and asbestos. All feed was pelleted with a Sprout-Waldron pelleter; the pellets were of oval configuration, 3/8" by 3/4" in size. Pelleted feed was packaged in 25 pound aliquots in standard paper feed bags which were color coded to minimize the occurrence of feeding errors at the test laboratory. Each lot of blended feed was analyzed for asbestos concentration; the results of these analyses are given in Appendix A.

TABLE 1. FIBER CHARACTERISTICS AND CHEMICAL-INSTRUMENTAL ANALYSES OF CHRYSOTILE ASBESTOS *(a)*

	Short Range	Intermediate Range
Fiber Characteristics		
Surface area (m^2/g)	54.3 ± 3.9 *(b)* 54.2 ± 0.9 *(c)*	20.2 ± 0.1 *(b)* 24.9 ± 2.2 *(c)*
Density (g/cm^3)	2.577 ± .022SD	2.607 ± .016 SD
Measurement, transmission electron microscopy		
fiber count/gram	.6081 x 10^{13}	.1291 x 10^{12}
median length (μm)	0.66	0.82
range of length (μm) *(d)*	0.088 - 51.1	0.104 - 783.4
median diameter (μm)	0.059	0.089
range of diameter (μm)	0.019 - 1.67	0.019 - 11.5
median fiber aspect ratio (l/d)	11.1698	8.435
Chemical Instrument Analyses (expressed as weight percent)		
Al_2O_3	0.66	1.47
CaO	0.32	0.05
FeO	Not Detected	Not Detected
Fe_2O_3	2.02	2.93
MgO	40.62	40.26
K_2O	Not Detected	0.08
SiO_2	39.77	39.90
Na_2O	0.01	0.04
TiO_2	0.03	0.04
MnO	0.07	0.06
Cr_2O_3	0.17	0.06
NiO	0.17	0.06
Co_2O_3	0.01	Not Detected
CO_2	0.78	0.51
H_2O^-	1.54	1.17
H_2O^+	12.69	12.81
Benzene extracted organics	0.026	0.011

(a) Measurements by transmission electron microscopy were performed at the Illinois Institute of Technology Research Institute; all other analyses were performed by the Bureau of Mines.

(b) As measured with the Quantachrome surface area instrument on 15-30 independent samples.

(c) As measured with the Perkin-Elmer surface area instrument on 15-30 independent samples.

(d) SR is comprised of short fibers, with 98% $<10\mu$m. IR consists of 65%$>10\mu$m, with a significant number of fibers (~14%) longer than 100 μm.

II. MATERIALS AND METHODS: SOURCE AND SPECIFICATIONS OF TEST ANIMALS

SOURCE AND SPECIFICATIONS OF TEST ANIMALS

Disease free, mated female outbred Syrian golden hamsters were obtained over a period of 20 weeks in 1977 from Charles River Lakeview Laboratories, Wilmington, MA. The hamsters had been mated 6 days prior to shipping.

ANIMAL MAINTENANCE

Upon arrival, the mated female hamsters were weighed and sorted into weight ranges. They were then distributed randomly between control and treatment groups, which were housed in separate rooms. The first shipment of mated females was assigned to the short range (SR) chrysotile study, the second to the intermediate range (IR) chrysotile study, the third shipment to the IR chrysotile plus DMH study, the fourth group to the amosite study and their respective control groups. Each dam was placed in an individual cage with filter top in its respective room. Control or formulated diets were provided *ad libitum* in feed jars on the floor of each cage. Water was provided *ad libitum* via bottles. The hamsters were not handled except when the cages were changed just before the litters were due to be born. Once the litters were born, they were left undisturbed until they were approximately 10 days of age. Then, the cages were changed weekly until the offspring were 4 weeks of age, at which time they were weaned. Details of animal maintenance are presented in Table 2.

At weaning, the offspring were individually weighed and separated by sex. The test groups were randomly placed into groups of 3 males or 3 females and housed in polycarbonate cages for the remainder of the lifetime study. The dams were killed at this time. Twenty male and 20 female offspring were removed from the study for endo- and ectoparasite examination (Appendix B) to confirm that the test groups were of a desired health status. Extra hamsters were not discarded at this time, in case animals had been missexed. Approximately 6 weeks after weaning, all missexed hamsters were killed along with their cage mates and were replaced with these alternates which had received maintenance identical to that received by the original hamsters. The remaining hamsters were killed. The experimental design insured that ingestion of asbestos spanned the entire phase of solid food consumption during the lifetime of the animal. Food consumption was not determined because of the hamster's habit of sequestering its feed in the bedding. Control hamsters were housed in separate rooms. The number of animals in the study is shown in Table 3.

Starting at 6 weeks of age, male and female hamsters in the intermediate range chrysotile/1,2-dimethylhydrazine dihydrochloride (DMH) study (Table 3) were given oral doses of DMH (4 mg/kg) every other week for a total of 5 doses. The dose of DMH used in this study was based on the results of a pilot study carried out previously in the same facility (see Pilot Study section for details). The latter was conducted in a manner similar to that reported in rats (McConnell et al., 1980). The DMH (Aldrich Chemical Co., Milwaukee, WI) was used as received and was dissolved in 0.9% saline to give a concentration of 2.00 mg/ml. The solutions were made up within one hour prior to the dosing of the hamsters. All dosing was completed in less than 3 hours. The DMH was analyzed after each dosing (Appendix C).

During the test period, the room temperature was maintained at 22°C ± 2°C and the relative humidity ranged from 40% to 80%. To minimize contamination of room air with asbestos, each cage was totally enclosed. Incoming air to the cages was passed through fiberglass filters, while exit air was passed through a fiberglass roughing filter followed by a bag housing filter. The cage air pressure was negative relative to the room and the room was maintained at a slightly negative pressure in relation to corridor air. Air flow within the animal rooms was maintained with a minimum of 20 air changes per hour. Fluorescent lighting was provided 12 hours per day.

TABLE 2. MATERIALS AND METHODS FOR ANIMAL MAINTENANCE

Item	Manufacturer	Specifications	Frequency of Change or Cleaning
Cages	Maryland Plastics New York, NY	Econo-Cage Polycarbonate 19" x 10-1/2" x 8"	Weekly
Racks	Bussy Products	Stainless Steel 20 cages/rack	Weekly
Bedding	Ab-sorb-Dri, Inc. Rochelle Park, NJ	Hardwood 50 lb/bag	Weekly
Cage tops	Able Molded Plastics, Inc. Chicago, IL	GE Lexan Polycarbonate	Weekly
Cage Filter	Associated Air Filter Co. Rosemont, IL	3" Diameter cut from FG50 Filter Mats	Weekly
Metal Holder for Cage Filter	C.D. Cash Manufacturing Chicago, IL	Outer shell with screen and baffle Inner shell with screen	Weekly
Snap Ring for Holder	Keats-Lorenz Spring Co. Chicago, IL	Phosphor Bronz Spring tempered	Weekly
Feed dish with Metal Lips	W. Braun Company Chicago, IL	16 oz. Opal or clear glass jars	Weekly
Feed Follower	Unifab Corp. Kalamazoo, MI	Stainless Steel with 7 holes	Weekly
Water Bottles	Continental Glass Co. Chicago, IL	Pint Flint glass	Weekly
Watering Tube	Wahmann Mfg. Co. Timonium, MD	Stainless Steel 5/16" OD, 7-1/2" length with 120° bend 1-1/2" from bottle	Weekly
Feed	Ziegler Brothers Gardners, PA	NIH-31 Diet 25- or 50-lb bags	Weekly
Cage & Bottle Washer	Blakeslee Cicero, IL	Tunnel Wash	Daily check Monthly maintenance
Autoclaves	American Sterilizer	Models 1) Medallion 2) RSP (Vacumatic S)	Bimonthly maintenance
Washing Compounds	Economics Labs, Inc. St. Paul, MN	Spearhead Lime Away	
Room Air Filters (Exhaust)	(Roughing Filters) Air Filter Equip. Corp. Chicago, IL	Amer-Glass Filters Type G filters	
	(Bag Housing) Pure Air Filter Chicago, IL	Dri Pak 2100 H Class II	
		Absolute Filters Am. Air Filter Astrocel	
Rack Washer	Metal Wash Machinery Elizabeth, NJ	Mark V	Daily check Monthly maintenance

TABLE 3. DISPOSITION OF HAMSTERS FROM THE CHRYSOTILE ASBESTOS FEED STUDY

Group	Sex	On Test	Histopathologic Evaluation	Missing	Cannibalized	Autolyzed	Missexed
SR Chrysotile	M	126	115	0	3	6	2
Control	F	126	114	1	1	6	5
IR Chrysotile	M	126	116	0	0	8	2
Control	F	126	119	0	0	4	3
DMH and IR Chrysotile	M	125	119	0	0	3	3
Control	F	128	120	1	0	2	5
Amosite	M	127	122	0	0	4	1
Control	F	126	119	1	0	1	5
SR Chrysotile	M	253	233	0	1	10	9
	F	252	228	1	0	17	6
IR Chrysotile	M	251	245	0	0	3	3
	F	252	244	1	0	3	4
DMH	M	127	127	0	0	0	0
	F	126	122	0	0	1	3
DMH and IR Chrysotile	M	176	173	0	0	2	1
	F	173	161	3	0	6	4

CLINICAL EXAMINATIONS AND PATHOLOGY

All hamsters were observed daily for signs of toxicity. Body weights of individual animals were recorded weekly for the duration of the study. All animals were allowed to die or were killed with pentobarbital sodium when moribund. A complete post-mortem examination was performed on all animals not severely cannibalized or autolyzed. Thus, the number of animals from which particular organs or tissues were examined microscopically varies and does not necessarily represent the number of animals that were placed on study in each group (Table 3).

The gastrointestinal tract, chosen as one of the target organs prior to the study, was handled in a manner slightly different than in standard rodent lifetime studies. Prior to placement 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 2 portions of jejunum were placed unopened in fixative. The remaining small intestine was opened, washed gently with saline, and then carefully examined. Suspected lesions were processed separately and identified individually as to location. Likewise, the entire colon with anus was opened, examined, and pinned to cardboard prior to 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 prior to embedding, the colon was "carpet-rolled" starting at the posterior end, with the mucosal surface inward.

All tissues were fixed in 10% neutral buffered formalin, sectioned, and stained with hematoxylin and eosin. Tissues/organs examined microscopically were: tissue masses, the above-mentioned portions of gastrointestinal tract, mesenteric and bronchial lymph nodes, salivary gland, bone marrow (sternum), larynx, trachea, lungs and bronchi, heart, thyroid, parathyroid, liver, gallbladder, pancreas, spleen, kidneys, adrenal glands, urinary bladder, seminal vesicles/prostate/ testes, ovaries/uterus, brain and pituitary gland. Mammary gland, thigh muscle, nasal cavity with turbinates, eyes, and spinal cord were examined grossly.

The findings of the contracting pathologist were subjected to a quality assurance review by an independent pathology contractor. This

review consisted of an examination of all tumors diagnosed by the original pathologist, target organs (gastrointestinal tract) from all animals, and all organs from 10% randomly selected hamsters, and of a tissue count on all animals. Sections from all tumors and from any other organ in which a discrepancy existed between the original and reviewing pathologists were submitted to the NTP Pathology Working Group (NTP/PWG) for subsequent review. When there was a discrepancy in tumor diagnosis between the original pathologist and the NTP/PWG, all slides in question were returned to the original pathologist for reevaluation. The tables in this report represent the original pathologist's final diagnosis. Cases in which the original pathologist did not agree with the NTP/PWG are reported separately.

DATA RECORDING AND STATISTICAL METHODS

The individual animal pathology data from this experiment were recorded in the Carcinogenesis Bioassay Data System. The data elements include descriptive information on the chemicals, animals, experimental design, clinical observations, survival, and individual pathologic results.

Probabilities of survival were estimated by the product-limit procedure of Kaplan and Meier (1958) and are presented in this report in the form of graphs. Animals were statistically censored as of the time that they died of other than natural causes or were found to be missing; animals dying from natural causes were not statistically censored. Differences in survival were evaluated by Cox's (1972) life table method.

As noted earlier, concurrent studies were conducted in this laboratory with another form of asbestos (amosite) with exactly the same protocol (NTP, 1983). Although the results of these studies are not given in this report, the amosite controls were included with the chrysotile control groups for statistical purposes as part of the pooled controls.

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 (numerator) to the number of animals in which that site was examined (denominator). In most instances, the denominators included only those animals for which that 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 numbers of animals necropsied.

For the statistical analysis of tumor incidence data, two different methods of adjusting for intercurrent mortality were employed. Each used the classical methods for combining contingency tables developed by Mantel and Haenszel (1959).

The first method of analysis assumed that all tumors of a given type 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 treated 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 were then combined by the Mantel-Haenszel methods to obtain an overall probability (P) value. This method of adjusting for intercurrent mortality is Cox's life table method (1972).

The second method of analysis assumed that all tumors of a given type were "incidental," i.e., they were merely observed at autopsy in animals dying of an unrelated cause. According to this approach, the proportions of animals found to have tumors in treated and control groups were compared in each of five time intervals. For male hamsters these time intervals were 0-52 weeks, 53-78 weeks, 79-92 weeks, 93-103 weeks, and beyond 103 weeks. For female hamsters whose median survival was considerably less than that of the males, the time intervals were 0-44 weeks, 45-52 weeks, 53-60 weeks, 61-68 weeks, and beyond 68 weeks. The denominators of these proportions were the number of animals actually autopsied during the time interval. The individual time interval comparisons were then combined by the previously described methods to obtain a single overall result. (See Peto et al., 1980.)

In addition to these tests, one other set of statistical analyses was carried out for each primary tumor: the Fisher exact test based on

the overall proportion of tumor-bearing animals (Gart et al., 1979). All reported P values are one sided. Except where noted, the three alternative analyses gave similar results.

PILOT STUDY FOR DOSE SETTING OF INTESTINAL CARCINOGEN

This pilot study was designed to determine the dose of a known intestinal carcinogen that would produce a low incidence (10% ± 5%) of intestinal cancer and relatively little toxicity or neoplasia at other sites in the body. This experiment was conducted in a manner similar to that reported in rats (McConnell et al., 1980). The chemicals chosen were methylazoxymethanol acetate (MAM) and 1,2-dimethylhydrazine dihydrochloride (DMH) (Aldrich Chemical Co., Milwaukee, WI). The chemical which most nearly met these two criteria would be used in the cocarcinogenesis studies.

MAM or DMH was used as received and dissolved in 0.9% saline to a concentration of 1.5% (15 mg/ml), then diluted with saline to give the appropriate concentration for dosing. The solutions were made up within one hour prior to dosing the animals. To obviate decomposition of the chemical, all dosing was completed in less than 3 hours following preparation of the solutions.

While in the rooms, personnel wore full protective clothing and activated charcoal respirators during the actual dosing and for an additional 2 weeks following the last dose. After this time, normal safety precautions were used.

Four-week-old male and female Syrian golden hamsters were obtained from A.R. Schmidt Co. (Madison, WI) for this pilot study. The animals were acclimatized to their environment for 2 weeks; during this period, 2 males and 2 females were chosen randomly for qualitative disease diagnosis as described earlier. Caging, bedding, and feeding were also handled as described earlier (Table 1). At 6 weeks of age, hamsters were sorted by weight and assigned randomly to the dose groups prior to compound administration. DMH or MAM solutions were administered by gastric intubation, 0.2 ml/kg body weight every other week for 10 weeks (5 doses). Dose levels and group sizes are shown in Table 4. The unbalanced group sizes were selected so that the largest numbers of animals would be included in dosage groups in which the desired effects were most likely to be observed. The study was terminated 9 months following the last dose of the carcinogen.

TABLE 4. DOSE LEVELS AND GROUP SIZES OF HAMSTERS USED IN THE PILOT STUDIES OF METHYLAZOXYMETHANOL (MAM) AND 1,2-DIMETHYLHYDRAZINE DIHYDROCHLORIDE (DMH)

Dose Level (mg/kg b.w.)	Group Size		
	Males	Females	Total
0 (0.9% saline control)	30	30	60
0.2	30	30	60
1	27	27	54
4	27	27	54
7.5	27	27	54
15	21	21	42
30	18	18	36

All hamsters were observed daily and weighed once per week. (Statistical analyses were not done on body weight gain.) Clinical signs were not recorded unless considered pertinent to pathological observations. Fecal samples were collected and analyzed for the presence of occult blood (clinitest tablets) at 3 months after the dosing regimen started (blood in the feces is often associated with the presence of intestinal neoplasms). A slight positive reaction is normally observed, due to the presence of undigested myoglobin in the feed. Any increase in intensity was considered to be a qualitative indication of occult blood.

All hamsters were subjected to a complete post-mortem examination as described earlier. While all hamsters were necropsied, not all animals were submitted for histopathological evaluation. Tissues from animals selected for histology were taken predominantly from the control groups of hamsters, from animals showing macroscopic tumors, and from those hamsters treated with lower doses of DMH, since it was obvious early in the study that DMH produced less hepatic toxicity than MAM (see below). Tissues routinely selected for histopathologic examination included representative portions of the entire gastrointestinal tract, liver, kidneys, mesenteric and colo-rectal lymph nodes, and any macroscopically visible or suspect lesions. Methods used for the handling of

these tissues were identical to those described previously.

Only the highest dose (30 mg/kg) of either MAM or DMH caused a marked effect on body weight gain. Females were more affected than males. The 30 mg/kg and 15 mg/kg doses of either MAM or DMH markedly decreased the survival rate, with females again being more affected than males at the same dose. Many of these hamsters died early in the study due to hepatic toxicity. (Note: body weight and survival data are not given.)

Of those animals receiving the two higher doses (30 and 15 mg/kg) of either compound, the majority that did not die early in the study due to toxic hepatitis had macroscopically visible masses in the colon and/or cecum; the colonic masses often adhered to the abdominal wall and in many instances contained large abscesses (Table 5). However, because animals died early in the study due to toxic hepatitis, the relationship between the dose administered and the tumor incidence in these groups could not be determined.

TABLE 5. INTESTINAL TUMOR INCIDENCE IN HAMSTERS GIVEN 1,2-DIMETHYLHYDRAZINE DIHYDROCHLORIDE (DMH) BY GAVAGE *(a)*

Dosage Group	Effective Number of Animals *(b)*	Number of Animals Examined Histopathologically	TBA *(c)*	% TBA *(d)*	Total No. of Tumors	
					Benign	Malignant
Males						
Saline control	29	9	2	7%	2	0
0.2 mg/kg	27	14	6	22%	9	0
1 mg/kg	27	14	6	22%	18	2
4 mg/kg	27	7	4	15%	5	0
7.5 mg/kg	27	10	7	26%	14	25
Females						
Saline control	29	18	2	7%	2	0
0.2 mg/kg	27	11	3	11%	3	0
1 mg/kg	27	13	3	11%	4	0
4 mg/kg	27	11	3	11%	2	5
7.5 mg/kg	26	13	13	50%	29	114

(a) DMH was administered once per week every other week for 10 weeks (5 doses).

(b) Effective Number of Animals = original number in group minus animals lost to autolysis.

(c) Based on histopathological evaluation = intestinal tumor-bearing animals.

(d) $$\% \text{ TBA} = \frac{\text{TBA}}{\text{Effective No. Animals}} \times 100$$

The effective number of animals was used in the denominator because these lesions are seen at necropsy and are examined microscopically for confirmation and differentiation.

II. MATERIALS AND METHODS: PILOT STUDY FOR INTESTINAL CARCINOGEN

Tumors of the colon were comparable morphologically to those described in the similar study in Fischer 344 rats given DMH (McConnell et al., 1980) and in a single-dose study of MAM (Ward, 1975). These neoplasms varied from adenomatous polyps to tubular or mucinous adenocarcinomas with invasion through the muscle wall and local metastases to regional lymph nodes (Table 6). Cystic epithelial hyperplasia of the cecum was commonly observed, but was probably not related to carcinogen exposure.

In addition to effects on the gastrointestinal tract, marked hepatic toxicity (dose related) was observed both at necropsy and histopathologically and was present to a greater extent in hamsters given MAM than in those given DMH. Affected livers had a diffuse nodular appearance and a coarse, granular surface. Some livers contained large sac-like structures filled with blood; at times, these replaced most of the affected lobe. Microscopically, the liver lesions encompassed a variety of changes, including focal necrosis with blood-filled spaces, hepatocellular vacuolization, cellular and nuclear pleomorphism, and focal nodular hyperplasia. Hepatotoxicity in hamsters administered DMH was judged to be minimal at doses of 7.5 and 4 mg/kg and was not observed below the latter dose. Lesions in the liver that were not related to chemical administration included periportal amyloidosis, bile-duct proliferation, and intrahepatic biliary cysts. These changes were found in almost every hamster.

In those hamsters that survived the hepatic toxicity there was increasing mortality, apparently due to severe nephropathy. This appeared in all dose groups and in the controls. The kidneys from these animals were pale and granular and had a thin cortex. Most of these animals were emaciated, and the liver often had a granular appearance. Microscopically, the kidneys were characterized by diffuse and often massive accumulations of amyloid. The glomerulus seemed to be primarily affected, but involvement of the entire cortex, and to a lesser extent of the medulla, was also observed. Inflammation was conspicuously absent.

In conclusion, both chemicals induced dose-related intestinal tumors, but DMH had fewer toxic side effects than MAM; for this reason, DMH was chosen for the cocarcinogenesis studies. The dose selection for females was relatively

TABLE 6. NUMBERS AND TYPES OF INTESTINAL TRACT TUMORS IN HAMSTERS GIVEN 1,2-DIMETHYLHYDRAZINE DIHYDROCHLORIDE (DMH) BY GAVAGE

Group	Number of Animals Examined Histopathically	Tumor-Bearing Animals	Number of Tumors					
			Adenomatous Polyp	Adenoma, Sessile	Adeno CA (Sessile)	Adeno CA (in situ)	Mucinous Adeno CA	Location
Males								
Saline (DMH)	9	2	2	0	0	0	0	Colon
DMH, 0.2 mg/kg	14	6	9	0	0	0	0	Colon, Cecum
DMH, 1 mg/kg	14	6	11	7	0	1	1	Colon, Cecum
DMH, 4 mg/kg	7	4	4	1	0	0	0	Colon, Cecum
DMH, 7.5 mg/kg	10	7	14	0	13	12	0	Colon, Cecum
Females								
Saline (DMH)	18	2	2	0	0	0	0	Colon
DMH, 0.2 mg/kg	11	3	3	0	0	0	0	Colon
DMH, 1 mg/kg	13	3	1	3	0	0	0	Colon
DMH, 4 mg/kg	11	3	2	0	0	5	0	Colon
DMH, 7.5 mg/kg	13	13	29	0	28	86	0	Colon, Cecum

straightforward: 4 mg/kg produced the desired incidence (11%) of tumors of the large intestine (benign and malignant), while 7.5 mg/kg caused a high incidence (50%) of intestinal tumors, and 1 mg/kg caused no malignant tumors (Tables 4-6). The data for males were more difficult to interpret because of the lack of a clear dose-response. Four mg/kg was also chosen for these cocarcinogenesis studies because 7.5 mg/kg caused too high an incidence of malignant tumors. Even though maligant tumors were not observed at the 4 mg/kg dose, they were observed at a low incidence in the 1 mg/kg dose group; as interpreted, these data suggested that 4 mg/kg should produce a higher yield of intestinal tumors in the subsequent study.

III. RESULTS

ESTABLISHMENT OF TEST GROUPS

BODY WEIGHTS AND CLINICAL SIGNS

SURVIVAL

PATHOLOGY AND STATISTICAL ANALYSES OF RESULTS

ESTABLISHMENT OF TEST GROUPS

The experiments were designed to evaluate the effects of orally ingested chrysotile asbestos during the entire life of the animal, starting from the time it was able to eat. For this reason, the mated female hamsters were placed on the test diets for approximately 2 weeks before the first litters were born. Ten to 15 percent of the females were either not pregnant or aborted, or their litters died immediately after birth. Several more dams died after showing a prolapsed rectum in the week following birth. The incidences of infertility and neonatal deaths were unrelated to the test diet. To minimize the chance that the mothers would reject or cannibalize their young, the litters were not handled during lactation. Many of the pups which died during the nursing period were cannibalized by their mothers. In those pups in which a postmortem examination was possible, the stomachs were typically without food (milk), suggesting maternal rejection or inability to compete with litter mates. None of these observations were compound related.

Approximately 2% of the offspring in all groups died between weaning and 14 weeks of age due to cage fighting or an enteritis of undetermined origin. Histologically, the disease was compatible with the acute form of proliferative ileitis ("wet tail"), a common disease of hamsters. Combinations of cage fighting and enteritis were also observed. These deaths were not compound related, although cage fighting was more severe in the SR chrysotile and its concurrent control groups than in the other two portions of the study. Replacement hamsters were incorporated into the groups (in additional cages) to maintain group sizes until the animals were 12 weeks of age; from this time on, no additional hamsters were added to the experimental groups. The extra hamsters were killed (Figure 1).

Figure 1. Schedule of Major Events in the Chrysotile Asbestos Study

Weeks	Events
- 1	Pregnant dams obtained: —SR Chrysotile - 9 Feb 77 —IR Chrysotile - 29 March 77 —IR Chrysotile + DMH - 26 April 77 —Amosite - 6 July 77
	Start test diet
0	Birth
+ 4	Weaned Weighed Sexed Randomly grouped 3/cage Ecto + endoparasite exam
+10	Missexed hamsters discarded Alternates added Remaining extra hamsters discarded
Lifetime	Natural death or moribund sacrifice

BODY WEIGHTS AND CLINICAL SIGNS

Body weight gain was not adversely affected in any dose group, including the group given 1,2-dimethylhydrazine dihydrochloride (DMH) (Figures 2-7). In fact, hamsters eating diets containing chrysotile asbestos appeared to have increased body weights in most of the dosed groups. The inordinately sharp rise in weight gain of male and female hamsters in the SR chrysotile study at week 29 and sharp decrease in male and female IR chrysotile-exposed animals at week 18 could not be explained, but was felt to be a spurious observation. No compound-related clinical signs were observed during the entire study. Occasional skin lesions and bite wounds were observed in both sexes, but were more apparent in males; these became less of a problem after the hamsters were 20 weeks of age.

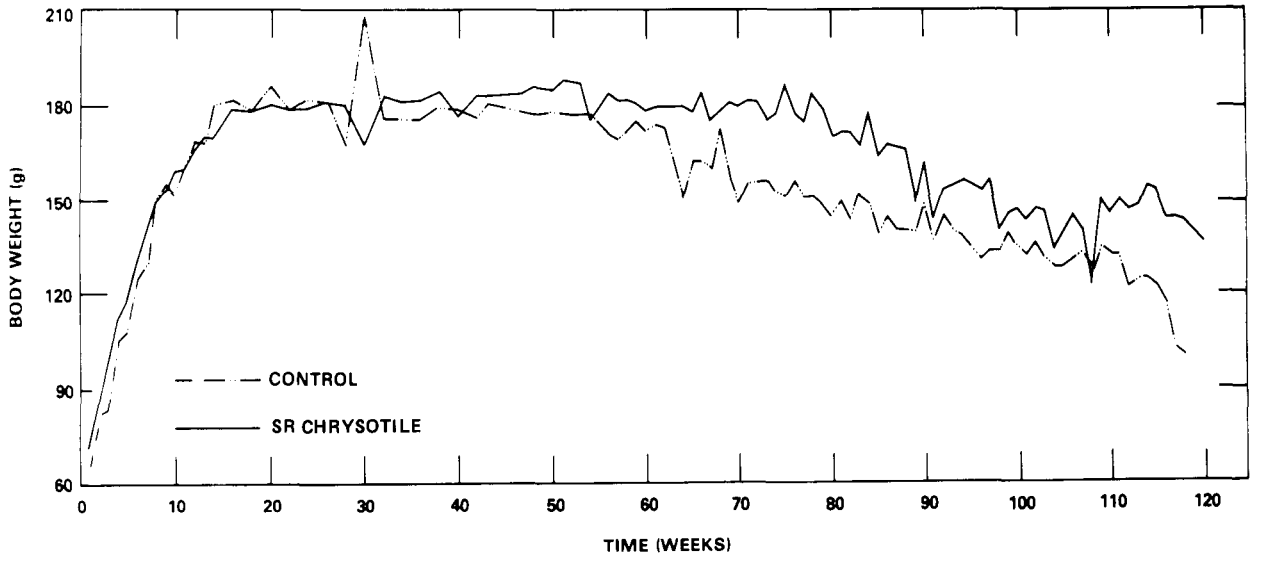

Figure 2. Growth Curves for Male Hamsters Administered Short Range (SR) Chrysotile Asbestos in the Diet

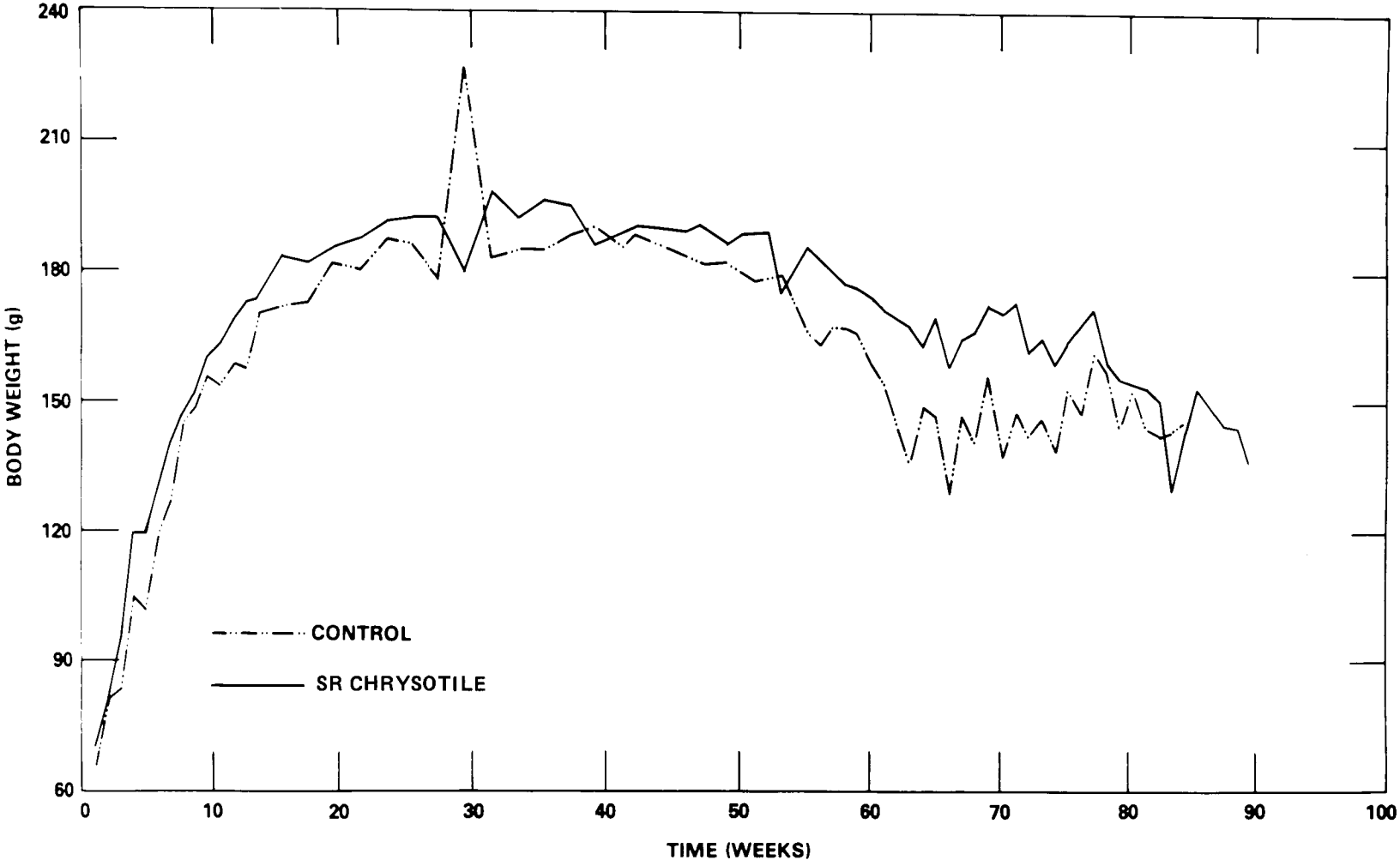

Figure 3. Growth Curves for Female Hamsters Administered Short Range (SR) Chrysotile Asbeseos in the Diet

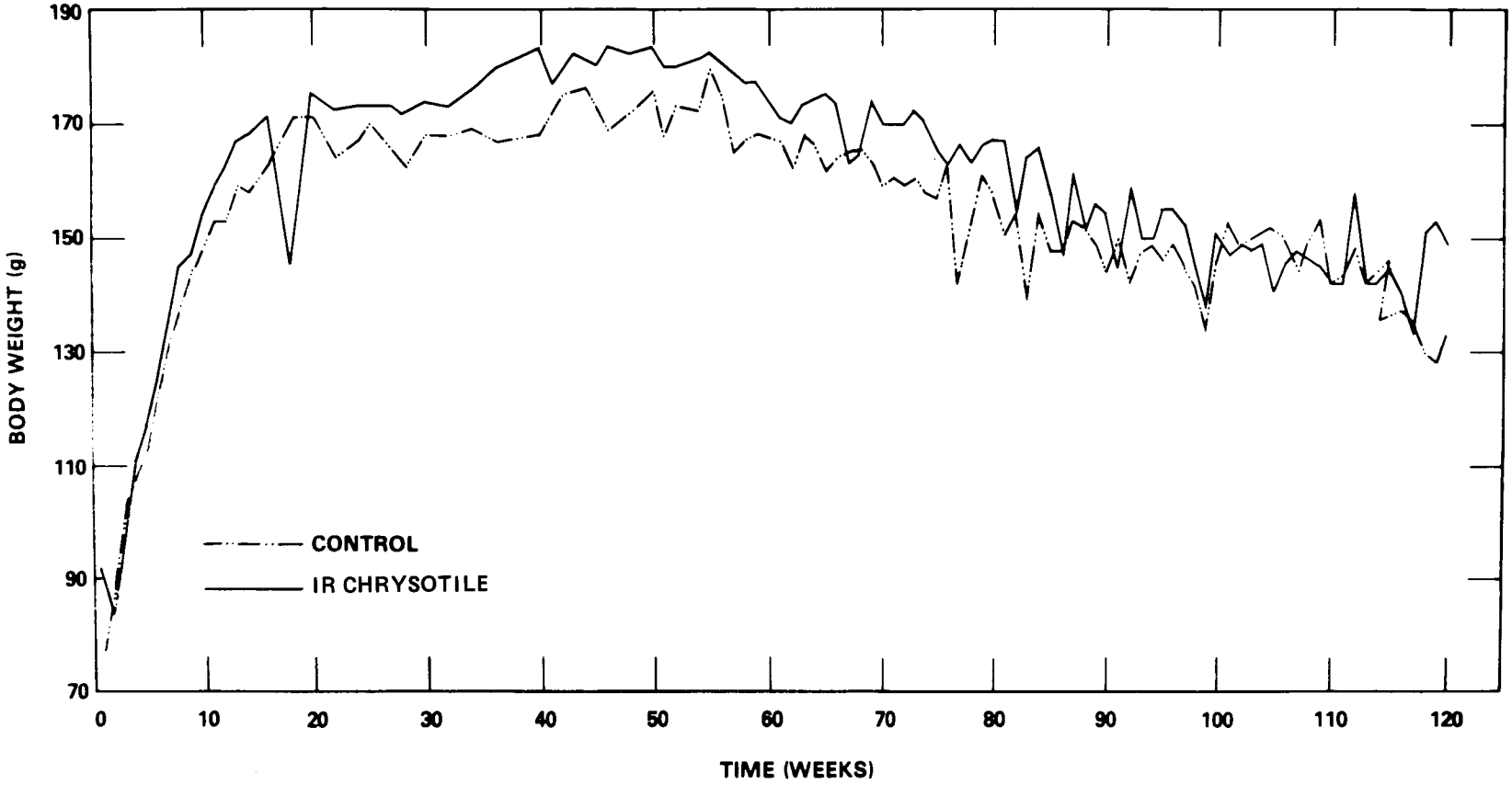

Figure 4. Growth Curves for Male Hamsters Administered Intermediate Range (IR) Chrysotile Asbestos in the Diet

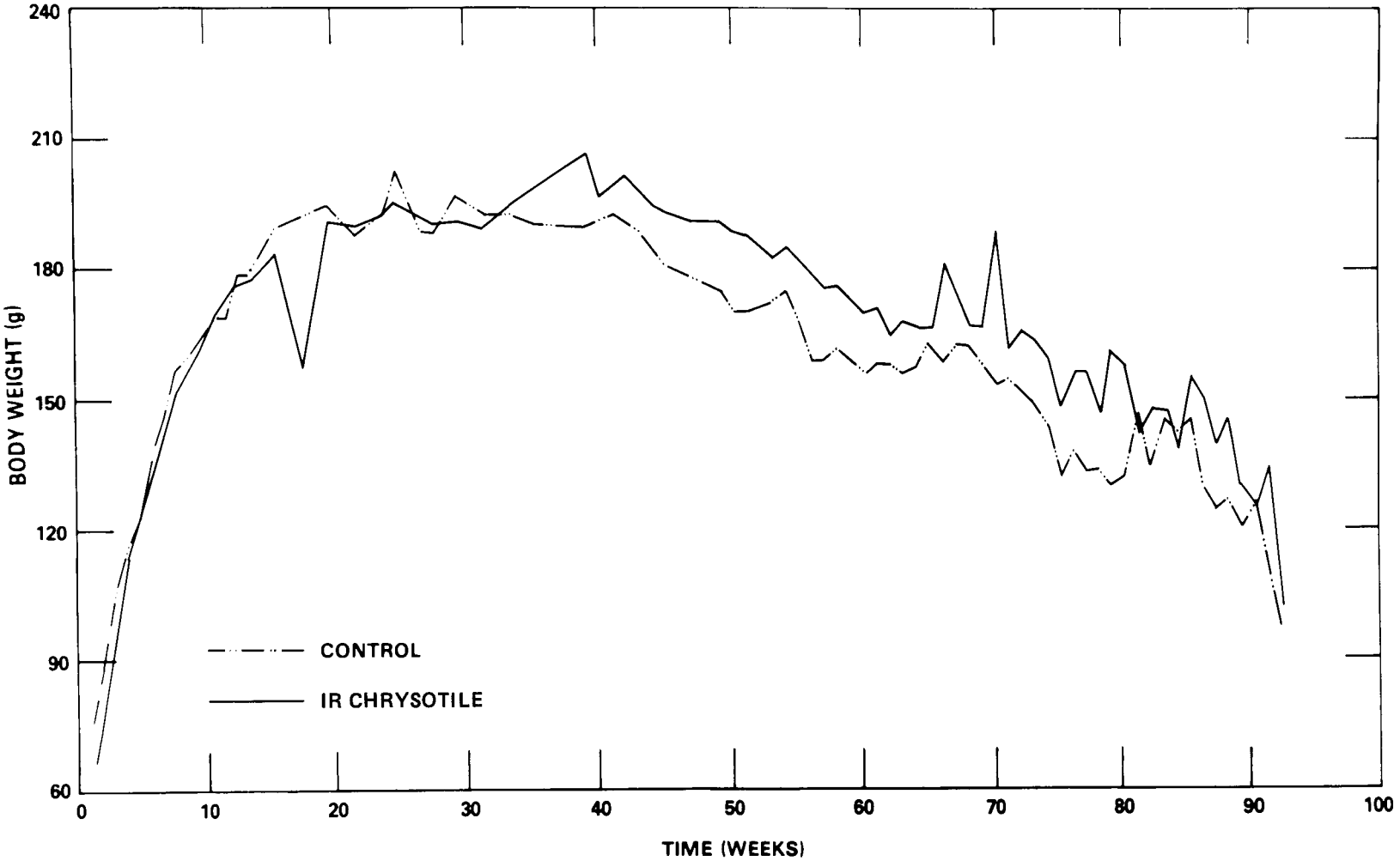

Figure 5. Growth Curves for Female Hamsters Administered Intermediate Range (IR) Chrysotile Asbestos in the Diet

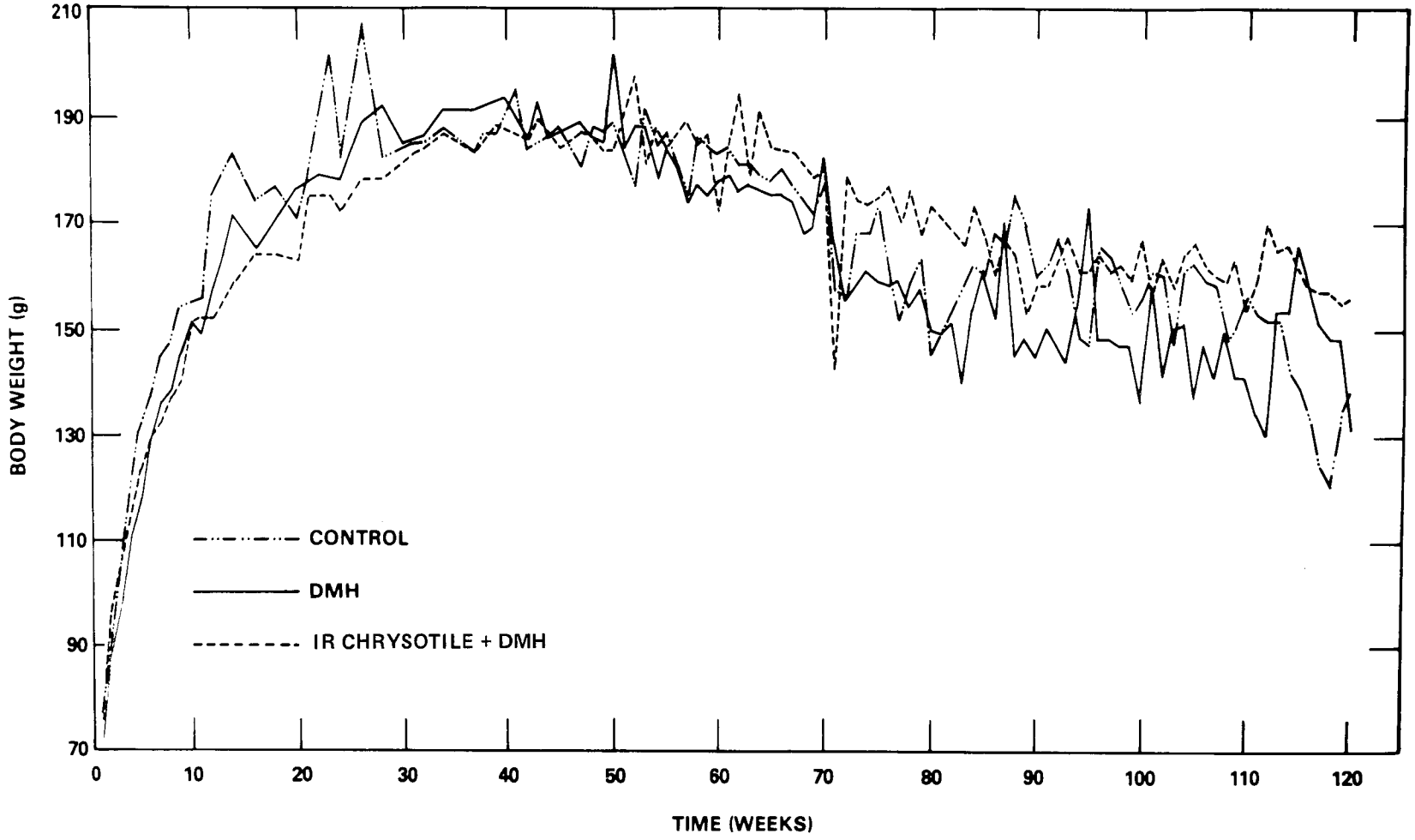

Figure 6. Growth Curves for Male Hamsters Administered 1,2-Dimethylhydrazine Dihydrochloride (DMH) by Gavage or 1,2-Dimethylhydrazine Dihydrochloride (DMH) Plus Intermediate Range (IR) Chrysotile Asbestos in the Diet

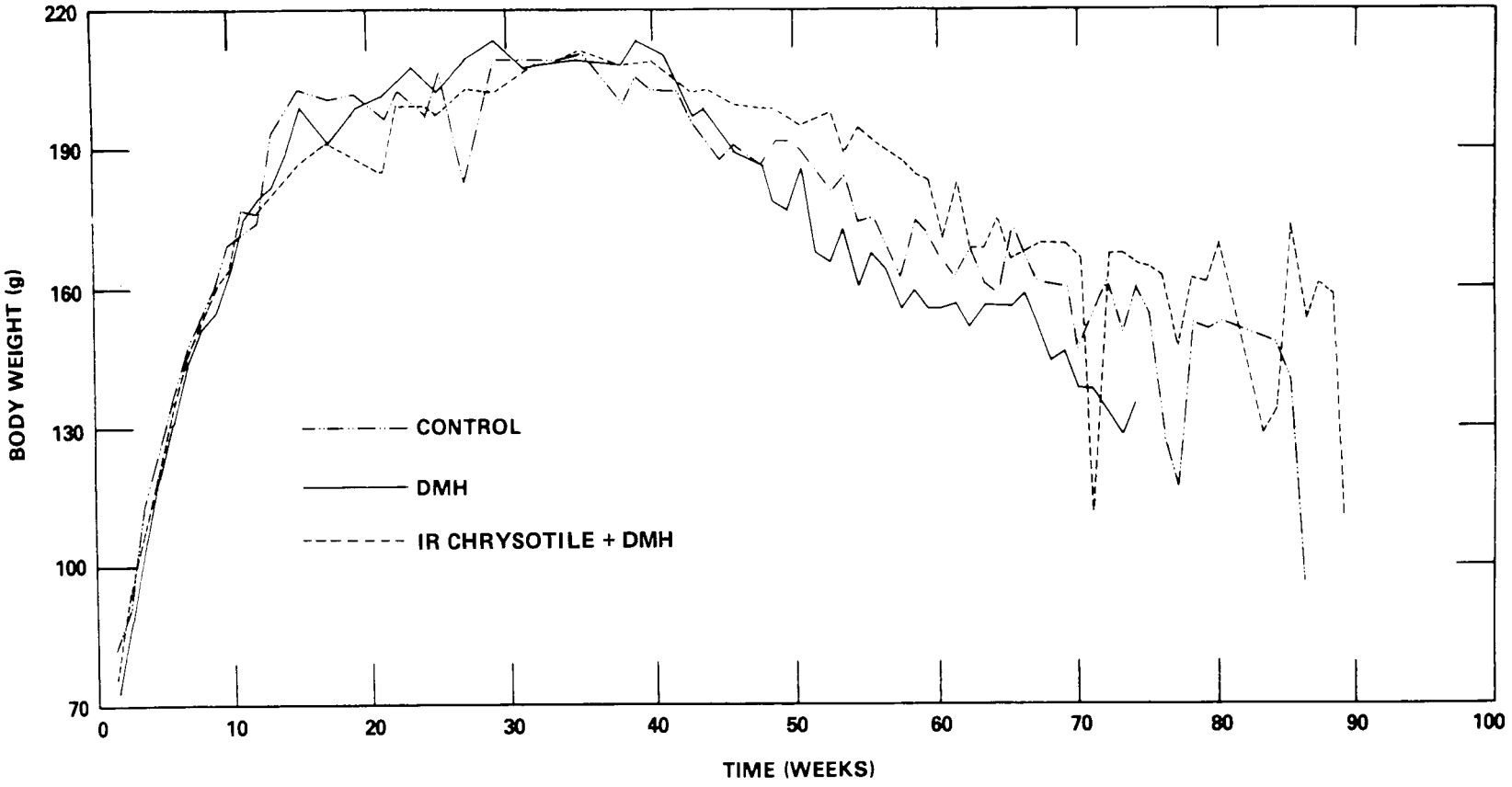

Figure 7. Growth Curves for Female Hamsters Administered 1,2-Dimethylhydrazine Dihydrochloride (DMH) by Gavage or 1,2-Dimethylhydrazine Dihydrochloride (DMH) Plus Intermediate Range (IR) Chrysotile Asbestos in the Diet

SURVIVAL

Survival was not adversely affected by any of the test diets (Figures 8-13) with the possible exception of DMH-treated female hamsters (Figure 13). Survival rates were higher in the SR and IR chrysotile groups relative to the concurrent controls. The median life spans of females (control and treated) were shorter than those of corresponding groups of males (Table 7). The median survival of control female groups was 57-61 weeks, compared to 77-83 weeks for control male hamsters (Figures 8-13 and Table 7).

TABLE 7. MEDIAN LIFE SPANS OF HAMSTERS RECEIVING 1% CHRYSOTILE ASBESTOS IN THE DIET FOR THEIR LIFETIME

Group	Sex	Median Life Span (Weeks)
IR Chrysotile Control	M	84
	F	62
IR Chrysotile	M	87
	F	60
SR Chrysotile Control	M	78
	F	57
SR Chrysotile	M	87
	F	63 *(a)*
DMH and IR Chrysotile Control	M	81
	F	56
DMH	M	82
	F	54 *(b)*
IR Chrysotile and DMH	M	90
	F	62 *(a)*

(a) Significantly ($P < 0.05$) improved overall survival relative to controls (life table analysis).

(b) Significantly ($P < 0.05$) reduced overall survival relative to controls (life table analysis).

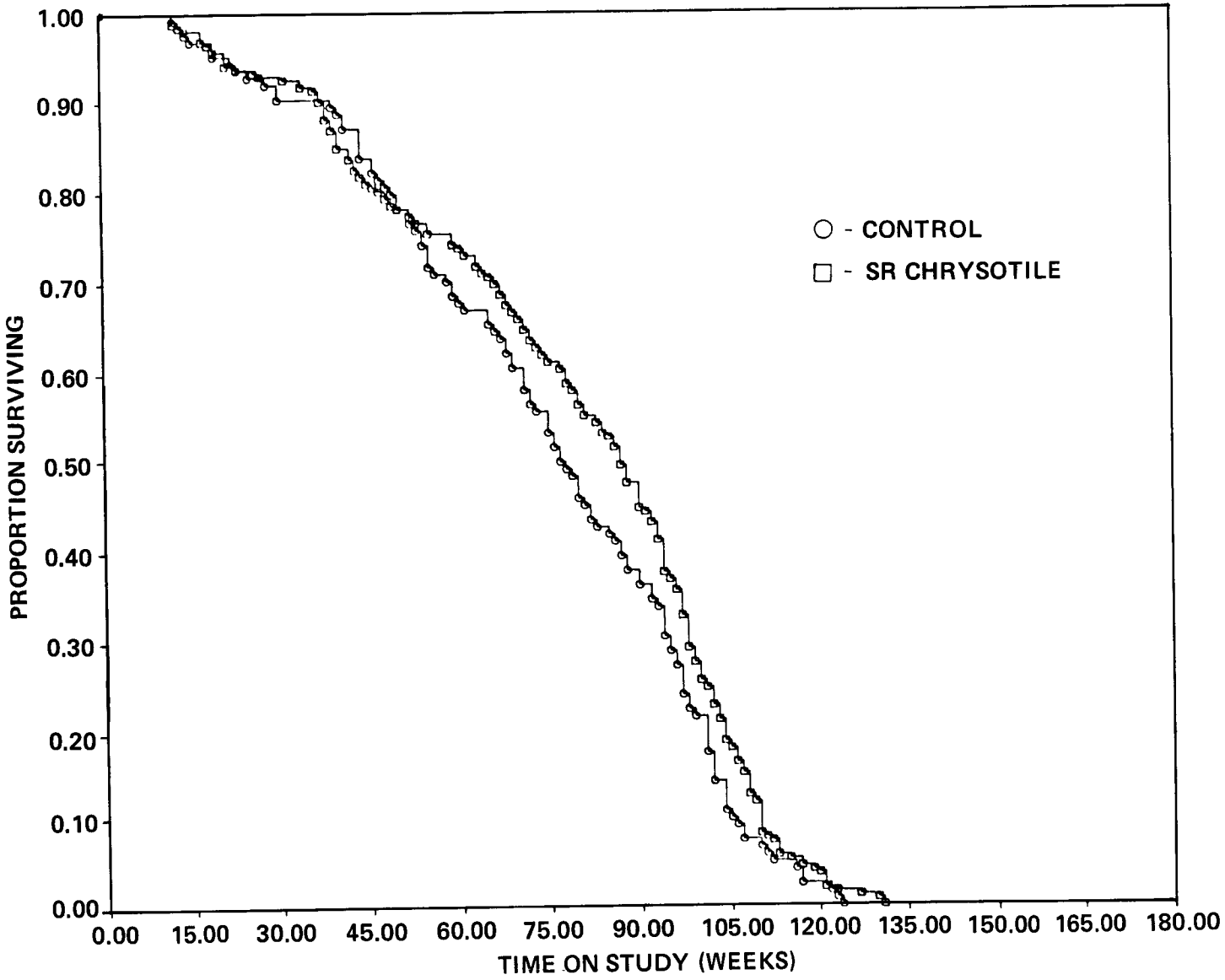

Figure 8. Survival Curves for Male Hamsters Receiving Short Range (SR) Chrysotile Asbestos in the Diet

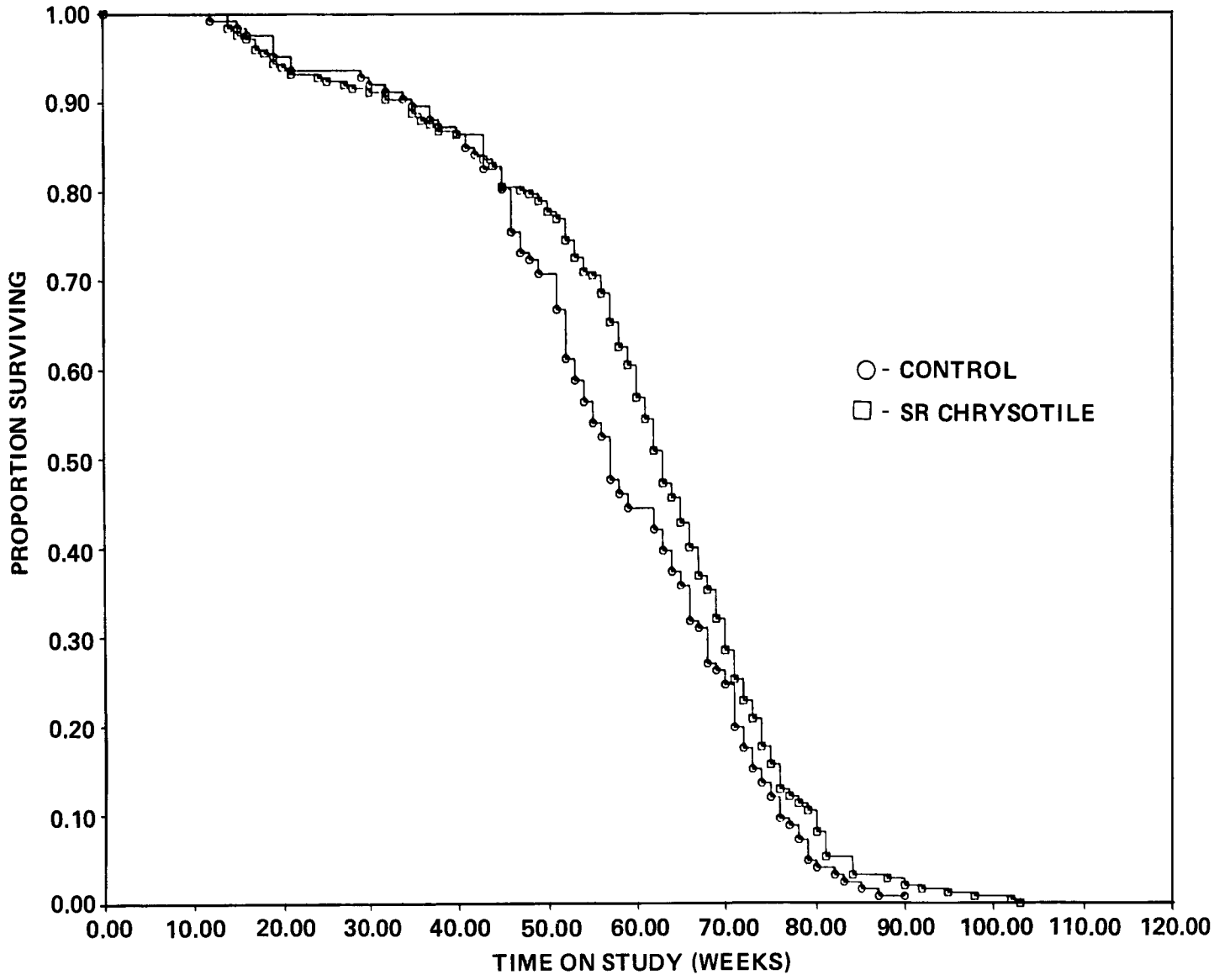

Figure 9. Survival Curves for Female Hamsters Receiving Short Range (SR) Chrysotile Asbestos in the Diet

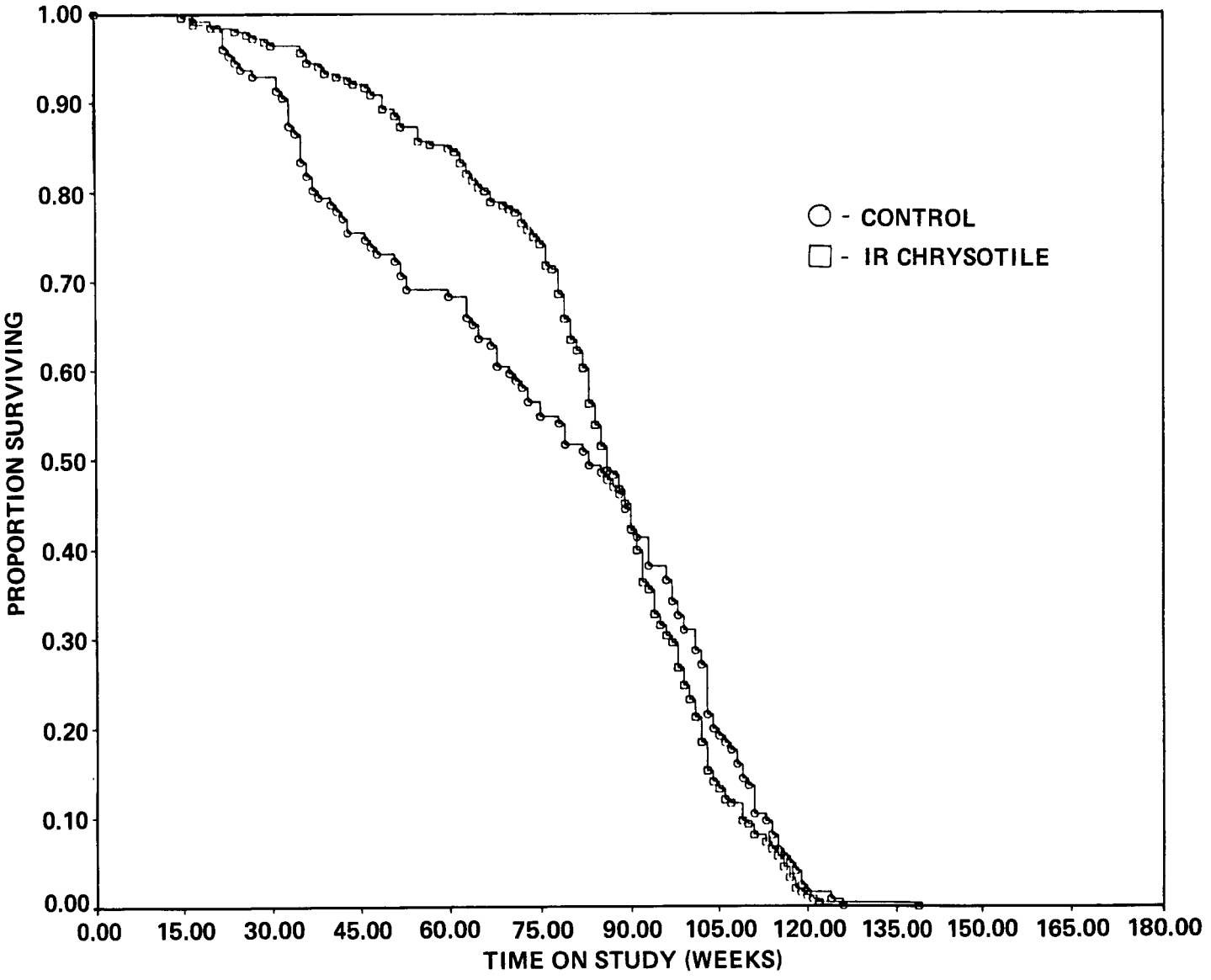

Figure 10. Survival Curves for Male Hamsters Receiving Intermediate Range (IR) Chrysotile Asbestos in the Diet

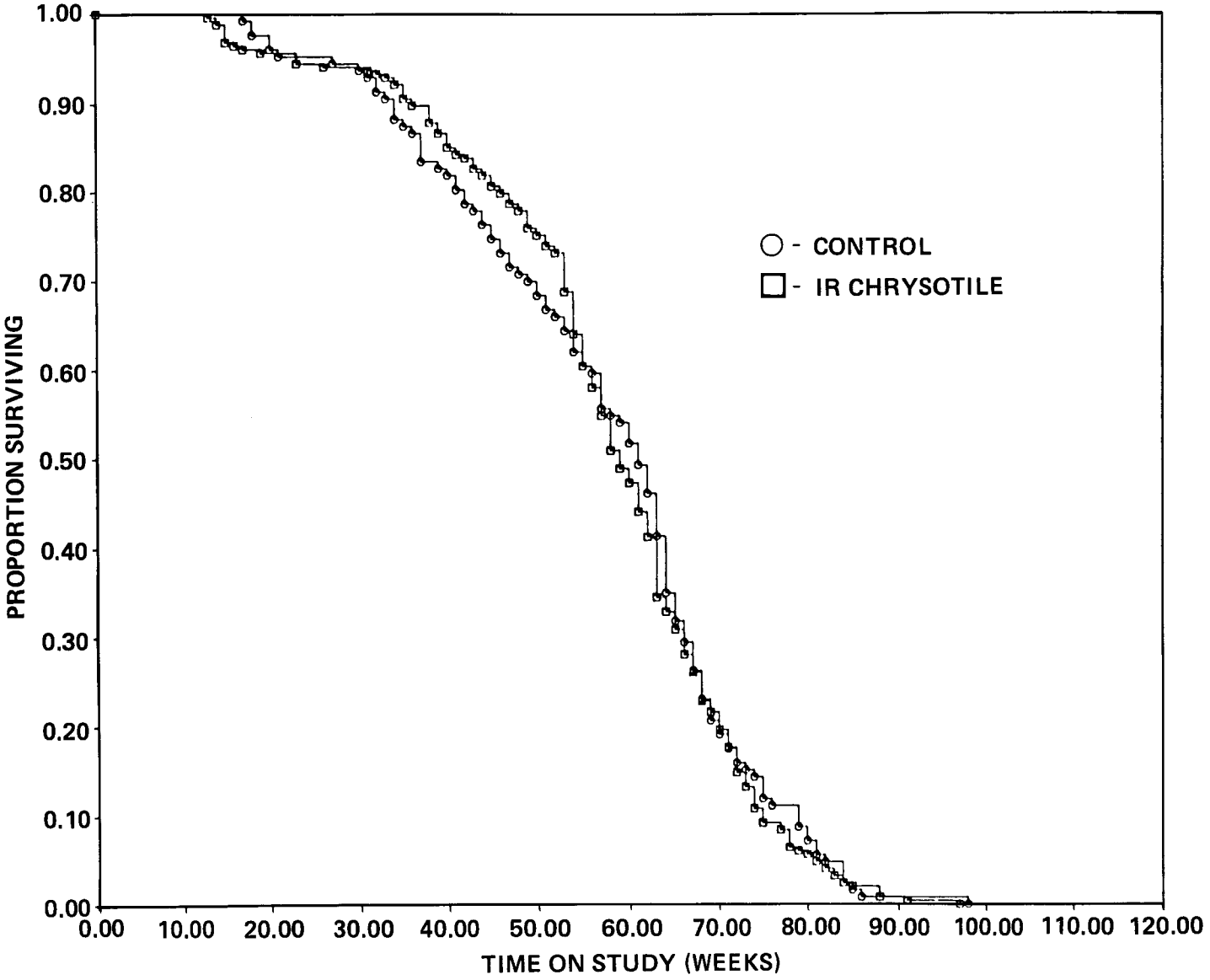

Figure 11. Survival Curves for Female Hamsters Receiving Intermediate Range (IR) Chrysotile Asbestos in the Diet

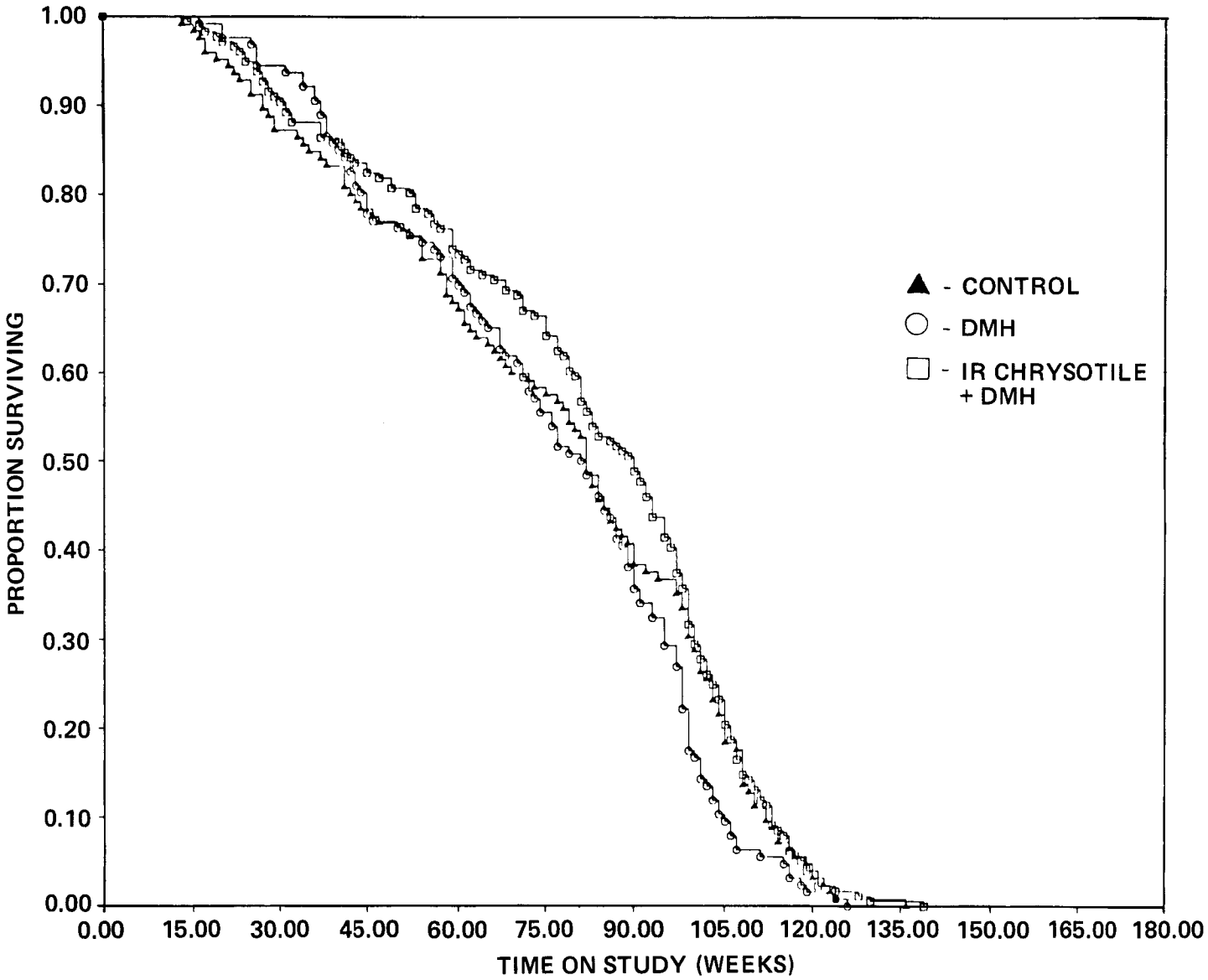

FIgure 12. Survival Curves for Male Hamsters Receiving 1,2-Dimethylhydrazine Dihydrochloride (DMH) by Gavage or DMH plus Intermediate Range (IR) Chrysotile Asbestos in the Diet

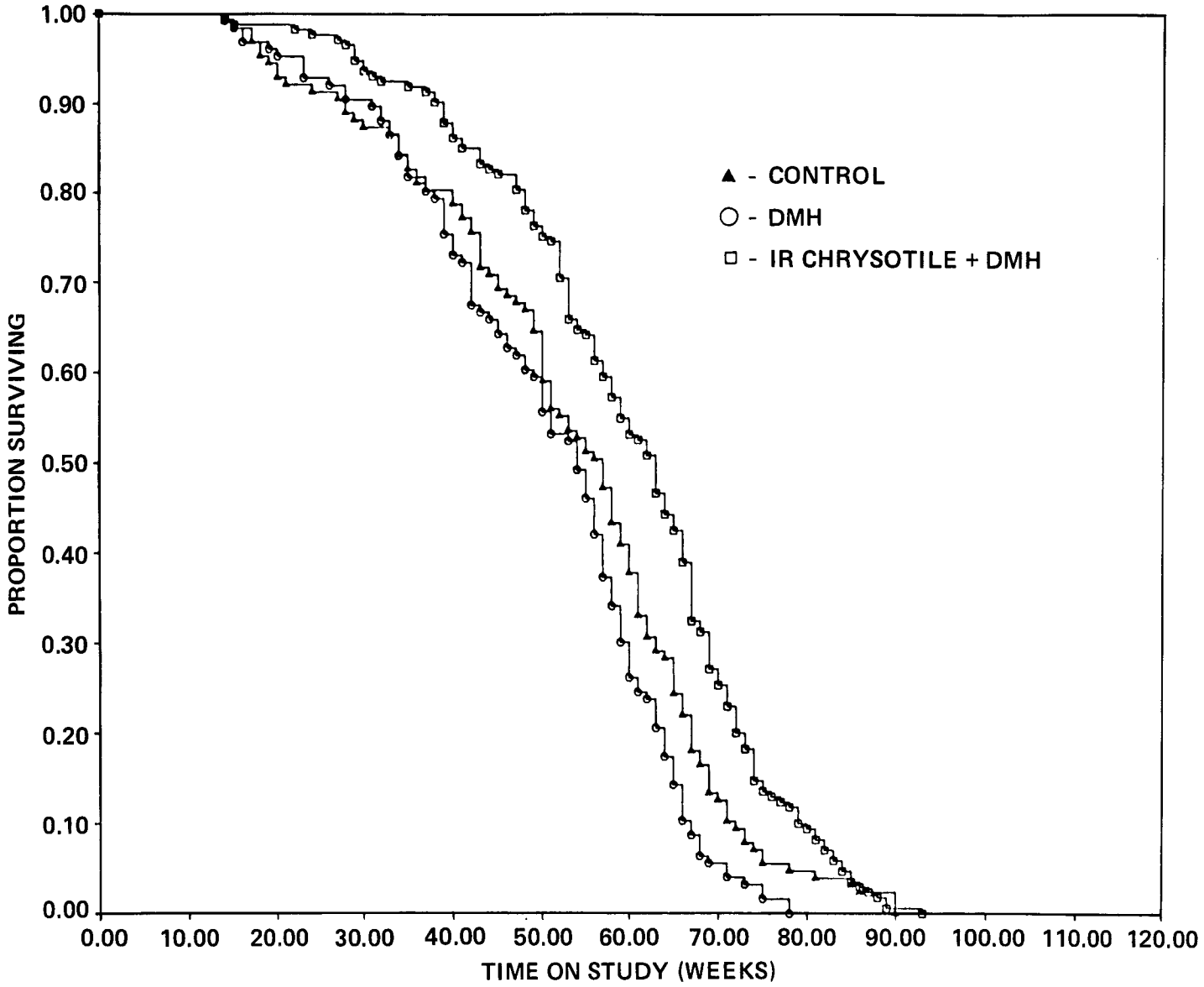

Figure 13. Surivial Curves for Female Hamsters Receiving 1,2,-Dimethylhydrazine Dihydrochloride (DMH) by Gavage or DMH plus Intermediate Range (IR) Chrysotile Asbestos in the Diet

PATHOLOGY AND STATISTICAL ANALYSES OF RESULTS

The number of hamsters available for histopathologic examination is shown in Table 3. Most animals not examined pathologically were excluded because of autolysis or cannibalization. Review of the clinical records of hamsters lost to autolysis or cannibalization gave no indication that these animals had neoplasia.

A variety of neoplasms were observed in control (Tables 8 and 9) and chrysotile-exposed hamsters (Tables 10-15). The proportions of control male or female hamsters bearing primary tumors were not statistically different among the 4 control groups. Thus, stastical comparisons were made with pooled controls as well as with temporal controls. Overall, the male hamsters had a slightly higher rate of neoplasia than the females. This response was also seen in the amosite studies (NTP, 1983).

TABLE 8. INCIDENCES OF PRIMARY TUMORS IN MALE HAMSTER CONTROL GROUPS

	Short Range Chrysotile Control	Intermediate Range Chrysotile Control	DMH & Intermediate Range Chrysotile Control	Amosite Control
Animals with primary tumors	21/115 (18%)	26/116 (22%)	27/119 (23%)	21/122 (17%)
Skin or sub. tissue: All tumors	0/115 (0%)	1/116 (1%)	1/119 (1%)	0/122 (0%)
Lung or trachea: All tumors	0/115 (0%)	0/116 (0%)	0/119 (0%)	0/120 (0%)
Adrenal:				
Cortical adenoma	7/115 (6%)	7/115 (6%)	3/117 (3%)	8/119 (7%)
Cortical carcinoma	3/115 (3%)	3/115 (3%)	4/117 (3%)	3/119 (3%)
Pheochromocytoma	2/115 (2%)	5/115 (4%)	3/117 (3%)	3/119 (3%)
Other tumors	0/115 (0%)	3/115 (3%)	2/117 (2%)	1/119 (1%)
Pancreas:				
Islet-cell adenoma	2/111 (2%)	7/110 (6%)	8/110 (7%)	3/114 (3%)
Islet-cell carcinoma	1/111 (1%)	0/110 (0%)	0/110 (0%)	0/114 (0%)
Thyroid:				
C-cell adenoma	3/109 (3%)	3/106 (3%)	0/107 (0%)	1/106 (1%)
C-cell carcinoma	1/109 (1%)	1/106 (1%)	0/107 (0%)	1/106 (1%)
Other tumors	0/109 (0%)	0/106 (0%)	1/107 (1%)	0/106 (0%)
Parathyroid: Adenoma	0/72 (0%)	1/71 (1%)	1/64 (2%)	0/64 (0%)
G.I. Tract: All tumors	2/115 (2%)	1/116 (1%)	2/119 (2%)	1/122 (1%)
Pituitary: All tumors	0/84 (0%)	0/77 (0%)	0/80 (0%)	0/81 (0%)
Kidney: All tumors	0/115 (0%)	2/116 (2%)	1/119 (1%)	1/120 (1%)
Liver: All tumors	0/115 (0%)	0/116 (0%)	0/119 (0%)	0/120 (0%)
Leukemia or malignant lymphoma	2/115 (2%)	1/116 (1%)	4/119 (3%)	1/122 (1%)
Hemangioma or hemangiosarcoma	0/115 (0%)	0/116 (0%)	3/119 (3%)	2/122 (2%)
All other tumors	1/115 (1%)	0/116 (0%)	3/119 (3%)	1/122 (1%)

TABLE 9. INCIDENCES OF PRIMARY TUMORS IN FEMALE HAMSTER CONTROL GROUPS

	Short Range Chrysotile Control	Intermediate Range Chrysotile Control	DMH & Intermediate Range Chrysotile Control	Amosite Control
Animals with primary tumors	19/114 (17%)	17/119 (14%)	15/120 (12%)	15/119 (13%)
Skin or sub. tissue: All tumors	0/114 (0%)	0/119 (0%)	0/120 (0%)	0/119 (0%)
Lung or trachea: All tumors	0/114 (0%)	0/119 (0%)	0/119 (0%)	0/119 (0%)
Adrenal:				
Cortical adenoma	4/112 (4%)	6/118 (5%)	3/120 (2%)	2/118 (2%)
Cortical carcinoma	0/112 (0%)	0/118 (0%)	0/120 (0%)	0/118 (0%)
Pheochromocytoma	0/112 (0%)	0/118 (0%)	0/120 (0%)	0/118 (0%)
Other tumors	0/112 (0%)	0/118 (0%)	0/120 (0%)	0/118 (0%)
Pancreas:				
Islet-cell adenoma	2/109 (2%)	5/116 (4%)	5/116 (4%)	3/115 (3%)
Islet-cell carcinoma	1/109 (1%)	0/116 (0%)	0/116 (0%)	0/115 (0%)
Thyroid:				
C-cell adenoma	2/107 (2%)	3/115 (3%)	0/112 (0%)	1/106 (1%)
C-cell carcinoma	0/107 (0%)	0/115 (0%)	1/112 (1%)	0/106 (0%)
Other tumors	2/107 (2%)	0/115 (0%)	0/112 (0%)	0/106 (0%)
Parathyroid: Adenoma	3/68 (4%)	1/77 (1%)	1/74 (1%)	1/61 (1%)
G.I. Tract: All tumors	1/114 (1%)	2/119 (2%)	1/120 (1%)	1/119 (1%)
Pituitary: All tumors	0/77 (0%)	2/67 (3%)	0/62 (0%)	0/79 (0%)
Kidney: All tumors	0/114 (0%)	1/119 (1%)	0/120 (0%)	0/119 (0%)
Liver: All tumors	0/114 (0%)	0/119 (0%)	0/119 (0%)	0/118 (0%)
Leukemia or malignant lymphoma	2/114 (2%)	0/119 (0%)	3/120 (2%)	2/119 (2%)
Hemangioma or hemangiosarcoma	0/114 (0%)	0/119 (0%)	1/120 (1%)	1/119 (1%)
Uterus: All tumors	3/113 (3%)	1/119 (1%)	2/120 (2%)	2/119 (2%)
All other tumors	3/114 (3%)	0/119 (0%)	1/120 (1%)	2/119 (2%)

TABLE 10. INCIDENCES OF PRIMARY TUMORS IN MALE HAMSTERS ADMINISTERED 1% SHORT RANGE CHRYSOTILE IN THE DIET

	Pooled Controls	Short Range Chrysotile Controls	Short Range Chrysotile
Animals with primary tumors	95/472 (20%)	21/115 (18%)	64/233 (27%) *(a)*
Skin or sub. tissue: All tumors	2/472 (<1%)	0/115 (0%)	0/233 (0%)
Lung or trachea: All tumors	0/470 (0%)	0/115 (0%)	0/231 (0%)
Adrenal:			
Cortical adenoma	25/466 (5%)	7/115 (6%)	26/229 (11%) *(b)*
Cortical carcinoma	13/466 (3%)	3/115 (3%)	8/229 (3%)
Pheochromocytoma	13/466 (3%)	2/115 (2%)	4/229 (2%)
Other tumors	6/466 (1%)	0/115 (0%)	1/229 (<1%)
Pancreas:			
Islet-cell adenoma	20/445 (4%)	2/111 (2%)	15/218 (7%)
Islet-cell carcinoma	1/445 (<1%)	1/111 (1%)	0/218 (0%)
Thyroid:			
C-cell adenoma	7/428 (2%)	3/109 (3%)	3/207 (1%)
C-cell carcinoma	3/428 (1%)	1/109 (1%)	1/207 (<1%)
Other tumors	1/428 (<1%)	0/109 (0%)	0/207 (0%)
Parathyroid: Adenoma	2/271 (1%)	0/72 (0%)	3/132 (2%)
G.I. Tract: All tumors	6/472 (1%)	2/115 (2%)	0/233 (0%)
Pituitary: All tumors	0/322 (0%)	0/84 (0%)	0/159 (0%)
Kidney: All tumors	4/470 (1%)	0/115 (0%)	3/232 (1%)
Liver: All tumors	0/470 (0%)	0/115 (0%)	0/232 (0%)
Leukemia or malignant lymphoma	8/472 (2%)	2/115 (2%)	3/233 (1%)
Hemangioma or hemangiosarcoma	5/472 (1%)	0/115 (0%)	4/233 (2%)
All other tumors	5/472 (1%)	1/115 (1%)	3/233 (1%)

(a) P = 0.152 (life table); P = 0.065 (incidental tumor test) and P ▫ 0.019 (Fisher's exact test) vs. pooled controls.

(b) $P < 0.05$ vs. pooled controls.

TABLE 11. INCIDENCES OF PRIMARY TUMORS IN FEMALE HAMSTERS ADMINISTERED 1% SHORT RANGE CHRYSOTILE IN THE DIET

	Pooled Controls	Short Range Chrysotile Controls	Short Range Chrysotile
Animals with primary tumors	66/472 (14%)	19/114 (17%)	28/228 (12%)
Skin or sub. tissue: All tumors	0/472 (0%)	0/114 (0%)	3/228 (1%)
Lung or trachea: All tumors	0/471 (0%)	0/114 (0%)	0/228 (0%)
Adrenal:			
Cortical adenoma	15/468 (3%)	4/112 (4%)	8/226 (4%)
Cortical carcinoma	0/468 (0%)	0/112 (0%)	0/226 (0%)
Pheochromocytoma	0/468 (0%)	0/112 (0%)	3/226 (1%)
Other tumors	0/468 (0%)	0/112 (0%)	1/226 (<1%)
Pancreas:			
Islet-cell adenoma	15/456 (3%)	2/109 (2%)	2/217 (1%) *(a)*
Islet-cell carcinoma	1/456 (<1%)	1/109 (1%)	0/217 (0%)
Thyroid:			
C-cell adenoma	6/440 (1%)	2/107 (2%)	0/214 (0%)
C-cell carcinoma	1/440 (<1%)	0/107 (0%)	0/214 (0%)
Other tumors	2/440 (<1%)	2/107 (2%)	0/214 (0%)
Parathyroid: Adenoma	6/280 (2%)	3/68 (4%)	3/139 (2%)
G.I. Tract: All tumors	5/472 (1%)	1/114 (1%)	1/228 (<1%)
Pituitary: All tumors	2/285 (1%)	0/77 (0%)	1/132 (1%)
Kidney: All tumors	1/472 (<1%)	0/114 (0%)	0/228 (0%)
Liver: All tumors	0/472 (0%)	0/114 (0%)	0/228 (0%)
Leukemia or malignant lymphoma	7/472 (1%)	2/114 (2%)	2/228 (1%)
Hemangioma or hemangiosarcoma	2/472 (<1%)	0/114 (0%)	1/228 (<1%)
Uterus: All tumors	8/471 (2%)	3/113 (3%)	5/226 (2%)
All other tumors	6/472 (1%)	3/114 (3%)	3/228 (1%)

(a) $P < 0.05$ decrease relative to pooled controls (life table and incidental tumor test).

TABLE 12. INCIDENCES OF PRIMARY TUMORS IN MALE HAMSTERS ADMINISTERED 1% INTERMEDIATE RANGE CHRYSOTILE IN THE DIET

	Pooled Controls	Intermediate Range Chrysotile Controls	Intermediate Range Chrysotile
Animals with primary tumors	95/472 (20%)	26/116 (22%)	78/245 (32%) *(a,b)*
Skin or sub. tissue: All tumors	2/472 (<1%)	1/116 (1%)	0/245 (0%)
Lung or trachea: All tumors	0/470 (0%)	0/116 (0%)	1/245 (<1%)
Adrenal:			
Cortical adenoma	25/466 (5%)	7/115 (6%)	24/244 (10%) *(c)*
Cortical carcinoma	13/466 (3%)	3/115 (3%)	7/244 (3%)
Pheochromocytoma	13/466 (3%)	5/115 (4%)	11/244 (5%)
Other tumors	6/466 (1%)	3/115 (3%)	1/244 (<1%)
Pancreas:			
Islet-cell adenoma	20/445 (4%)	7/110 (6%)	15/226 (7%)
Islet-cell carcinoma	1/445 (<1%)	0/110 (0%)	1/226 (<1%)
Thyroid:			
C-cell adenoma	7/428 (2%)	3/106 (3%)	5/216 (2%)
C-cell carcinoma	3/428 (1%)	1/106 (1%)	4/216 (2%)
Other tumors	1/428 (<1%)	0/106 (0%)	1/216 (<1%)
Parathyroid: Adenoma	2/271 (1%)	1/71 (1%)	4/138 (3%)
G.I. Tract: All tumors	6/472 (1%)	1/116 (1%)	3/245 (1%)
Pituitary: All tumors	0/322 (0%)	0/77 (0%)	0/182 (0%)
Kidney: All tumors	4/470 (1%)	2/116 (2%)	1/245 (<1%)
Liver: All tumors	0/470 (0%)	0/116 (0%)	0/244 (0%)
Leukemia or malignant lymphoma	8/472 (2%)	1/116 (1%)	10/245 (4%)
Hemangioma or hemangiosarcoma	5/472 (1%)	0/116 (0%)	1/245 (<1%)
All other tumors	5/472 (1%)	0/116 (0%)	2/245 (1%)

(a) $P < 0.01$ vs. pooled controls.

(b) $P < 0.05$ vs. intermediate range chrysotile controls.

(c) $P < 0.05$ vs. pooled controls.

TABLE 13. INCIDENCES OF PRIMARY TUMORS IN FEMALE HAMSTERS ADMINISTERED 1% INTERMEDIATE RANGE CHRYSOTILE IN THE DIET

	Pooled Controls	Intermediate Range Chrysotile Controls	Intermediate Range Chrysotile
Animals with primary tumors	66/472 (14%)	17/119 (14%)	39/244 (16%)
Skin or sub. tissue: All tumors	0/472 (0%)	0/119 (0%)	2/244 (1%)
Lung or trachea: All tumors	0/471 (0%)	0/119 (0%)	0/243 (0%)
Adrenal:			
Cortical adenoma	15/468 (3%)	6/118 (5%)	18/234 (8%) *(a)*
Cortical carcinoma	0/468 (0%)	0/118 (0%)	1/234 (<1%)
Pheochromocytoma	0/468 (0%)	0/118 (0%)	1/234 (<1%)
Other tumors	0/468 (0%)	0/118 (0%)	0/234 (0%)
Pancreas:			
Islet-cell adenoma	15/456 (3%)	5/116 (4%)	4/236 (2%)
Islet-cell carcinoma	1/456 (<1%)	0/116 (0%)	0/236 (0%)
Thyroid:			
C-cell adenoma	6/440 (1%)	3/115 (3%)	2/223 (1%)
C-cell carcinoma	1/440 (<1%)	0/115 (0%)	0/223 (0%)
Other tumors	2/440 (<1%)	0/115 (0%)	1/223 (<1%)
Parathyroid: Adenoma	6/280 (2%)	1/77 (1%)	1/148 (1%)
G.I. Tract: All tumors	5/472 (1%)	2/119 (2%)	1/244 (<1%)
Pituitary: All tumors	2/285 (1%)	2/67 (3%)	2/164 (1%)
Kidney: All tumors	1/472 (<1%)	1/119 (1%)	0/243 (0%)
Liver: All tumors	0/472 (0%)	0/119 (0%)	0/243 (0%)
Leukemia or malignant lymphoma	7/472 (1%)	0/119 (0%)	2/244 (1%)
Hemangioma or hemangiosarcoma	2/472 (<1%)	0/119 (0%)	1/244 (<1%)
Uterus: All tumors	8/471 (2%)	1/119 (1%)	7/240 (3%)
All other-tumors	6/472 (1%)	0/119 (0%)	2/244 (1%)

(a) $P < 0.05$ vs. pooled controls.

TABLE 14. INCIDENCES OF THE PRIMARY TUMORS IN MALE HAMSTERS ADMINISTERED 1,2-DIMETHYLHYDRAZINE DIHYDROCHLORIDE (DMH) OR INTERMEDIATE RANGE CHRYSOTILE AND DMH *(a)*

	Pooled Controls	DMH & Intermediate Range Chrysotile Controls	DMH	DMH & Intermediate Range Chrysotile
Animals with primary tumors	95/472 (20%)	27/119 (23%)	29/127 (23%)	51/173 (29%) *(b)*
Skin or sub. tissue: All tumors	2/472 (<1%)	1/119 (1%)	0/127 (0%)	1/173 (1%)
Lung or trachea: All tumors	0/470 (0%)	0/119 (0%)	0/126 (0%)	0/173 (0%)
Adrenal:				
Cortical adenoma	25/466 (5%)	3/117 (3%)	3/127 (2%)	8/171 (5%)
Cortical carcinoma	13/466 (3%)	4/117 (3%)	2/127 (2%)	7/171 (4%)
Pheochromocytoma	13/466 (3%)	3/117 (3%)	4/127 (3%)	6/171 (4%)
Other tumors	6/466 (1%)	2/117 (2%)	0/127 (0%)	1/171 (1%)
Pancreas:				
Islet-cell adenoma	20/445 (4%)	8/110 (7%)	6/114 (5%)	10/167 (6%)
Islet-cell carcinoma	1/445 (<1%)	0/110 (0%)	0/114 (0%)	1/167 (1%)
Thyroid:				
C-cell adenoma	7/428 (2%)	0/107 (0%)	2/118 (2%)	3/163 (2%)
C-cell carcinoma	3/428 (1%)	0/107 (0%)	0/118 (0%)	1/163 (1%)
Other tumors	1/428 (<1%)	1/107 (1%)	0/118 (0%)	0/163 (0%)
Parathyroid: Adenoma	2/271 (1%)	1/64 (2%)	0/81 (0%)	2/118 (2%)
G.I. Tract: All tumors	6/472 (1%)	2/119 (2%)	3/127 (2%)	4/173 (2%)
Pituitary: All tumors	0/322 (0%)	0/80 (0%)	1/87 (1%)	2/123 (2%)
Kidney: All tumors	4/470 (1%)	1/119 (1%)	0/127 (0%)	0/173 (0%)
Liver: All tumors	0/470 (0%)	0/119 (0%)	2/127 (2%)	1/173 (1%)
Leukemia or malignant lymphoma	8/472 (2%)	4/119 (4%)	7/127 (6%) *(c)*	8/173 (5%)
Hemangioma or hemangiosarcoma	5/472 (1%)	3/119 (3%)	2/127 (2%)	2/173 (1%)
All other tumors	5/472 (1%)	3/119 (3%)	1/127 (1%)	4/173 (2%)

(a) DMH was given by gastric intubation at 4 mg/kg b.w. once every other week for 10 weeks; chrysotile asbestos was offered in the diet at a 1% level.

(b) P = 0.257 (life table); P = 0.038 (incidental tumor test); P = 0.009 (Fisher's exact test) vs. pooled controls.

(c) $P < 0.05$ vs. pooled controls.

TABLE 15. INCIDENCES OF PRIMARY TUMORS IN FEMALE HAMSTERS ADMINISTERED 1,2-DIMETHYLHYDRAZINE DIHYDROCHLORIDE (DMH) OR INTERMEDIATE RANGE CHRYSOTILE AND DMH *(a)*

	Pooled Controls	DMH & Intermediate Range Chrysotile Controls	DMH	DMH & Intermediate Range Chrysotile
Animals with primary tumors	66/472 (14%)	15/120 (12%)	15/122 (12%)	19/161 (12%)
Skin or sub. tissue: All tumors	0/472 (0%)	0/120 (0%)	1/122 (1%)	0/161 (0%)
Lung or trachea: All tumors	0/471 (0%)	0/119 (0%)	0/122 (0%)	1/160 (1%)
Adrenal:				
Cortical adenoma	15/468 (3%)	3/120 (2%)	2/120 (2%)	6/158 (4%)
Cortical carcinoma	0/468 (0%)	0/120 (0%)	0/120 (0%)	2/158 (1%)
Pheochromocytoma	0/468 (0%)	0/120 (0%)	0/120 (0%)	0/158 (0%)
Other tumors	0/468 (0%)	0/120 (0%)	0/120 (0%)	0/158 (0%)
Pancreas:				
Islet-cell adenoma	15/456 (3%)	5/116 (4%)	2/119 (2%)	4/149 (3%)
Islet-cell carcinoma	1/456 (<1%)	0/116 (0%)	0/119 (0%)	0/149 (0%)
Thyroid:				
C-cell adenoma	6/440 (1%)	0/112 (0%)	0/108 (0%)	0/141 (0%)
C-cell carcinoma	1/440 (<1%)	1/112 (1%)	0/108 (0%)	0/141 (0%)
Other tumors	2/440 (<1%)	0/112 (0%)	0/108 (0%)	0/141 (0%)
Parathyroid: Adenoma	6/280 (2%)	1/74 (1%)	2/57 (4%)	0/91 (0%)
G.I. Tract: All tumors	5/472 (1%)	1/120 (1%)	2/122 (2%)	0/161 (0%)
Pituitary: All tumors	2/285 (1%)	0/62 (0%)	0/59 (0%)	0/109 (0%)
Kidney: All tumors	1/472 (<1%)	0/120 (0%)	0/122 (0%)	0/161 (0%)
Liver: All tumors	0/472 (0%)	0/119 (0%)	0/121 (0%)	0/161 (0%)
Leukemia or malignant lymphoma	7/472 (1%)	3/120 (2%)	2/122 (2%)	3/161 (2%)
Hemangioma or hemangiosarcoma	2/472 (<1%)	1/120 (1%)	0/122 (0%)	1/161 (1%)
Uterus: All tumors	8/471 (2%)	2/120 (2%)	2/116 (2%)	2/156 (1%)
All other tumors	6/472 (1%)	1/120 (1%)	2/122 (2%)	2/161 (1%)

(a) DMH was given by gastric intubation at 4 mg/kg b.w. once every other week for 10 weeks; chrysotile asbestos was offered in the diet at a 1% level.

A greater than 4% incidence of neoplasia in dosed or control groups was observed in the adrenal gland, pancreas (Islets of Langerhans), parathyroid, and reticuloendothelial system. Of these, only the adrenal cortex showed an increased rate of neoplasia in chrysotile-exposed hamsters compared to the controls. In male hamsters, the incidence of cortical adenomas was significantly increased ($P < 0.05$) in the SR and IR chrysotile groups compared with the pooled controls (Tables 10 and 12) but not in the DMH chrysotile group (Table 14). None of the chrysotile groups showed a significant ($P<0.05$) increase in cortical adenomas relative to their concurrent control groups. A similar increase in cortical adenomas was observed in the female IR chrysotile group compared with pooled controls, but this also ceased to be significant when compared with the concurrent control group (Tables 11 and 13). Combining male hamsters with either adenomas or carcinomas of the adrenal glands resulted in significantly ($P<0.05$) increased incidences in both the SR (34/229, 14.8%) and IR (31/244, 12.7%) groups compared with pooled controls. For females only the IR group (18/234, 7.7%) was different ($P<0.05$) from pooled controls. In every comparison significance was eliminated using concurrent controls.

Males and females administered DMH did not show a significant ($P < 0.05$) increase in intestinal neoplasia. Nor did the intermediate range chrysotile produce a higher rate of intestinal neoplasia in DMH-dosed animals. A summary of all gastrointestinal tumors observed in this study is given in Table 16.

In only two other instances did specific tumor types show significant effects relative to pooled or concurrent controls. Female hamsters administered SR chrysotile showed a significantly ($P < 0.05$) decreased incidence of islet-cell adenoma of the pancreas relative to pooled controls (Table 11). Male hamsters administered DMH showed a significantly ($P < 0.05$) increased incidence of leukemia or malignant lymphoma relative to pooled controls (Table 14).

The only group to show a significant ($P < 0.05$) increase in overall primary tumors was the male IR chrysotile group (Table 14). This increase was due primarily to adrenal tumors. Male hamsters receiving SR chrysotile or DMH and IR chrysotile also showed an elevated incidence of primary tumors relative to pooled controls. However, when survival differences were taken into account by life table analyses, these differences were not statistically significant (Tables 10 and 14). Female chrysotile groups showed little evidence of an increased incidence of primary tumors relative to concurrent or pooled controls.

The diagnoses of the NTP Pathology Working Group differed from the original pathologist's interpretation, as shown in Table 17. The major diagnostic difference concerned the issue of whether certain adrenal tumors originated in the medulla or cortex. As shown in Table 17, the PWG diagnoses reduced the significance of adrenal cortical tumors in the male SR chrysotile group, but did not materially alter the results in other groups. To diagnose adrenal tumors, the NTP/PWG used the criteria reported by Homburger and Russfield (1970), Matsuyama and Suzuki (1970), and Murthy and Russfield (1966).

TABLE 16. INCIDENCES OF GASTROINTESTINAL TRACT TUMORS IN HAMSTERS IN THE CHRYSOTILE ASBESTOS STUDIES

	Pooled Controls		Short Range Chrysotile		Intermediate Range Chrysotile		DMH		DMH & Intermediate Range Chrysotile	
	M	F	M	F	M	F	M	F	M	F
Stomach (no. examined)	(464)	(468)	(222)	(224)	(244)	(242)	(127)	(118)	(170)	(160)
Squamous cell papilloma	3				1				2	
Carcinoma in-situ					1					
Papillary adenoma					1	1 *(a)*				
Small Intestine (no. examined)	(467)	(469)	(226)	(227)	(244)	(244)	(127)	(120)	(170)	(159)
Adenoma	1									
Adenomacarcinoma	1									
Large Intestine (no. examined)	(464)	(468)	(222)	(226)	(241)	(243)	(126)	(118)	(170)	(159)
Papilloma									1	
Adenoma		1 *(a)*					1			
Papillary adenoma							1			
Adenocarcinoma		1		1						
Lipoma		1								
Adenomatous polyp								1 *(a)*		
Rectum (no. examined)	(472)	(472)	(233)	(228)	(245)	(244)	(127)	(122)	(173)	(161)
Adenoma	1	1 *(a)*								
Papillary adenoma									1 *(a)*	
Fibrosarcoma							1			
Squamous cell carcinoma								1		
Fibroma		1								

(a) These lesions were diagnosed by the original pathologist and were not confirmed by the NTP Pathology Working Group.

TABLE 17. COMPARISON OF ADRENAL TUMOR INCIDENCE AS DETERMINED BY ORIGINAL PATHOLOGIST (OP) AND BY THE NTP PATHOLOGY WORKING GROUP (PWG)

	Pooled Controls	SR Chrysotile Controls	SR Chrysotile	IR Chrysotile Controls	IR Chrysotile	DMH & IR Chrysotile Controls	DMH	DMH & IR Chrysotile
Males (OP)								
Cortical adenoma	25/466 (5%)	7/115 (6%)	26/229 (11%)*(a)*	7/115 (6%)	24/244 (10%)*(a)*	3/117 (3%)	3/127 (2%)	8/171 (5%)
Cortical carcinoma	13/466 (3%)	3/115 (3%)	8/229 (3%)	3/115 (3%)	7/244 (3%)	4/117 (3%)	2/127 (2%)	7/171 (4%)
Pheochromocytoma	13/466 (3%)	2/115 (2%)	4/229 (2%)	5/115 (4%)	11/244 (5%)	3/117 (3%)	4/127 (3%)	6/171 (4%)
Other	6/466 (1%)	0/115 (0%)	1/229 (<1%)	3/115 (3%)	1/244 (<1%)	2/117 (2%)	0/127 (0%)	1/171 (1%)
Males (PWG)								
Cortical adenoma	31/466 (7%)	7/115 (6%)	26/229 (11%)	9/115 (8%)	29/244 (12%)*(a)*	6/117 (5%)	5/127 (4%)	11/171 (6%)
Cortical carcinoma	14/466 (3%)	3/115 (3%)	9/229 (4%)	3/115 (3%)	7/244 (3%)	5/117 (4%)	4/127 (3%)	8/171 (5%)
Pheochromocytoma	7/466 (2%)	2/115 (2%)	2/229 (1%)	4/115 (3%)	7/244 (3%)	0/117 (0%)	2/127 (2%)	1/171 (1%)
Other	2/466 (<1%)	0/115 (0%)	1/229 (<1%)	1/115 (1%)	1/244 (<1%)	1/117 (1%)	0/127 (0%)	1/171 (1%)
Females (OP)								
Cortical adenoma	15/468 (3%)	4/112 (4%)	8/226 (4%)	6/118 (5%)	18/234 (8%) *(a)*	3/120 (2%)	2/120 (2%)	6/158 (4%)
Cortical carcinoma	0/468 (0%)	0/112 (0%)	0/226 (0%)	0/118 (0%)	1/234 (<1%)	0/120 (0%)	0/120 (0%)	2/158 (1%)
Pheochromocytoma	0/468 (0%)	0/112 (0%)	3/226 (1%)	0/118 (0%)	1/234 (<1%)	0/120 (0%)	0/120 (0%)	0/158 (0%)
Other	0/468 (0%)	0/112 (0%)	1/226 (<1%)	0/118 (0%)	0/234 (0%)	0/120 (0%)	0/120 (0%)	0/158 (0%)
Females (PWG)								
Cortical adenoma	19/468 (4%)	4/112 (4%)	9/226 (4%)	7/118 (6%)	23/234 (10%)*(a)*	4/120 (3%)	2/120 (2%)	7/158 (4%)
Cortical carcinoma	0/468 (0%)	0/112 (0%)	0/226 (0%)	0/118 (0%)	1/234 (<1%)	0/120 (0%)	0/120 (0%)	2/158 (1%)
Pheochromocytoma	0/468 (0%)	0/112 (0%)	2/226 (1%)	0/118 (0%)	1/234 (<1%)	0/120 (0%)	0/120 (0%)	0/158 (0%)
Other	0/468 (0%)	0/112 (0%)	1/226 (<1%)	0/118 (0%)	0/234 (0%)	0/120 (0%)	0/120 (0%)	0/158 (0%)

(a) $P < 0.05$ relative to pooled controls

Adrenal Cortex

Focal hyperplasia—There was a proliferation of cells appearing normal and resembling those of the zona fasciculata. The cells were of uniform size and morphology, and mitotic figures were not observed. These lesions were invariably observed in adrenals showing severe amyloidosis. Another type of hyperplastic lesion encountered was the presence of extracapsular nodules of cortical tissue that had a normal appearance. These were completely encased in a connective tissue capsule.

Cortical adenoma—Two types were observed. One was composed of cells resembling the zona fasciculata; these cells were somewhat pheomorphic and were compressing the adjacent parenchyma. The second type contained cells similar to those of the first, except that admixed between them were spindle-shaped cells which resembled fibroblasts. Mitotic figures were rare. The border of both types of adenomas was well defined but no capsule was evident.

Neurolemmoma—This tumor was composed of delicate spindloid cells arranged in parallel palisades. It was well circumscribed but nonencapsulated. No mitotic figures were observed. This type of tumor was of much lower incidence than the previously described adenomas.

Cortical carcinoma—Carcinomas were composed of cells resembling both types of the adenomas described above. They were differentiated from adenomas on the basis of pleomorphism, nuclear atypia, increased numbers of mitotic figures, and invasive growth through the capsule and/or into adjacent blood vessels. Areas of necrosis and hemorrhage were common.

Adrenal Medulla

Hyperplasia—This lesion was characterized by proliferation of cells that appeared normal, although an increase in basophilia was sometimes noted. The normal architecture was preserved, and the lesion was usually diffuse.

Pheochromocytoma—This lesion consisted of a focal nodular proliferation of uniform cells that appeared fairly normal, although they were often smaller than normal. Mitotic figures were not observed. Growth was by expansion. The borders were distinct, and there appeared to be a delicate capsule.

Malignant pheochromocytoma—The major distinguishing characteristics of this neoplasm were nuclear atypia and invasive growth.

The major difference in terminology between the original pathologist and the NTP/PWG was in regard to the adrenal tumors (benign and malignant) composed of a mixture of spindle-shaped cells and eosinophilic hepatoid-like cells. The original pathologist diagnosed these as pheochromocytomas or malignant pheochromocytomas, while the PWG called them cortical adenomas or carcinomas.

While this study was not designed to evaluate nonneoplastic disease, noteworthy lesions were observed. None appeared to be dosage related; rather, they were consistent with lesions that are normally found in aging hamsters. The pathologist opined that the most important lesion, responsible for many deaths, was generalized amyloidosis. The kidneys were particularly affected by diffuse accumulation of amyloid, which replaced glomeruli and infiltrated tubular interstitium to a point where the normal cortical architecture was obliterated. Other organs which showed significant accumulations of amyloid were the adrenal gland, liver, spleen, and the epithelium of the small intestine. Amyloid was observed within the walls of blood vessels in many tissues.

Many of the livers were cirrhotic, infiltrated with amyloid, and contained large cystic structures filled with a lightly staining proteinaceous fluid. These structures were interpreted as cystic bile ducts and are consistent with what others have termed "retention cysts." At times, these cysts were so large and/or numerous that less than half of the livers remained.

Other nonneoplastic lesions that were observed in more than 5% of the hamsters in any of the experimental groups were:

1. Skin—chronic dermatitis
2. Lung—interstitial pneumonitis
3. Spleen—lymphoid atrophy
4. Lymph node—hyperplasia
5. Heart—atrial thrombosis
6. Gallbladder—edema and calculi
7. Stomach (nonglandular)—hyperkeratosis or acanthosis
8. Colon—intussusception, inflammation
9. Urinary bladder—chronic inflammation, hyperplasia
10. Adrenal gland—cortical and medullary hyperplasia
11. Thyroid gland—follicular atrophy
12. Pituitary gland—degeneration

13. Ovary—atrophy
14. Uterus—inflammation, endometrial hyperplasia.
15. Vagina—acute inflammation, squamous metaplasia

None of these lesions were dose related.

IV. SUMMARY, COMMENTS, AND CONCLUSIONS

IV. SUMMARY, COMMENTS, AND CONCLUSIONS

The clinicopathologic results in this study showed that chronic ingestion of 1% chrysotile [short range (SR) or intermediate range (IR) fiber lengths] asbestos in the diet did not have any adverse effect on body weight gain and survival. In fact, both weight gain and survival seemed to be enhanced. An explanation for these observations is not apparent.

The only organ which showed a statistically significant ($P < 0.05$) increased rate of neoplasia was the adrenal cortex in male and female hamsters exposed to IR chrysotile asbestos and males exposed to SR chrysotile asbestos when compared with pooled controls. However, statistical significance was lost when these groups were compared to their concurrent controls. Also, the increased incidence in SR males was not statistically significant when the diagnoses of the NTP/PWG were used. The increase in body weight may have been a factor in adrenal cortical tumorigenesis, but this is speculative. It is difficult to imagine how orally administered asbestos, even though it is known to be absorbed through the gastrointestinal tract (Cook and Olson, 1979), could cause an increased tumor rate in the adrenal cortex without causing similar increases in tumors in other abdominal organs and tissues, i.e., gastrointestinal tract and peritoneum. For these reasons, the biologic importance of adrenal tumors in this study is doubtful. The overall increase in total primary tumors in male IR chrysotile hamsters can be explained primarily on the basis of an increased incidence of adrenal tumors in this group. The enhanced survival of animals in the chrysotile groups also contributed to the elevated incidence of primary tumors observed in these groups compared with controls. Similar increases were not observed in the amosite asbestos studies (NTP, 1983).

The only other instance of an increased rate of neoplasia was a significant ($P < 0.05$) increase in leukemia or malignant lymphoma in male hamsters exposed to DMH when compared to pooled controls. Again, statistical significance was lost when this group was compared to its concurrent control group. This finding also loses importance because it was not observed in the DMH plus IR chrysotile group.

Other such studies involving the long-term ingestion of asbestos are few. Donham et al., (1980) reported equivocal results in F344 rats which were fed a diet containing 10% chrysotile for their lifetime. While they did not observe a statistically significant ($P < 0.05$) increase in the number of tumors in exposed animals, the authors believed that there was a trend toward increased colon lesions in general, evidence of penetration of asbestos into the colonic mucosa and possible cytotoxicity to colonic tissues and they suggested a possible relationship to peritoneal mesothelioma. Another equivocal study is that reported by Gibel et al. (1976), who described an increase in malignant tumors in the lung, kidney, liver, and reticuloendothelial system, but no increase in intestinal neoplasia in Wistar rats fed asbestos filter material (20 mg/day) for a period of 8-14 months. Cunningham et al. (1977) reported 2 studies in male Wistar rats administered 1% chrysotile in the diet, one study of 24 months and one of 30 months. No intestinal tumors were found in the control rats. Negative results were reported by Gross et al., (1974), who fed rats a diet containing 5% chrysotile asbestos for a period of 21 months with no evidence of intestinal neoplasia.

The only other oral asbestos study in hamsters was reported by Smith et al. (1980). They exposed groups of 30 male and 30 female hamsters via drinking water for lifetime to amosite asbestos, mine tailings, beach rock, and Lake Superior drinking water. They did not observe adverse effects on body weight or survival time in any of the groups. A peritoneal mesothelioma, one pulmonary carcinoma, and two early squamous cell carcinomas of the nonglandular stomach were found in the hamsters exposed to amosite, but the incidence was not statistically significant ($P > 0.05$). They concluded that these studies were essentially negative.

Except for those by Donham et al. (1980) and Smith et al. (1980), these studies were conducted with relatively small numbers of animals. Also, some were conducted for periods of time insufficient to adequately test the carcinogenic potential of ingested asbestos.

The results of the combination study (IR chrysotile plus DMH) did not yield a significant increase in tumors above the background level observed in the DMH group alone or in the untreated control group. The DMH failed to yield a background level of intestinal tumors high enough to provide a valid test of the cocarcinogenic potential of chrysotile asbestos. For this reason, the cocarcinogenic potential of orally administered asbestos should be considered untested. However, the DMH plus chrysotile group provides an additional IR chrysotile group for comparative purposes.

Why the DMH dosed group of hamsters failed to show an increased incidence of intestinal neoplasia remains unclear. The results from the pilot study indicated that the dose of DMH used should have caused an incidence of approximately 10% to 15%. DMH solutions rapidly decompose if they are at room temperature or if they are not properly buffered. For these studies, however, precautions were taken to prevent decomposition.

The only long-term study designed to determine the cocarcinogenic potential of asbestos was reported by Ward et al. (1980). They administered 1 mg amosite asbestos in saline by gavage to 6-week-old F344 rats 3 times per week for 10 weeks. 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. All surviving rats were killed at 94-95 weeks of age. Ward et al. reported an intestinal tumor incidence of 66.7% for AOM alone, 77.1% for amosite plus AOM, and 32.6% for amosite alone. The authors concluded that while amosite did not significantly add to the incidence of AOM-induced intestinal neoplasia, amosite alone caused a relatively high rate of intestinal neoplasia. However, there was no untreated control group with which to compare the treated groups. These authors also reported a 14% incidence of Zymbal gland tumors in the rats exposed to amosite alone. The historical rate of Zymbal gland tumors in the Program is 0.34%, indicating that this neoplasm is an extremely rare spontaneous tumor. However, AOM 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. An appropriate explanation for the high incidence of Zymbal gland tumors in the amosite group would be that those animals were inadvertently exposed to AOM. If this occurred, animals would also be expected to show a high incidence of intestinal neoplasia.

This investigation of the carcinogenic and cocarcinogenic potential of ingested asbestos is a two-animal-species effort by the National Institute of Environmental Health Sciences/National Toxicology Program. While the results in the hamster appear to be negative, carcinogenesis studies involving more types of asbestos but using essentially the same protocol (1% diet) in rats are currently being evaluated. The concurrent study (NTP, 1983) using 1% amosite in the diet of hamsters did not show any significant increase in tumor incidence compared to pooled or concurrent control groups.

Conclusions: Under the conditions of these studies, neither short range chrysotile nor intermediate range chrysotile asbestos was carcinogenic when ingested at 1% levels in the diet by male and female Syrian golden hamsters. While there were increases in the rates of adrenal cortical adenomas in male and female hamsters exposed to intermediate range chrysotile asbestos compared with pooled control groups, these incidence rates were not different when compared with the concurrent control groups. Additionally, the biologic importance of adrenal tumors in the absence of target organ (gastrointestinal tract) neoplasia is questionable. The cocarcinogenesis studies using IR chrysotile asbestos and 1,2-dimethylhydrazine dihydrochloride were considered inadequate because there was no increase in intestinal neoplasia in the DMH group.

V. REFERENCES

V. REFERENCES

Bey, E. and Harrington, J.S., Cytotoxic effects of some mineral dusts on Syrian hamster peritoneal macrophages. J. Exptl. Med. 133:1149-1169; 1971.

Carter, R.E. and Taylor, W.G., Identification of a particular amphibole asbestos fiber in tissues of persons exposed to a high oral intake of the mineral. Environ. Res. 21:85-93; 1980.

Chamberlain, M. and Tarmy, E.M., Asbestos and glass fibers in bacterial mutation tests. Mutat. Res. 43:159-164; 1977.

Cook, P.M. and Olson, G.F., Ingested mineral fibers: elimination in human urine. Science 204:195-198; 1979.

Cooper, R.C., Murchio, J.C., and Paffenbarger, R.S., Asbestos in domestic water supplies for five California counties. Part II, EHS Publ. No. 79-1, School of Public Health, Univ. Calif. Berkeley. 247; 1979. In: EPA, Ambient water quality criteria for asbestos, EPA 440/5-80-022, US EPA, Washington, D.C.; 1980.

Cox, D.R., Regression models and life tables. J. R. Stat. Soc. B34:187-220; 1972.

Cunningham, H.M., Moodie, C.A., Lawrence, G.A., and Pontefract, R.D., Chronic effects of ingested asbestos in rats. Arch. Environ. Contam. Toxicol. 6:507-513; 1977.

Cunningham, H.M. and Pontefract, R.D., Asbestos fibers in beverages and drinking water. Nature 232:332-333; 1971.

Donham, K.J., Berg, J.W., Will, L.A., and Leininger, J.R., The effects of long term ingestion of asbestos on the colon of F344 rats. Cancer 45:1073-1084; 1980.

EHP, Environmental Health Perspectives, Proceedings of the joint NIEHS-EPA conference on Biological Effects of Ingested Asbestos, Environ. Health Perspect. 9:113-462; 1974.

EPA, Environmental Protection Agency, Ambient water quality criteria for asbestos, EPA 440/5-80-022, US EPA, Washington, DC; 1980.

Gart, J., Chu, K., and Tarone, R., Statistical issues in interpretation of chronic bioassay tests for carcinogenicity. J. Natl. Cancer Inst. 62(4):957-974; 1979.

Gibel, W., Lohs, K.H., Horn, K.H., Wildner, G.P., and Hoffman, F., Investigation into a carcinogenic effect of asbestos filter material following oral intake in experimental animals. Archiv. fur Geschwulstforschung 46:437-442; 1976.

Gross, P., Harley, R.A., Swinberne, L.M., Davis, J.M.G., and Green, W.B., Ingested mineral fibres, do they penetrate tissue or cause cancer? Arch. Environ. Hlth. 29:341-347; 1974.

Harrington, J.M., Craun, G.F., Meigs, J.W., Landrigen, P.J., and Flannery, J.T., An investigation of the use of asbestos-cement pipe for public water supply and the incidence of gastrointestinal cancer in Connecticut, 1935-1973. Am. J. Epidemiol. 107:96-103; 1978.

Homburger, F. and Russfield, A.B., Inbred line of Syrian hamsters with frequent spontaneous adrenal tumors. Cancer Res. 30:305-308; 1970.

IARC, Asbestos monograph on the evaluation of the carcinogenic risk of chemicals to man, International Agency for Research on Cancer, Lyon, France. 14:1-106; 1977.

Kanarek, M.S., Conforti, P.M., Jackson, L.A., Cooper, R.C., and Murchio, J.C., Asbestos in drinking water and cancer incidence in the San Francisco Bay area. Am. J. Epidemiol. 112:54-72; 1980.

Kaplan, E.L. and Meier, P., Nonparametric estimation from incomplete observations. J. Amer. Statist. Assoc. 53:457-481; 1958.

Levine, R.J., Asbestos: an information resource. National Institutes of Health, Department of Health and Human Services, NIH 78-1681; 1978.

Mantel, N. and Haenszel, W., Statistical aspects of the analysis of data from retrospective studies of disease. J. Natl. Cancer Inst. 22:719-748; 1959.

Matsuyama, M. and Suzuki, H., Adrenal tumours and endocrine lesions induced in Syrian hamsters by urethane injection during suckling period. Brit. J. Cancer 24:312-318; 1970.

McConnell, E.E., Wilson, R.E., Moore, J.A., and Haseman, J.K., Dose response of 1,2-dimethylhydrazine and methylazoxymethanol acetate in the F344 rat. Cancer Letters 8:271-278; 1980.

Merliss, R. R., Talc and asbestos contamination of rice. JAMA 216:2144; 1971.

Merliss, R.R., Talc-treated rice and Japanese stomach cancer. Science 173:1141-1142; 1971.

Millette, J.R., Exposure to asbestos from drinking water in the United States. EPA 600:1-79-150; US EPA 1979.

V. REFERENCES

Murthy, A.S.K. and Russfield, A.B., Evidence for three types of benign adrenal tumors in Syrian hamsters. Arch. Path. 81:140-145; 1966.

NTP, National Toxicology Program, NTP Technical report on the carcinogenesis bioassay of amosite asbestos in Syrian golden hamsters. NTP TR 249, Department of Health and Human Services, Research Triangle Park, North Carolina, 1983.

Peto, R., Pike, M., Day, N., Gray, R., Lee, P., Parish, S., Peto, J., Richard, S. and Wahrendorf, J., Guidelines for simple, sensitive significant tests for carcinogenic effects in long-term animal experiments. International Agency for Research Against Cancer. Monographs on the long-term and short-term screening assays for carcinogens: a critical appraisal. Geneva: World Health Organization. Supplement 2:311-426; 1980.

Reiss, B., Weisburger, J.H., and Williams, G.M., Asbestos and gastrointestinal cancer: cell culture studies. Environmental Protection Agency, EPA—600/1-79-023; July 1979.

Selikoff, I.J., Asbestos-associated disease. Chapter 13. Maxcy-Rosehau's Public Health and Preventive Medicine, 11th Edition, Last, J.M., Ed., Appleton-Century-Croft; 1980:568-589.

Selikoff, I.J. and Hammond, E.C., Eds., Health hazards of asbestos exposure. Ann. N.Y. Acad. Sci. 330:1-814; 1979.

Smith, W.E., Hubert, D.D., Sobel, H.J., Peters, E.T., and Doerfler, T.E., Health in experimental animals drinking water with and without amosite and other mineral particles. J. Environ. Path. Toxicol. 3:277-300; 1980.

Storeygard, A.R. and Brown, A.L., Penetration of the small intestinal mucosa by asbestos fibers. Mayo Clin. Proc. 52:809-812; 1977.

Ward, J.M., Dose response to a single injection of azoxymethane in rats. Vet. Pathol. 12:165-177; 1975.

Ward, J.M., Frank, A.L., Wenk, M., Devor, D., and Tarone, R.E., Ingested asbestos with frequent spontaneous adrenal tumors. J. Environ. Pathol. Toxicol. 3:301-312; 1980.

Weisburger, J.H. and Williams, G.M. Chemical carcinogens. In: Toxicology: the basic science of poisons. Second edition (Doull, J. and Klaasen, C., Eds.), New York: MacMillan Publishing Co., Inc.; 1979.

APPENDIX A

ANALYSIS OF FEED

APPENDIX A

Five pellets from the asbestos dosed and seven pellets from the control diet were individually crushed, transferred to a tared crucible, and weighed. The sample sizes used for the assays were 350 to 500 mg of asbestos-containing diet and 1,000 to 1,500 mg of control diet. The crucibles containing the diet were placed in a muffle furnace and ashed overnight at 550°C. After cooling, the ashed samples were quantitatively transferred to 100-ml beakers. Twenty ml of a 1:1:2 solution of nitric and hydrochloric acid in distilled water were added to each beaker and the samples were gently boiled for 8 hours. The digested sample was quantitatively transferred to a volumetric flask and a sufficient quantity of a stock solution containing potassium, lanthanum, and hydrochloric acid was added to provide a final concentration of 100 mg/l of K+ and 30 mg/l of La++ at a pH below 3. The quantity of asbestos was determined by measuring the magnesium content by atomic absorption spectroscopy.

Results of the analyses are presented in Tables A1 and A2.

TABLE A1. CALCULATED VALUES OF SHORT RANGE CHRYSOTILE ASBESTOS IN INDIVIDUAL LOTS OF FEED AS DETERMINED BY MAGNESIUM CONTENT

Feed Preparation Date	Calculated Asbestos Content (%)
03/23/77	1.05 ± 0.07
03/14/77	0.96 ± 0.07
05/20/77	0.89 ± 0.38
06/23/77	1.29 ± 1.96
06/23/77	0.94 ± 0.07
09/21/77	0.96 ± 0.13
12/07/77	1.00 ± 0.06
02/01/78	0.94 ± 0.06
09/78	0.93 ± 0.06
10/79	0.97 ± 0.07
Mean = 0.98 ± 0.22	

TABLE A2. CALCULATED VALUES OF INTERMEDIATE RANGE CHRYSOTILE ASBESTOS IN INDIVIDUAL LOTS OF FEED AS DETERMINED BY MAGNESIUM CONTENT

Feed Preparation Date	Calculated Asbestos Content (%)
03/14/77	1.02 ± 0.04
05/20/77	1.00 ± 0.11
06/23/77	1.64 ± 1.49
06/23/77	1.09 ± 0.39
06/23/77	0.94
06/23/77	0.89 ± 0.06
09/21/77	0.89
09/21/77	0.85
12/07/77	1.02 ± 0.05
02/01/78	1.03 ± 0.13
02/01/78	1.02 ± 0.17
07/11/78	0.97 ± 0.02
10/27/78	0.92 ± 0.07
10/79	1.00
Mean = 0.96 ± 0.12	

APPENDIX B

DISEASE STATUS OF HAMSTERS EXPOSED IN THE CHRYSOTILE ASBESTOS STUDIES

TABLE B1. DISEASE STATUS OF HAMSTERS EXPOSED TO CHRYSOTILE ASBESTOS AND/OR 1,2-DIMETHYLHYDRAZINE DIHYDROCHLORIDE (DMH)

	Short Range Chrysotile				Intermediate Range Chrysotile				Intermediate Range Chrysotile and/or DMH			
	Control		Asbestos		Control		Asbestos		Control		Asbestos and/or DMH	
Organism	Mother	Off-spring	Mother	Off-spring	Mother	Off-spring	Mother	Off-spring	Mother	Off-spring	Mother	Off-spring
Mycoplasma spp.	—	—	—	—	—	—	—	—	—	—	—	—
Corynebacterium kutscheri	—	—	—	—	—	—	—	—	—	—	—	—
Salmonella spp.	—	—	—	—	—	—	—	—	—	—	—	—
Streptobacillus moniliformis	—	—	—	—	—	—	—	—	—	—	—	—
Streptococcus pneumoniae	—	—	—	—	—	—	—	—	—	—	—	—
Haemobartonella spp.	--	—	—	—	—	—	—	—	—	—	—	—
Encephalitazoon spp.	—	—	—	—	—	—	—	—	—	—	—	—
Aspicularis tetraptera	—	—	—	—	—	—	—	—	—	—	—	—
Sphacia obvelata	—	—	—	—	—	—	—	—	+++	+++	+++	—
Taxoplasma gondii	—	—	—	—	—	—	—	—	—	—	—	—
Hymenolepsis diminuta or nana	—	—	—	—	—	—	—	—	—	—	—	—
Trichomonas spp.	+++	+++	+++	+++	+++	+++	+++	+++	+++	+++	+++	+++
Hexamita muris	+	+	++	++	+	+	++	++	++	++	++	++
Giardia muris	++	++	+	+	++	++	++	++	++	++	++	++
Lymphocytic choriomeningitis	—	—	—	—	—	—	—	—	—	—	—	—
Mites	—	—	—	—	—	—	—	—	—	—	—	—
Fleas	—	—	—	—	—	—	—	—	—	—	—	—
Lice	—	—	—	—	—	—	—	—	—	—	—	—

APPENDIX C

ANALYSES OF 1,2-DIMETHYLHYDRAZINE DIHYDROCHLORIDE

TABLE C1. ANALYSIS OF 1,2-DIMETHYLHYDRAZINE DIHYDROCHLORIDE SOLUTIONS

Date Prepared and Used	Theoretical Concentration	Actual Concentration
6/22/77	2.00 mg/ml	2.004 ±0.03 mg/ml
7/6/77	2.00 mg/ml	1.75 ±0.04 mg/ml
7/20/77	2.00 mg/ml	2.51 ±0.08 mg/ml
8/3/77	2.00 mg/ml	1.92 ±0.06 mg/ml
8/17/77	2.00 mg/ml	1.68 ±0.14 mg/ml

The concentration of 1,2-dimethylhydrazine dihydrochloride was determined by the pentacyanoamino ferrate colorimetric method. Quantity modifications were made to avoid the small and fraction milliliter quantities and to make possible the use of standard laboratory ware.

All solutions and solid reagents in use or storage were kept cold, at about ice temperatures in a *cold* refrigerator.

REAGENTS

1. Trisodium salt of pentacyanoamino ferrate; concentration 20 mg/ml dissolved in cold borate buffer.
2. Stock 1,2-DMH•2HCl solution; approximately 40 mg/200 ml; dissolved in cold acetate buffer; concentration, approximately 200 μg/ml.
3. 0.05 M Borate buffer:

   0.05 M H_3BO_3:3.08 g/l
   0.5 M $NA_3B_4O_7$•10 H_20:19.06 g/l
   Add the salt to boric acid until pH 8.5.
4. 0.2 M acetate buffer

   0.2 M HOAc:11.4 ml conc glacial acetic acid per liter. Conc HOAc=17.6M
   0.2 M NaOAc:27.2 g/liter of NaOAc•3H_2 O

   Add HOAc to the salt solution until pH 5.
5. 1-1 HCl solution.
6. Color development reagent (combined reagent) 12.0 ml (by pipette) of pentacyanoamino ferrate reagent diluted to 250 ml with cold borate buffer. Keep cold.

EQUIPMENT

Beckman spectrophotometer; 1 cm cells. Wavelength 536 nm.

CALIBRATION CURVE

No attempt was made to weigh 40.0 mg of the symmetrical DMH•2HCl because of its unstable nature at room temperature and its tendency to pick up water. 40 mg or more were quickly weighed and immediately dissolved in cold acetate buffer and diluted to 200 ml in a volumetric flask.

To prepare the calibration curve, 6 standard solutions were prepared from which 5 ml aliquots were taken to obtain each absorbance value.

Std Solution		If Stock is 210 μg/ml	
ml Stock	ml OAc^- Buffer	Std Sol μg/ml	Calib. Sol. μg/ml
4	36	21	3.44
8	32	42	6.88
10	30	52.5	8.61
12	28	63	10.3
16	24	84	13.8
20	20	105	17.2

The calibration curve points were obtained by 5 aliquots of 5 ml each diluted with 25 ml color reagent and 0.5 ml of 1-1 HCl solution or a total or 30.5 ml. Concentration in μg/ml for each of these calibration points is (5 ml × conc each std μg/ml) ÷ 30.5 ml and is included in the above table. The blank consists of 5 ml OAc^- buffer with 25 ml indicator and 0.5 ml 1-1 acid.

The color develops and fades very rapidly, even when cold. To obtain reasonably consistent values for 5 aliquots, the acid was measured with a fast pipette, and a dry cuvette was filled and read immediately. If any motion is delayed, this is reflected in a bad reading. A typical calibration curve and a copy of a data sheet are attached.

A new calibration curve was prepared for each sample analyzed. Because these curves were prepared from somewhat different concentrations (plotted according to ml), two curves prepared from two different concentrations two weeks apart were converted to equivalent concentrations and plotted. The two curves were nearly identical.

SAMPLE ANALYSES

For sample analyses, samples were received as a solution; three separate aliquots were taken from the original sample. These were diluted to 50 ml; then, a 10 ml sample was taken from each and diluted to 50 ml. From the latter, 5 separate samples were taken, each diluted to 30.5 ml, and the absorbance values were averaged to determine the concentration. The 5 absorbance values were averaged to give the concentration of each aliquot.

APPENDIX D

SUMMARY OF THE INCIDENCE OF NEOPLASMS IN HAMSTERS ADMINISTERED CHRYSOTILE ASBESTOS IN THE DIET

TABLE D1.

SUMMARY OF THE INCIDENCE OF NEOPLASMS IN MALE HAMSTERS ADMINISTERED SHORT RANGE (SR) CHRYSOTILE ASBESTOS IN THE DIET

	CONTROL	SR CHRYSOTILE
ANIMALS INITIALLY IN STUDY	126	253
ANIMALS NECROPSIED	115	233
ANIMALS EXAMINED HISTOPATHOLOGICALLY	115	233
INTEGUMENTARY SYSTEM		
NONE		
RESPIRATORY SYSTEM		
#PERITRACHEAL TISSUE	(115)	(228)
SARCOMA, NOS, METASTATIC		1 (0%)
#LUNG	(115)	(231)
PARAGANGLIOMA, METASTATIC		1 (0%)
SARCOMA, NOS, METASTATIC		1 (0%)
HEMATOPOIETIC SYSTEM		
*MULTIPLE ORGANS	(115)	(233)
MALIG.LYMPHOMA, LYMPHOCYTIC TYPE	1 (1%)	2 (1%)
MALIG.LYMPHOMA, HISTIOCYTIC TYPE	1 (1%)	
GRANULOCYTIC LEUKEMIA		1 (0%)
#LYMPH NODE	(114)	(230)
C-CELL CARCINOMA, METASTATIC		1 (0%)
#THYMUS	(90)	(137)
PARAGANGLIOMA, METASTATIC		1 (1%)
CIRCULATORY SYSTEM		
#SPLEEN	(112)	(229)
HEMANGIOSARCOMA		1 (0%)
#HEART	(114)	(230)
PARAGANGLIOMA, MALIGNANT		1 (0%)
#LIVER	(115)	(232)
HEMANGIOSARCOMA		2 (1%)
#TESTIS	(112)	(229)
HEMANGIOMA		1 (0%)
DIGESTIVE SYSTEM		
#LIVER	(115)	(232)
OSTEOSARCOMA, METASTATIC		1 (0%)
#CARDIAC STOMACH	(113)	(222)
SQUAMOUS CELL PAPILLOMA	1 (1%)	
#DUODENUM	(114)	(226)
ADENOMA, NOS	1 (1%)	
URINARY SYSTEM		
#KIDNEY	(115)	(232)
TUBULAR-CELL ADENOMA		2 (1%)
#KIDNEY/CORTEX	(115)	(232)
ADENOMA, NOS		1 (0%)

NUMBER OF ANIMALS WITH TISSUE EXAMINED MICROSCOPICALLY
* NUMBER OF ANIMALS NECROPSIED

TABLE D1. MALE HAMSTERS: NEOPLASMS (CONTINUED)

	CONTROL	SR CHRYSOTILE
ENDOCRINE SYSTEM		
#ADRENAL	(115)	(229)
CORTICAL ADENOMA	7 (6%)	26 (11%)
CORTICAL CARCINOMA	3 (3%)	8 (3%)
PHEOCHROMOCYTOMA	2 (2%)	4 (2%)
NEURILEMOMA		1 (0%)
#THYROID	(109)	(207)
C-CELL ADENOMA	3 (3%)	3 (1%)
C-CELL CARCINOMA	1 (1%)	1 (0%)
#PARATHYROID	(72)	(132)
ADENOMA, NOS		3 (2%)
#PANCREATIC ISLETS	(111)	(218)
ISLET-CELL ADENOMA	2 (2%)	15 (7%)
ISLET-CELL CARCINOMA	1 (1%)	
REPRODUCTIVE SYSTEM		
NONE		
NERVOUS SYSTEM		
#BRAIN	(114)	(223)
ASTROCYTOMA	1 (1%)	
SPECIAL SENSE ORGANS		
NONE		
MUSCULOSKELETAL SYSTEM		
*SKELETAL MUSCLE	(115)	(233)
FIBROSARCOMA		1 (0%)
BODY CAVITIES		
*THORACIC CAVITY	(115)	(233)
OSTEOSARCOMA		1 (0%)
ALL OTHER SYSTEMS		
NONE		
ANIMAL DISPOSITION SUMMARY		
ANIMALS INITIALLY IN STUDY	126	253
NATURAL DEATH@	112	221
MORIBUND SACRIFICE	11	29
SCHEDULED SACRIFICE		
ACCIDENTALLY KILLED		2
TERMINAL SACRIFICE		
ANIMAL MISSING		

@ INCLUDES AUTOLYZED ANIMALS

NUMBER OF ANIMALS WITH TISSUE EXAMINED MICROSCOPICALLY
* NUMBER OF ANIMALS NECROPSIED

TABLE D1. MALE HAMSTERS: NEOPLASMS (CONTINUED)

	CONTROL	SR CHRYSOTILE
TUMOR SUMMARY		
TOTAL ANIMALS WITH PRIMARY TUMORS*	21	64
TOTAL PRIMARY TUMORS	24	74
TOTAL ANIMALS WITH BENIGN TUMORS	15	48
TOTAL BENIGN TUMORS	16	56
TOTAL ANIMALS WITH MALIGNANT TUMORS	8	18
TOTAL MALIGNANT TUMORS	8	18
TOTAL ANIMALS WITH SECONDARY TUMORS#		4
TOTAL SECONDARY TUMORS		6
TOTAL ANIMALS WITH TUMORS UNCERTAIN-BENIGN OR MALIGNANT		
TOTAL UNCERTAIN TUMORS		
TOTAL ANIMALS WITH TUMORS UNCERTAIN-PRIMARY OR METASTATIC		
TOTAL UNCERTAIN TUMORS		

* PRIMARY TUMORS: ALL TUMORS EXCEPT SECONDARY TUMORS
# SECONDARY TUMORS: METASTATIC TUMORS OR TUMORS INVASIVE INTO AN ADJACENT ORGAN

TABLE D2.

SUMMARY OF THE INCIDENCE OF NEOPLASMS IN FEMALE HAMSTERS ADMINISTERED SHORT RANGE (SR) CHRYSOTILE ASBESTOS IN THE DIET

	CONTROL	SR CHRYSOTILE
ANIMALS INITIALLY IN STUDY	126	252
ANIMALS MISSING	1	1
ANIMALS NECROPSIED	114	228
ANIMALS EXAMINED HISTOPATHOLOGICALLY	114	228
INTEGUMENTARY SYSTEM		
*SUBCUT TISSUE	(114)	(228)
SARCOMA, NOS		1 (0%)
FIBROSARCOMA		1 (0%)
LIPOMA		1 (0%)
RESPIRATORY SYSTEM		
#LUNG	(114)	(228)
SARCOMA, NOS, METASTATIC		2 (1%)
HEMATOPOIETIC SYSTEM		
*MULTIPLE ORGANS	(114)	(228)
MALIGNANT LYMPHOMA, NOS	1 (1%)	
MALIG.LYMPHOMA, LYMPHOCYTIC TYPE		2 (1%)
#LYMPH NODE	(114)	(227)
MALIG.LYMPHOMA, LYMPHOCYTIC TYPE	1 (1%)	
CIRCULATORY SYSTEM		
#SPLEEN	(112)	(226)
HEMANGIOMA		1 (0%)
DIGESTIVE SYSTEM		
#COLON	(114)	(226)
ADENOCARCINOMA, NOS	1 (1%)	1 (0%)
URINARY SYSTEM		
NONE		
ENDOCRINE SYSTEM		
#PITUITARY	(77)	(132)
CHROMOPHOBE ADENOMA		1 (1%)
#ADRENAL	(112)	(226)
CORTICAL ADENOMA	4 (4%)	8 (4%)
PHEOCHROMOCYTOMA		3 (1%)
NEURILEMOMA		1 (0%)
#THYROID	(107)	(214)
FOLLICULAR-CELL ADENOMA	2 (2%)	
C-CELL ADENOMA	2 (2%)	
#PARATHYROID	(68)	(139)
ADENOMA, NOS	3 (4%)	3 (2%)
#PANCREATIC ISLETS	(109)	(217)
ISLET-CELL ADENOMA	2 (2%)	2 (1%)
ISLET-CELL CARCINOMA	1 (1%)	

NUMBER OF ANIMALS WITH TISSUE EXAMINED MICROSCOPICALLY
* NUMBER OF ANIMALS NECROPSIED

TABLE D2. FEMALE HAMSTERS: NEOPLASMS (CONTINUED)

	CONTROL	SR CHRYSOTILE
REPRODUCTIVE SYSTEM		
*VAGINA	(114)	(228)
PAPILLARY ADENOMA	1 (1%)	
#UTERUS	(113)	(226)
PAPILLOMA, NOS		1 (0%)
PAPILLARY CARCINOMA		1 (0%)
ADENOMA, NOS		1 (0%)
PAPILLARY ADENOMA		1 (0%)
LEIOMYOMA	2 (2%)	1 (0%)
ENDOMETRIAL STROMAL POLYP	1 (1%)	
#OVARY	(112)	(222)
FIBROMA		1 (0%)
NERVOUS SYSTEM		
NONE		
SPECIAL SENSE ORGANS		
NONE		
MUSCULOSKELETAL SYSTEM		
NONE		
BODY CAVITIES		
*THORACIC CAVITY	(114)	(228)
OSTEOSARCOMA	1 (1%)	
ALL OTHER SYSTEMS		
PERINEUM		
PAPILLOMA, NOS	1	
SITE UNKNOWN		
SARCOMA, NOS		1
OSTEOSARCOMA		1
ANIMAL DISPOSITION SUMMARY		
ANIMALS INITIALLY IN STUDY	126	252
NATURAL DEATH@	112	231
MORIBUND SACRIFICE	13	19
SCHEDULED SACRIFICE		
ACCIDENTALLY KILLED		
TERMINAL SACRIFICE		
ANIMAL MISSING	1	1

@ INCLUDES AUTOLYZED ANIMALS

NUMBER OF ANIMALS WITH TISSUE EXAMINED MICROSCOPICALLY
* NUMBER OF ANIMALS NECROPSIED

TABLE D2. FEMALE HAMSTERS: NEOPLASMS (CONTINUED)

	CONTROL	SR CHRYSOTILE
TUMOR SUMMARY		
TOTAL ANIMALS WITH PRIMARY TUMORS*	19	28
TOTAL PRIMARY TUMORS	23	33
TOTAL ANIMALS WITH BENIGN TUMORS	16	24
TOTAL BENIGN TUMORS	18	25
TOTAL ANIMALS WITH MALIGNANT TUMORS	5	7
TOTAL MALIGNANT TUMORS	5	8
TOTAL ANIMALS WITH SECONDARY TUMORS#		2
TOTAL SECONDARY TUMORS		2
TOTAL ANIMALS WITH TUMORS UNCERTAIN-BENIGN OR MALIGNANT		
TOTAL UNCERTAIN TUMORS		
TOTAL ANIMALS WITH TUMORS UNCERTAIN-PRIMARY OR METASTATIC		
TOTAL UNCERTAIN TUMORS		

* PRIMARY TUMORS: ALL TUMORS EXCEPT SECONDARY TUMORS
\# SECONDARY TUMORS: METASTATIC TUMORS OR TUMORS INVASIVE INTO AN ADJACENT ORGAN

TABLE D3.

SUMMARY OF THE INCIDENCE OF NEOPLASMS IN MALE HAMSTERS ADMINISTERED INTERMEDIATE RANGE (IR) CHRYSOTILE ASBESTOS IN THE DIET

	CONTROL	IR CHRYSOTILE
ANIMALS INITIALLY IN STUDY	126	251
ANIMALS NECROPSIED	116	245
ANIMALS EXAMINED HISTOPATHOLOGICALLY	116	245
INTEGUMENTARY SYSTEM		
*SUBCUT TISSUE	(116)	(245)
SARCOMA, NOS	1 (1%)	
RESPIRATORY SYSTEM		
#TRACHEA	(116)	(244)
CARCINOMA,NOS		1 (0%)
HEMATOPOIETIC SYSTEM		
*MULTIPLE ORGANS	(116)	(245)
MALIG.LYMPHOMA, LYMPHOCYTIC TYPE		8 (3%)
MALIG.LYMPHOMA, HISTIOCYTIC TYPE	1 (1%)	1 (0%)
#CERVICAL LYMPH NODE	(116)	(244)
CARCINOMA,NOS		1 (0%)
C-CELL CARCINOMA, METASTATIC		1 (0%)
#LYMPH NODE OF THORAX	(116)	(244)
SARCOMA, NOS, METASTATIC		1 (0%)
#MEDIASTINAL L.NODE	(116)	(244)
ADENOCARCINOMA, NOS, METASTATIC	1 (1%)	
#PANCREATIC L.NODE	(116)	(244)
ADENOCARCINOMA, NOS, METASTATIC	1 (1%)	
#MESENTERIC L. NODE	(116)	(244)
MALIG.LYMPHOMA, HISTIOCYTIC TYPE		1 (0%)
CIRCULATORY SYSTEM		
#SPLENIC CAPSULE	(112)	(242)
HEMANGIOMA		1 (0%)
DIGESTIVE SYSTEM		
#LIVER	(116)	(244)
ADENOCARCINOMA, NOS, METASTATIC	1 (1%)	
#CARDIAC STOMACH	(115)	(244)
SQUAMOUS CELL PAPILLOMA		1 (0%)
PAPILLARY ADENOMA		1 (0%)
#GASTRIC FUNDUS	(115)	(244)
CARCINOMA-IN-SITU, NOS		1 (0%)
#JEJUNUM	(116)	(244)
ADENOCARCINOMA, NOS	1 (1%)	
URINARY SYSTE		
#KIDNEY	(115)	(245)
ADENOCARCINOMA, NOS	1 (1%)	
TUBULAR-CELL ADENOCARCINOMA		1 (0%)
#KIDNEY/CORTEX	(115)	(245)
ADENOCARCINOMA, NOS	1 (1%)	

NUMBER OF ANIMALS WITH TISSUE EXAMINED MICROSCOPICALLY
* NUMBER OF ANIMALS NECROPSIED

TABLE D3. MALE HAMSTERS: NEOPLASMS (CONTINUED)

	CONTROL	IR CHRYSOTILE
ENDOCRINE SYSTEM		
#ADRENAL	(115)	(244)
CORTICAL ADENOMA	7 (6%)	24 (10%)
CORTICAL CARCINOMA	3 (3%)	7 (3%)
PHEOCHROMOCYTOMA	5 (4%)	9 (4%)
PHEOCHROMOCYTOMA, MALIGNANT		2 (1%)
GANGLIONEUROMA	1 (1%)	
NEUROBLASTOMA	2 (2%)	1 (0%)
#THYROID	(106)	(216)
ADENOMA, NOS		1 (0%)
C-CELL ADENOMA	3 (3%)	5 (2%)
C-CELL CARCINOMA	1 (1%)	4 (2%)
#PARATHYROID	(71)	(138)
ADENOMA, NOS	1 (1%)	4 (3%)
#PANCREATIC ISLETS	(110)	(226)
ISLET-CELL ADENOMA	7 (6%)	15 (7%)
ISLET-CELL CARCINOMA		1 (0%)
REPRODUCTIVE SYSTEM		
NONE		
NERVOUS SYSTEM		
NONE		
SPECIAL SENSE ORGANS		
NONE		
MUSCULOSKELETAL SYSTEM		
NONE		
BODY CAVITIES		
NONE		
ALL OTHER SYSTEMS		
*MULTIPLE ORGANS	(116)	(245)
CARCINOMA, NOS, METASTATIC		1 (0%)
FIBROSARCOMA		1 (0%)
ANIMAL DISPOSITION SUMMARY		
ANIMALS INITIALLY IN STUDY	126	251
NATURAL DEATH@	102	218
MORIBUND SACRIFICE	24	33
SCHEDULED SACRIFICE		
ACCIDENTALLY KILLED		
TERMINAL SACRIFICE		
ANIMAL MISSING		

@ INCLUDES AUTOLYZED ANIMALS

NUMBER OF ANIMALS WITH TISSUE EXAMINED MICROSCOPICALLY
* NUMBER OF ANIMALS NECROPSIED

TABLE D3. MALE HAMSTERS: NEOPLASMS (CONTINUED)

	CONTROL	IR CHRYSOTILE
TUMOR SUMMARY		
TOTAL ANIMALS WITH PRIMARY TUMORS*	26	78
TOTAL PRIMARY TUMORS	35	91
TOTAL ANIMALS WITH BENIGN TUMORS	19	55
TOTAL BENIGN TUMORS	24	61
TOTAL ANIMALS WITH MALIGNANT TUMORS	10	30
TOTAL MALIGNANT TUMORS	11	30
TOTAL ANIMALS WITH SECONDARY TUMORS#	1	3
TOTAL SECONDARY TUMORS	3	3
TOTAL ANIMALS WITH TUMORS UNCERTAIN-BENIGN OR MALIGNANT		
TOTAL UNCERTAIN TUMORS		
TOTAL ANIMALS WITH TUMORS UNCERTAIN-PRIMARY OR METASTATIC		
TOTAL UNCERTAIN TUMORS		

* PRIMARY TUMORS: ALL TUMORS EXCEPT SECONDARY TUMORS
# SECONDARY TUMORS: METASTATIC TUMORS OR TUMORS INVASIVE INTO AN ADJACENT ORGAN

TABLE D4.

SUMMARY OF THE INCIDENCE OF NEOPLASMS IN FEMALE HAMSTERS ADMINISTERED INTERMEDIATE RANGE (IR) CHRYSOTILE ASBESTOS IN THE DIET

	CONTROL	IR CHRYSOTILE
ANIMALS INITIALLY IN STUDY	126	252
ANIMALS MISSING		1
ANIMALS NECROPSIED	119	244
ANIMALS EXAMINED HISTOPATHOLOGICALLY	119	244
INTEGUMENTARY SYSTEM		
*SKIN	(119)	(244)
MALIGNANT MELANOMA		1 (0%)
*SUBCUT TISSUE	(119)	(244)
SARCOMA, NOS		1 (0%)
RESPIRATORY SYSTEM		
NONE		
HEMATOPOIETIC SYSTEM		
*MULTIPLE ORGANS	(119)	(244)
MALIG.LYMPHOMA, HISTIOCYTIC TYPE		1 (0%)
#LYMPH NODE	(119)	(243)
MALIG.LYMPHOMA, HISTIOCYTIC TYPE		1 (0%)
CIRCULATORY SYSTEM		
#SPLEEN	(118)	(241)
HEMANGIOMA		1 (0%)
DIGESTIVE SYSTEM		
#GASTRIC FUNDUS	(118)	(242)
PAPILLARY ADENOMA		1 (0%)
#COLON	(118)	(243)
ADENOMA, NOS	1 (1%)	
*ANUS	(119)	(244)
FIBROMA	1 (1%)	
URINARY SYSTEM		
#KIDNEY/CORTEX	(119)	(243)
ADENOCARCINOMA, NOS	1 (1%)	
ENDOCRINE SYSTEM		
#PITUITARY	(67)	(164)
ADENOMA, NOS	1 (1%)	1 (1%)
CHROMOPHOBE ADENOMA	1 (1%)	
CHROMOPHOBE CARCINOMA		1 (1%)
#ADRENAL	(118)	(234)
CORTICAL ADENOMA	6 (5%)	18 (8%)
CORTICAL CARCINOMA		1 (0%)
PHEOCHROMOCYTOMA		1 (0%)
#THYROID	(115)	(223)
FOLLICULAR-CELL ADENOMA		1 (0%)
C-CELL ADENOMA	3 (3%)	2 (1%)
#PARATHYROID	(77)	(148)
ADENOMA, NOS	1 (1%)	1 (1%)
#PANCREATIC ISLETS	(116)	(236)
ISLET-CELL ADENOMA	5 (4%)	4 (2%)

NUMBER OF ANIMALS WITH TISSUE EXAMINED MICROSCOPICALLY
* NUMBER OF ANIMALS NECROPSIED

TABLE D4. FEMALE HAMSTERS: NEOPLASMS (CONTINUED)

	CONTROL	IR CHRYSOTILE
REPRODUCTIVE SYSTEM		
#UTERUS	(119)	(240)
PAPILLOMA, NOS		1 (0%)
ADENOMA, NOS		1 (0%)
ADENOCARCINOMA, NOS		1 (0%)
PAPILLARY ADENOMA		2 (1%)
LEIOMYOMA	1 (1%)	2 (1%)
NERVOUS SYSTEM		
NONE		
SPECIAL SENSE ORGANS		
NONE		
MUSCULOSKELETAL SYSTEM		
*THORACIC VERTEBRA	(119)	(244)
SARCOMA, NOS		1 (0%)
BODY CAVITIES		
*MESENTERY	(119)	(244)
OSTEOMA		1 (0%)
ALL OTHER SYSTEMS		
NONE		
ANIMAL DISPOSITION SUMMARY		
ANIMALS INITIALLY IN STUDY	126	252
NATURAL DEATH@	114	235
MORIBUND SACRIFICE	12	16
SCHEDULED SACRIFICE		
ACCIDENTALLY KILLED		
TERMINAL SACRIFICE		
ANIMAL MISSING		1
@ INCLUDES AUTOLYZED ANIMALS		
# NUMBER OF ANIMALS WITH TISSUE EXAMINED MICROSCOPICALLY		
* NUMBER OF ANIMALS NECROPSIED		
TUMOR SUMMARY		
TOTAL ANIMALS WITH PRIMARY TUMORS*	17	39
TOTAL PRIMARY TUMORS	21	45
TOTAL ANIMALS WITH BENIGN TUMORS	16	33
TOTAL BENIGN TUMORS	20	37
TOTAL ANIMALS WITH MALIGNANT TUMORS	1	8
TOTAL MALIGNANT TUMORS	1	8
TOTAL ANIMALS WITH SECONDARY TUMORS#		
TOTAL SECONDARY TUMORS		
TOTAL ANIMALS WITH TUMORS UNCERTAIN-BENIGN OR MALIGNANT		
TOTAL UNCERTAIN TUMORS		
TOTAL ANIMALS WITH TUMORS UNCERTAIN-PRIMARY OR METASTATIC		
TOTAL UNCERTAIN TUMORS		

* PRIMARY TUMORS: ALL TUMORS EXCEPT SECONDARY TUMORS
# SECONDARY TUMORS: METASTATIC TUMORS OR TUMORS INVASIVE INTO AN ADJACENT ORGAN

TABLE D5.

SUMMARY OF THE INCIDENCE OF NEOPLASMS IN MALE HAMSTERS ADMINISTERED 1,2-DIMETHYLHYDRAZINE DIHYDROCHLORIDE (DMH) PLUS INTERMEDIATE RANGE (IR) CHRYSOTILE ASBESTOS IN THE DIET

	CONTROL	DMH	IR CHRYSOTILE PLUS DMH
ANIMALS INITIALLY IN STUDY	125	127	176
ANIMALS NECROPSIED	119	127	173
ANIMALS EXAMINED HISTOPATHOLOGICALLY	119	127	173
INTEGUMENTARY SYSTEM			
*SKIN	(119)	(127)	(173)
SARCOMA, NOS	1 (1%)		
*SUBCUT TISSUE	(119)	(127)	(173)
FIBROSARCOMA			1 (1%)
RESPIRATORY SYSTEM			
#LUNG	(119)	(126)	(173)
UNDIFFERENTIATED CARCINOMA METAS		3 (2%)	3 (2%)
SARCOMA, NOS, METASTATIC	1 (1%)		
HEMATOPOIETIC SYSTEM			
*MULTIPLE ORGANS	(119)	(127)	(173)
MALIG.LYMPHOMA, LYMPHOCYTIC TYPE	2 (2%)	2 (2%)	3 (2%)
MALIG.LYMPHOMA, HISTIOCYTIC TYPE	1 (1%)	5 (4%)	5 (3%)
GRANULOCYTIC LEUKEMIA	1 (1%)		
#LYMPH NODE OF THORAX	(118)	(127)	(173)
C-CELL CARCINOMA, METASTATIC			1 (1%)
#COLO-RECTAL L. NODE	(118)	(127)	(173)
FIBROSARCOMA, METASTATIC			1 (1%)
CIRCULATORY SYSTEM			
#LIVER	(119)	(127)	(173)
HEMANGIOMA	1 (1%)	2 (2%)	1 (1%)
HEMANGIOSARCOMA	1 (1%)		1 (1%)
#CECUM	(116)	(126)	(170)
HEMANGIOMA	1 (1%)		
DIGESTIVE SYSTEM			
#LIVER	(119)	(127)	(173)
HEPATOCELLULAR ADENOMA		2 (2%)	
SARCOMA, NOS			1 (1%)
#PANCREAS	(110)	(114)	(167)
MESOTHELIOMA, METASTATIC	1 (1%)		
#CARDIAC STOMACH	(116)	(127)	(170)
SQUAMOUS CELL PAPILLOMA	1 (1%)		2 (1%)
#COLON	(116)	(126)	(170)
ADENOMA, NOS		1 (1%)	
FIBROSARCOMA, METASTATIC			1 (1%)
#CECUM	(116)	(126)	(170)
PAPILLOMA, NOS			1 (1%)
PAPILLARY ADENOMA		1 (1%)	
*RECTUM	(119)	(127)	(173)
ADENOMA, NOS	1 (1%)		
PAPILLARY ADENOMA			1 (1%)
*ANUS	(119)	(127)	(173)
FIBROSARCOMA		1 (1%)	

NUMBER OF ANIMALS WITH TISSUE EXAMINED MICROSCOPICALLY
* NUMBER OF ANIMALS NECROPSIED

TABLE D5. MALE HAMSTERS: NEOPLASMS (CONTINUED)

	CONTROL	DMH	IR CHRYSOTILE PLUS DMH
URINARY SYSTEM			
#KIDNEY	(119)	(127)	(173)
TUBULAR-CELL ADENOMA	1 (1%)		
ENDOCRINE SYSTEM			
#PITUITARY	(80)	(87)	(123)
CARCINOMA,NOS		1 (1%)	1 (1%)
ADENOMA, NOS			1 (1%)
#ADRENAL	(117)	(127)	(171)
CORTICAL ADENOMA	3 (3%)	3 (2%)	8 (5%)
CORTICAL CARCINOMA	4 (3%)	2 (2%)	7 (4%)
PHEOCHROMOCYTOMA	3 (3%)	4 (3%)	3 (2%)
PHEOCHROMOCYTOMA, MALIGNANT			3 (2%)
NEUROBLASTOMA			1 (1%)
NEURILEMOMA	1 (1%)		
#ADRENAL MEDULLA	(117)	(127)	(171)
NEUROBLASTOMA	1 (1%)		
#THYROID	(107)	(118)	(163)
ADENOMA, NOS	1 (1%)		
C-CELL ADENOMA		2 (2%)	3 (2%)
C-CELL CARCINOMA			1 (1%)
#PARATHYROID	(64)	(81)	(118)
ADENOMA, NOS	1 (2%)		2 (2%)
#PANCREATIC ISLETS	(110)	(114)	(167)
ISLET-CELL ADENOMA	8 (7%)	6 (5%)	10 (6%)
ISLET-CELL CARCINOMA			1 (1%)
REPRODUCTIVE SYSTEM			
*EPIDIDYMIS	(119)	(127)	(173)
ADENOMA, NOS			1 (1%)
NERVOUS SYSTEM			
#BRAIN	(113)	(124)	(169)
SARCOMA, NOS			1 (1%)
ASTROCYTOMA	1 (1%)		
SPECIAL SENSE ORGANS			
NONE			
MUSCULOSKELETAL SYSTEM			
*STERNUM	(119)	(127)	(173)
OSTEOMA	1 (1%)		
*MUSCLE HIP/THIGH	(119)	(127)	(173)
RHABDOMYOSARCOMA			1 (1%)
BODY CAVITIES			
*ABDOMINAL CAVITY	(119)	(127)	(173)
FIBROSARCOMA			1 (1%)
*PERITONEUM	(119)	(127)	(173)
FIBROSARCOMA		1 (1%)	
MESOTHELIOMA, MALIGNANT	1 (1%)		
ALL OTHER SYSTEMS			
NONE			

NUMBER OF ANIMALS WITH TISSUE EXAMINED MICROSCOPICALLY
* NUMBER OF ANIMALS NECROPSIED

TABLE D5. MALE HAMSTERS: NEOPLASMS (CONTINUED)

	CONTROL	DMH	IR CHRYSOTILE PLUS DMH
ANIMAL DISPOSITION SUMMARY			
ANIMALS INITIALLY IN STUDY	125	127	176
NATURAL DEATHa	98	101	141
MORIBUND SACRIFICE	27	25	35
SCHEDULED SACRIFICE			
ACCIDENTALLY KILLED		1	
TERMINAL SACRIFICE			
ANIMAL MISSING			
a INCLUDES AUTOLYZED ANIMALS			
TUMOR SUMMARY			
TOTAL ANIMALS WITH PRIMARY TUMORS*	27	29	51
TOTAL PRIMARY TUMORS	36	33	61
TOTAL ANIMALS WITH BENIGN TUMORS	19	20	31
TOTAL BENIGN TUMORS	23	21	33
TOTAL ANIMALS WITH MALIGNANT TUMORS	12	12	26
TOTAL MALIGNANT TUMORS	13	12	28
TOTAL ANIMALS WITH SECONDARY TUMORS#	2	3	5
TOTAL SECONDARY TUMORS	2	3	6
TOTAL ANIMALS WITH TUMORS UNCERTAIN-BENIGN OR MALIGNANT			
TOTAL UNCERTAIN TUMORS			
TOTAL ANIMALS WITH TUMORS UNCERTAIN-PRIMARY OR METASTATIC			
TOTAL UNCERTAIN TUMORS			

* PRIMARY TUMORS: ALL TUMORS EXCEPT SECONDARY TUMORS
\# SECONDARY TUMORS: METASTATIC TUMORS OR TUMORS INVASIVE INTO AN ADJACENT ORGAN

TABLE D6.

SUMMARY OF THE INCIDENCE OF NEOPLASMS IN FEMALE HAMSTERS ADMINISTERED 1,2-DIMETHYLHYDRAZINE DIHYDROCHLORIDE (DMH) BY GAVAGE OR DMH PLUS INTERMEDIATE RANGE (I.R.) CHRYSOTILE ASBESTOS IN THE DIET

	CONTROL	DMH	IR CHRYSOTILE PLUS DMH
ANIMALS INITIALLY IN STUDY	128	126	174
ANIMALS MISSING	1		2
ANIMALS NECROPSIED	120	122	161
ANIMALS EXAMINED HISTOPATHOLOGICALLY	120	122	161
INTEGUMENTARY SYSTEM			
*SUBCUT TISSUE	(120)	(122)	(161)
FIBROSARCOMA		1 (1%)	
RESPIRATORY SYSTEM			
#LUNG	(119)	(122)	(160)
UNDIFFERENTIATED CARCINOMA METAS			1 (1%)
ALVEOLAR/BRONCHIOLAR CARCINOMA			1 (1%)
SARCOMA, NOS, METASTATIC		1 (1%)	3 (2%)
FIBROSARCOMA, METASTATIC		1 (1%)	
OLIGODENDROGLIOMA,METASTAT.		1 (1%)	
HEMATOPOIETIC SYSTEM			
*MULTIPLE ORGANS	(120)	(122)	(161)
MALIG.LYMPHOMA, LYMPHOCYTIC TYPE	2 (2%)	1 (1%)	3 (2%)
LEUKEMIA,NOS	1 (1%)		
#SPLEEN	(119)	(121)	(159)
FIBROSARCOMA, METASTATIC		1 (1%)	
#LYMPH NODE	(119)	(121)	(161)
MALIG.LYMPHOMA, HISTIOCYTIC TYPE		1 (1%)	
#CERVICAL LYMPH NODE	(119)	(121)	(161)
UNDIFFERENTIATED CARCINOMA METAS			1 (1%)
SARCOMA, NOS			1 (1%)
CIRCULATORY SYSTEM			
*MULTIPLE ORGANS	(120)	(122)	(161)
HEMANGIOSARCOMA	1 (1%)		
#UTERUS	(120)	(116)	(156)
ADENOCARCINOMA, NOS		1 (1%)	
CYSTADENOMA, NOS	1 (1%)		
FIBROMA			1 (1%)
LEIOMYOMA			1 (1%)
ENDOMETRIAL STROMAL POLYP		1 (1%)	
#CERVIX UTERI	(120)	(116)	(156)
PAPILLARY ADENOMA	1 (1%)		
NERVOUS SYSTEM			
#BRAIN	(118)	(119)	(156)
OLIGODENDROGLIOMA		1 (1%)	
SPECIAL SENSE ORGANS			
*EYE APPENDAGE	(120)	(122)	(161)
SARCOMA, NOS		1 (1%)	
MUSCULOSKELETAL SYSTEM			
NONE			

NUMBER OF ANIMALS WITH TISSUE EXAMINED MICROSCOPICALLY
* NUMBER OF ANIMALS NECROPSIED

TABLE D6. FEMALE HAMSTERS: NEOPLASMS (CONTINUED)

	CONTROL	DMH	IR CHRYSOTILE PLUS DMH
BODY CAVITIES			
NONE			
ALL OTHER SYSTEMS			
NONE			
#SPLEEN	(119)	(121)	(159)
HEMANGIOMA			1 (1%)
DIGESTIVE SYSTEM			
*GALLBLADDER	(120)	(122)	(161)
PAPILLOMA, NOS	1 (1%)		
#COLON	(120)	(118)	(159)
ADENOMATOUS POLYP, NOS		1 (1%)	
#CECUM	(120)	(118)	(159)
LIPOMA	1 (1%)		
*RECTUM	(120)	(122)	(161)
SQUAMOUS CELL CARCINOMA		1 (1%)	
URINARY SYSTEM			
#KIDNEY	(120)	(122)	(161)
UNDIFFERENTIATED CARCINOMA METAS			1 (1%)
ENDOCRINE SYSTEM			
#PITUITARY	(62)	(59)	(109)
OLIGODENDROGLIOMA,METASTAT.		1 (2%)	
#ADRENAL	(120)	(120)	(158)
CORTICAL ADENOMA	3 (3%)	2 (2%)	6 (4%)
CORTICAL CARCINOMA			2 (1%)
#THYROID	(112)	(108)	(141)
C-CELL CARCINOMA	1 (1%)		
#PARATHYROID	(74)	(57)	(91)
ADENOMA, NOS	1 (1%)	2 (4%)	
#PANCREATIC ISLETS	(116)	(119)	(149)
ISLET-CELL ADENOMA	5 (4%)	2 (2%)	4 (3%)
REPRODUCTIVE SYSTEM			
*VAGINA	(120)	(122)	(161)
PAPILLOMA, NOS			1 (1%)

NUMBER OF ANIMALS WITH TISSUE EXAMINED MICROSCOPICALLY
* NUMBER OF ANIMALS NECROPSIED

TABLE D6. FEMALE HAMSTERS: NEOPLASMS (CONTINUED)

	CONTROL	DMH	IR CHRYSOTILE PLUS DMH
ANIMAL DISPOSITION SUMMARY			
ANIMALS INITIALLY IN STUDY	128	126	174
NATURAL DEATH@	115	108	163
MORIBUND SACRIFICE	12	18	8
SCHEDULED SACRIFICE			
ACCIDENTALLY KILLED			
TERMINAL SACRIFICE			
ANIMAL MISSING	1		2
@ INCLUDES AUTOLYZED ANIMALS			
TUMOR SUMMARY			
TOTAL ANIMALS WITH PRIMARY TUMORS*	15	15	19
TOTAL PRIMARY TUMORS	18	15	21
TOTAL ANIMALS WITH BENIGN TUMORS	12	8	14
TOTAL BENIGN TUMORS	13	8	14
TOTAL ANIMALS WITH MALIGNANT TUMORS	5	7	7
TOTAL MALIGNANT TUMORS	5	7	7
TOTAL ANIMALS WITH SECONDARY TUMORS#		3	4
TOTAL SECONDARY TUMORS		5	6
TOTAL ANIMALS WITH TUMORS UNCERTAIN-BENIGN OR MALIGNANT			
TOTAL UNCERTAIN TUMORS			
TOTAL ANIMALS WITH TUMORS UNCERTAIN-PRIMARY OR METASTATIC			
TOTAL UNCERTAIN TUMORS			

* PRIMARY TUMORS: ALL TUMORS EXCEPT SECONDARY TUMORS
\# SECONDARY TUMORS: METASTATIC TUMORS OR TUMORS INVASIVE INTO AN ADJACENT ORGAN

APPENDIX E

INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF HAMSTERS ADMINISTERED CHRYSOTILE ASBESTOS IN THE DIET

TABLE E1.

INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF MALE HAMSTERS ADMINISTERED SHORT RANGE CHRYSOTILE ASBESTOS IN THE DIET

CONTROL

ANIMAL NUMBER	011	012	013	031	032	033	041	042	043	051	052	053	061	062	063	071	072	073	081	082	083	091	092	093	101
WEEKS ON STUDY	056	110	081	096	085	069	082	058	087	077	096	070	094	071	075	078	041	021	019	087	066	014	052	047	094
RESPIRATORY SYSTEM																									
LUNGS AND BRONCHI	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
TRACHEA	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
HEMATOPOIETIC SYSTEM																									
BONE MARROW	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
SPLEEN	+	+	-	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
LYMPH NODES	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
THYMUS	+	-	+	-	+	-	+	+	-	+	-	+	-	+	+	+	+	+	+	+	+	+	+	+	+
CIRCULATORY SYSTEM																									
HEART	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
DIGESTIVE SYSTEM																									
SALIVARY GLAND	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
LIVER	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
BILE DUCT	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
GALLBLADDER & COMMON BILE DUCT	N	N	N	+	N	+	N	+	N	N	N	N	+	N	N	+	+	N	N	N	N	N	+	+	+
PANCREAS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
ESOPHAGUS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+
STOMACH SQUAMOUS CELL PAPILLOMA	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+
SMALL INTESTINE ADENOMA, NOS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
																		X							
LARGE INTESTINE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
URINARY SYSTEM																									
KIDNEY	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
URINARY BLADDER	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
ENDOCRINE SYSTEM																									
PITUITARY	-	+	+	-	-	+	+	+	-	-	+	+	+	+	+	-	+	+	--	+	+	+	+	+	+
ADRENAL CORTICAL ADENOMA CORTICAL CARCINOMA PHEOCHROMOCYTOMA	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
									X	X				X						X					
THYROID C-CELL ADENOMA C-CELL CARCINOMA	+	+	+	-	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	-	+	+	+	+	+
PARATHYROID	+	+	-	-	+	+	+	+	+	+	-	+	-	+	+	+	+	+	-	-	+	+	-	+	-
PANCREATIC ISLETS ISLET-CELL ADENOMA ISLET-CELL CARCINOMA	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
REPRODUCTIVE SYSTEM																									
MAMMARY 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
TESTIS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
PROSTATE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	-	+	+	+	+	+	+
NERVOUS SYSTEM																									
BRAIN ASTROCYTOMA	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
												X													
ALL OTHER SYSTEMS																									
MULTIPLE ORGANS NOS MALIG.LYMPHOMA, LYMPHOCYTIC TYPE MALIG.LYMPHOMA, HISTIOCYTIC TYPE	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N

+: TISSUE EXAMINED MICROSCOPICALLY
-: REQUIRED TISSUE NOT EXAMINED MICROSCOPICALLY
X: TUMOR INCIDENCE
N: NECROPSY, NO AUTOLYSIS, NO MICROSCOPIC EXAMINATION

: NO TISSUE INFORMATION SUBMITTED
C: NECROPSY, NO HISTOLOGY DUE TO PROTOCOL
A: AUTOLYSIS
M: ANIMAL MISSING
B: NO NECROPSY PERFORMED

TABLE E1. MALE HAMSTERS: TUMOR PATHOLOGY (CONTINUED) CONTROL

ANIMAL NUMBER	102	103	111	112	113	121	122	123	131	132	133	141	142	143	151	152	153	161	162	163	171	172	173	181	182
WEEKS ON STUDY	073	044	097	099	071	030	101	101	041	093	117	102	107	092	098	098	030	101	095	075	091	078	080	076	056
RESPIRATORY SYSTEM																									
LUNGS AND BRONCHI	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
TRACHEA	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
HEMATOPOIETIC SYSTEM																									
BONE MARROW	+	+	+	+	+	+	+	+	+	+	+	+	+	+	−	+	+	+	−	+	+	+	+	+	+
SPLEEN	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
LYMPH NODES	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
THYMUS	+	+	−	−	+	+	−	+	+	−	−	+	+	−	−	−	+	+	+	+	+	+	−	+	+
CIRCULATORY SYSTEM																									
HEART	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	−	+
DIGESTIVE SYSTEM																									
SALIVARY GLAND	+	−	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
LIVER	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
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	+	
PANCREAS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	−	+	+	+	−	
ESOPHAGUS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	−	+	+	−	+	+	+
STOMACH SQUAMOUS CELL PAPILLOMA	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
SMALL INTESTINE ADENOMA, NOS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
LARGE INTESTINE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
URINARY SYSTEM																									
KIDNEY	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
URINARY BLADDER	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	−	+	+	+	+	+	+
ENDOCRINE SYSTEM																									
PITUITARY	+	+	+	+	+	−	+	+	+	−	+	+	+	+	+	+	+	+	+	+	−	−	−	+	−
ADRENAL CORTICAL ADENOMA CORTICAL CARCINOMA PHEOCHROMOCYTOMA	+	+	+	+	+	+	+	+	+ X	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+ X	+
THYROID C-CELL ADENOMA C-CELL CARCINOMA	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	−	+	+
PARATHYROID	−	+	−	−	+	−	+	+	+	−	+	+	+	+	+	−	−	+	−	−	+	−	+	+	+
PANCREATIC ISLETS ISLET-CELL ADENOMA ISLET-CELL CARCINOMA	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	−	+	+	+	−
REPRODUCTIVE SYSTEM																									
MAMMARY 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
TESTIS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	−	+	+	+	+	+
PROSTATE	−	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	−	+	−	+	+	+
NERVOUS SYSTEM																									
BRAIN ASTROCYTOMA	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
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
MALIG.LYMPHOMA, LYMPHOCYTIC TYPE																									
MALIG.LYMPHOMA, HISTIOCYTIC TYPE												X													

+: TISSUE EXAMINED MICROSCOPICALLY
−: REQUIRED TISSUE NOT EXAMINED MICROSCOPICALLY
X: TUMOR INCIDENCE
N: NECROPSY, NO AUTOLYSIS, NO MICROSCOPIC EXAMINATION

: NO TISSUE INFORMATION SUBMITTED
C: NECROPSY, NO HISTOLOGY DUE TO PROTOCOL
A: AUTOLYSIS
M: ANIMAL MISSING
B: NO NECROPSY PERFORMED

TABLE E1. MALE HAMSTERS: TUMOR PATHOLOGY (CONTINUED) CONTROL

ANIMAL NUMBER	183	191	192	193	202	203	211	212	213	221	222	223	231	232	233	241	242	243	251	252	253	261	262	263	271
WEEKS ON STUDY	072	044	046	053	028	022	111	116	124	052	050	054	046	088	059	094	076	065	094	014	051	071	086	067	041
RESPIRATORY SYSTEM																									
LUNGS AND BRONCHI	+	A	+	+	A	+	+	+	+	A	+	+	+	+	+	+	+	+	+	A	A	+	+	+	+
TRACHEA	+	A	+	+	A	+	+	+	+	A	+	+	+	+	+	+	+	+	+	A	A	+	+	+	+
HEMATOPOIETIC SYSTEM																									
BONE MARROW	+	A	+	+	A	-	+	+	+	A	+	+	+	+	+	+	+	+	+	A	A	+	+	+	+
SPLEEN	+	A	+	+	A	+	+	+	+	A	+	+	+	+	+	+	+	-	+	A	A	+	+	+	+
LYMPH NODES	+	A	+	+	A	+	+	+	+	A	+	+	+	+	+	+	+	+	+	A	A	+	+	+	+
THYMUS	+	A	+	+	A	+	+	-	-	A	+	+	+	+	+	+	+	-	+	A	A	+	+	+	+
CIRCULATORY SYSTEM																									
HEART	+	A	+	+	A	+	+	+	+	A	+	+	+	+	+	+	+	+	+	A	A	+	+	+	+
DIGESTIVE SYSTEM																									
SALIVARY GLAND	+	A	+	+	A	+	+	+	+	A	+	+	+	+	+	+	+	+	+	A	A	+	+	+	+
LIVER	+	A	+	+	A	+	+	+	+	A	+	+	+	+	+	+	+	+	+	A	A	+	+	+	+
BILE DUCT	+	A	+	+	A	+	+	+	+	A	+	+	+	+	+	+	+	+	+	A	A	+	+	+	+
GALLBLADDER & COMMON BILE DUCT	N	A	N	+	A	N	N	N	N	A	N	+	N	N	+	N	N	N	N	A	A	N	N	N	+
PANCREAS	+	A	+	+	A	+	+	+	+	A	+	+	+	+	+	+	+	+	+	A	A	+	+	+	+
ESOPHAGUS	+	A	+	+	A	+	+	+	+	A	+	+	+	+	+	+	+	+	+	A	A	+	+	+	+
STOMACH SQUAMOUS CELL PAPILLOMA	+	A	+	+	A	+	+	+	+	A	+	+	+	+ X	+	+	+	+	+	A	A	+	+	+	+
SMALL INTESTINE ADENOMA, NOS	+	A	+	+	A	+	+	+	+	A	+	+	+	+	+	+	+	+	+	A	A	+	+	+	+
LARGE INTESTINE	+	A	+	+	A	+	+	+	+	A	+	+	+	+	+	+	+	+	+	A	A	+	+	+	+
URINARY SYSTEM																									
KIDNEY	+	A	+	+	A	+	+	+	+	A	+	+	+	+	+	+	+	+	+	A	A	+	+	+	+
URINARY BLADDER	+	A	+	+	A	+	+	+	+	A	+	+	+	+	+	+	+	+	+	A	A	+	+	+	+
ENDOCRINE SYSTEM																									
PITUITARY	+	A	+	+	A	+	+	+	+	A	-	+	+	+	+	+	+	-	+	A	A	-	-	+	-
ADRENAL CORTICAL ADENOMA CORTICAL CARCINOMA PHEOCHROMOCYTOMA	+	A	+	+	A	+	+ X	+	+	A	+	+	+	+	+	+	+	+	+ X	A	A	+	+	+	+
THYROID C-CELL ADENOMA C-CELL CARCINOMA	+	A	+	+	A	+	+	+ X	+	A	+	+	+	+	+	+	+	+	+	A	A	+	+	+	+
PARATHYROID	+	A	-	-	A	-	-	-	+	A	-	-	-	+	-	-	-	-	-	A	A	+	+	-	+
PANCREATIC ISLETS ISLET-CELL ADENOMA ISLET-CELL CARCINOMA	+	A	+	+	A	+	+	+	+	A	+	+	+	+	+	+	+	+	+	A	A	+	+	+	+
REPRODUCTIVE SYSTEM																									
MAMMARY GLAND	N	A	N	N	A	N	N	N	N	A	N	N	N	N	N	N	N	N	N	A	A	N	N	N	N
TESTIS	+	A	+	+	A	+	+	+	+	A	+	+	+	+	+	+	+	+	+	A	A	+	+	+	+
PROSTATE	-	A	+	+	A	+	+	+	+	A	+	+	+	-	+	+	+	+	+	A	A	-	+	+	+
NERVOUS SYSTEM																									
BRAIN ASTROCYTOMA	+	A	+	+	A	+	+	+	+	A	+	+	+	+	+	+	+	+	+	A	A	+	+	+	+
ALL OTHER SYSTEMS																									
MULTIPLE ORGANS NOS MALIG.LYMPHOMA, LYMPHOCYTIC TYPE MALIG.LYMPHOMA, HISTIOCYTIC TYPE	N	A	N	N	A	N	N	N	N	A	N	N	N	N	N	N	N	N	N	A	A	N	N	N	N

+: TISSUE EXAMINED MICROSCOPICALLY
-: REQUIRED TISSUE NOT EXAMINED MICROSCOPICALLY
X: TUMOR INCIDENCE
N: NECROPSY, NO AUTOLYSIS, NO MICROSCOPIC EXAMINATION

: NO TISSUE INFORMATION SUBMITTED
C: NECROPSY, NO HISTOLOGY DUE TO PROTOCOL
A: AUTOLYSIS
M: ANIMAL MISSING
B: NO NECROPSY PERFORMED

TABLE E1. MALE HAMSTERS: TUMOR PATHOLOGY (CONTINUED) CONTROL

ANIMAL NUMBER	272	273	281	282	283	291	292	293	301	302	303	311	312	322	323	341	342	343	351	352	353	361	362	363	381
WEEKS ON STUDY	041	123	075	068	088	080	025	097	066	092	060	055	083	082	090	044	077	055	069	065	055	091	040	044	044
RESPIRATORY SYSTEM																									
LUNGS AND BRONCHI	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
TRACHEA	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
HEMATOPOIETIC SYSTEM																									
BONE MARROW	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
SPLEEN	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
LYMPH NODES	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
THYMUS	+	-	+	+	+	+	+	-	A	-	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+
CIRCULATORY SYSTEM																									
HEART	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
DIGESTIVE SYSTEM																									
SALIVARY GLAND	+	+	+	+	+	-	+	-	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
LIVER	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
BILE DUCT	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
GALLBLADDER & COMMON BILE DUCT	N	N	N	N	+	+	N	N	A	N	N	+	N	+	N	N	N	N	N	N	N	+	N	N	N
PANCREAS	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
ESOPHAGUS	+	+	+	+	+	+	+	+	A	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+
STOMACH SQUAMOUS CELL PAPILLOMA	+	+	+	+	+	+	+	+	A	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+
SMALL INTESTINE ADENOMA, NOS	+	+	+	+	+	+	+	+	A	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+
LARGE INTESTINE	+	+	+	+	+	+	+	+	A	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+
URINARY SYSTEM																									
KIDNEY	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
URINARY BLADDER	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
ENDOCRINE SYSTEM																									
PITUITARY	+	-	+	-	+	+	-	+	A	+	+	-	+	-	+	+	-	+	-	+	-	+	+	+	+
ADRENAL CORTICAL ADENOMA CORTICAL CARCINOMA PHEOCHROMOCYTOMA	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
		X																							
THYROID C-CELL ADENOMA C-CELL CARCINOMA	-	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
		X																						X	
PARATHYROID	-	-	-	+	+	+	-	+	A	-	+	+	+	+	+	+	+	-	-	+	-	+	+	+	+
PANCREATIC ISLETS ISLET-CELL ADENOMA ISLET-CELL CARCINOMA	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
REPRODUCTIVE SYSTEM																									
MAMMARY GLAND	N	N	N	N	N	N	N	N	A	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
TESTIS	+	+	+	+	+	+	+	+	A	+	+	-	+	+	+	+	+	+	-	+	+	+	+	+	+
PROSTATE	+	+	-	+	+	+	+	+	A	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+
NERVOUS SYSTEM																									
BRAIN ASTROCYTOMA	+	+	+	+	+	+	+	+	A	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+
ALL OTHER SYSTEMS																									
MULTIPLE ORGANS NOS MALIG.LYMPHOMA, LYMPHOCYTIC TYPE MALIG.LYMPHOMA, HISTIOCYTIC TYPE	N	N	N	N	N	N	N	N	A	N	N	N X	N	N	N	N	N	N	N	N	N	N	N	N	N

+: TISSUE EXAMINED MICROSCOPICALLY
-: REQUIRED TISSUE NOT EXAMINED MICROSCOPICALLY
X: TUMOR INCIDENCE
N: NECROPSY, NO AUTOLYSIS, NO MICROSCOPIC EXAMINATION
: NO TISSUE INFORMATION SUBMITTED
C: NECROPSY, NO HISTOLOGY DUE TO PROTOCOL
A: AUTOLYSIS
M: ANIMAL MISSING
B: NO NECROPSY PERFORMED

TABLE E1. MALE HAMSTERS: TUMOR PATHOLOGY (CONTINUED) CONTROL

ANIMAL NUMBER	38 2	38 3	39 1	39 2	39 3	40 1	40 2	40 3	41 1	41 2	41 3	42 1	42 2	42 3	43 1	43 2	43 3	44 1	44 2	44 3	45 1	45 2	45 3	TOTAL TISSUES TUMORS
WEEKS ON STUDY	102	061	051	001	015	019	013	011	002	031	021	112	023	095	068	080	059	117	049	079	044	011	097	
RESPIRATORY SYSTEM																								
LUNGS AND BRONCHI	+	+	+	+	+	A	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	115
TRACHEA	+	+	+	+	+	A	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	115
HEMATOPOIETIC SYSTEM																								
BONE MARROW	+	+	+	+	+	A	A	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	111
SPLEEN	+	+	+	+	+	A	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	112
LYMPH NODES	+	+	+	+	+	A	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	114
THYMUS	-	+	+	+	+	A	A	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	-	90
CIRCULATORY SYSTEM																								
HEART	+	+	+	+	+	A	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	114
DIGESTIVE SYSTEM																								
SALIVARY GLAND	+	+	+	+	+	A	A	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	110
LIVER	+	+	+	+	+	A	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	115
BILE DUCT	+	+	+	+	+	A	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	115
GALLBLADDER & COMMON BILE DUCT	N	+	N	+	N	A	A	N	N	N	N	N	N	N	N	N	+	+	N	N	N	N	N	115*
PANCREAS	+	+	+	+	+	A	A	+	+	-	+	+	+	+	+	-	+	+	+	+	+	+	+	111
ESOPHAGUS	+	+	+	+	+	A	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	111
STOMACH SQUAMOUS CELL PAPILLOMA	+	+	+	+	+	A	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	113 1
SMALL INTESTINE ADENOMA, NOS	+	+	+	+	+	A	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	114 1
LARGE INTESTINE	+	+	+	+	+	A	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	114
URINARY SYSTEM																								
KIDNEY	+	+	+	+	+	A	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	115
URINARY BLADDER	+	+	+	+	+	A	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	114
ENDOCRINE SYSTEM																								
PITUITARY	+	+	+	+	+	A	A	+	+	+	+	+	A	+	+	-	-	+	-	-	+	+	+	84
ADRENAL CORTICAL ADENOMA CORTICAL CARCINOMA PHEOCHROMOCYTOMA	+	+	+	+	+ X	A	A	+	+	+	+ X	+ X	+	+	+	+	+	+	+	+	+	+	+	115 7 3 2
THYROID C-CELL ADENOMA C-CELL CARCINOMA	+ X	+	+	+	+	A	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	109 3 1
PARATHYROID	+	+	+	+	+	A	A	+	+	+	+	+	+	+	+	+	-	+	-	+	+	+	-	72
PANCREATIC ISLETS ISLET-CELL ADENOMA ISLET-CELL CARCINOMA	+ X	+	+	+	+	A	A	+ X	+	-	+	+ X	+	+	+	-	+	+	+	+	+	+	+	111 2 1
REPRODUCTIVE SYSTEM																								
MAMMARY GLAND	N	N	N	N	N	A	A	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	115*
TESTIS	+	+	+	+	+	A	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	112
PROSTATE	+	+	+	+	+	A	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	105
NERVOUS SYSTEM																								
BRAIN ASTROCYTOMA	+	+	+	+	+	A	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	114 1
ALL OTHER SYSTEMS																								
MULTIPLE ORGANS NOS MALIG.LYMPHOMA, LYMPHOCYTIC TYPE MALIG.LYMPHOMA, HISTIOCYTIC TYPE	N	N	N	N	N	A	A	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	115* 1 1

* ANIMALS NECROPSIED

+: TISSUE EXAMINED MICROSCOPICALLY
-: REQUIRED TISSUE NOT EXAMINED MICROSCOPICALLY
X: TUMOR INCIDENCE
N: NECROPSY, NO AUTOLYSIS, NO MICROSCOPIC EXAMINATION
: NO TISSUE INFORMATION SUBMITTED
C: NECROPSY, NO HISTOLOGY DUE TO PROTOCOL
A: AUTOLYSIS
M: ANIMAL MISSING
B: NO NECROPSY PERFORMED

TABLE E1.

INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF MALE HAMSTERS ADMINISTERED SHORT RANGE CHRYSOTILE ASBESTOS IN THE DIET

SHORT RANGE CHRYSOTILE

ANIMAL NUMBER	011	012	013	021	022	023	031	032	033	041	042	043	051	052	053	061	062	063	071	072	073	081	082	083	091
WEEKS ON STUDY	043	107	078	117	103	115	080	094	104	050	070	113	027	110	117	088	097	117	088	102	043	100	102	103	069
RESPIRATORY SYSTEM																									
LUNGS AND BRONCHI PARAGANGLIOMA, METASTATIC SARCOMA, NOS, METASTATIC	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	A	+
TRACHEA SARCOMA, NOS, METASTATIC	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	A	+
HEMATOPOIETIC SYSTEM																									
BONE MARROW	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	–	+	+	+	+	+	A	+
SPLEEN HEMANGIOSARCOMA	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	A	+
LYMPH NODES C-CELL CARCINOMA, METASTATIC	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	A	+
THYMUS PARAGANGLIOMA, METASTATIC	–	–	+	–	–	–	–	–	–	+	+	+	+	–	A	–	+	–	–	–	+	–	–	A	+
CIRCULATORY SYSTEM																									
HEART PARAGANGLIOMA, MALIGNANT	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	A	+
DIGESTIVE SYSTEM																									
SALIVARY GLAND	+	+	+	+	–	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	–	A	+
LIVER HEMANGIOSARCOMA OSTEOSARCOMA, METASTATIC	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	A	+
BILE DUCT	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	A	+
GALLBLADDER & COMMON BILE DUCT	N	N	N	N	N	N	N	N	N	N	N	N	+	N	A	N	N	+	N	N	N	N	N	A	N
PANCREAS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	A	+
ESOPHAGUS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	A	+
STOMACH	+	+	+	+	+	+	+	+	+	+	+	+	–	+	A	+	+	+	+	+	+	+	+	A	+
SMALL INTESTINE	+	+	+	+	+	+	+	+	+	+	+	+	–	+	A	+	+	+	+	+	+	+	+	A	+
LARGE INTESTINE	+	+	+	+	+	+	+	+	+	+	+	+	–	+	A	+	+	+	+	+	+	+	+	A	+
URINARY SYSTEM																									
KIDNEY ADENOMA, NOS TUBULAR-CELL ADENOMA	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	A	+
URINARY BLADDER	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	A	+
ENDOCRINE SYSTEM																									
PITUITARY	+	+	+	+	–	+	+	+	+	+	–	+	–	+	A	–	–	+	+	–	–	+	+	A	–
ADRENAL CORTICAL ADENOMA CORTICAL CARCINOMA PHEOCHROMOCYTOMA NEURILEMOMA	+	+	+ X	+ X	+ X	+ X	+	+	+	+	+	+	+	+	A	+	+	+	+	+ X	+	+	+ X	A	+
THYROID C-CELL ADENOMA C-CELL CARCINOMA	+	–	+	+	+	+	+	–	+	+	+	+	+	+	A	–	+	+	+	+	+	+	+	A	+
PARATHYROID ADENOMA, NOS	+	–	+	+	+	–	+	–	–	–	+	+	–	–	A	–	–	+	+	–	–	–	–	A	+
PANCREATIC ISLETS ISLET-CELL ADENOMA	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	A	+
REPRODUCTIVE SYSTEM																									
MAMMARY GLAND	N	N	N	N	N	N	N	N	N	N	N	N	N	N	A	N	N	N	N	N	N	N	N	A	N
TESTIS HEMANGIOMA	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	A	+
PROSTATE	+	+	–	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	A	+
NERVOUS SYSTEM																									
BRAIN	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	–	+	+	+	+	+	+	A	+
MUSCULOSKELETAL SYSTEM																									
MUSCLE FIBROSARCOMA	N	N	N	N	N	N	N	N	N	N	N	N	N	N	A	N	N	N	N	N	N	N	N	A	N
BODY CAVITIES																									
PLEURA OSTEOSARCOMA	N	N	N	N	N	N	N	N	N	N	N	N	N	N	A	N	N	N	N	N	N	N	N	A	N
ALL OTHER SYSTEMS																									
MULTIPLE ORGANS NOS MALIG.LYMPHOMA, LYMPHOCYTIC TYPE GRANULOCYTIC LEUKEMIA	N	N	N	N	N	N	N	N	N	N	N	N	N	N	A	N	N	N	N	N	N	N	N	A	N

+: TISSUE EXAMINED MICROSCOPICALLY
–: REQUIRED TISSUE NOT EXAMINED MICROSCOPICALLY
X: TUMOR INCIDENCE
N: NECROPSY, NO AUTOLYSIS, NO MICROSCOPIC EXAMINATION
: NO TISSUE INFORMATION SUBMITTED
C: NECROPSY, NO HISTOLOGY DUE TO PROTOCOL
A: AUTOLYSIS
M: ANIMAL MISSING
B: NO NECROPSY PERFORMED

TABLE E1. MALE HAMSTERS: TUMOR PATHOLOGY (CONTINUED) SHORT RANGE

ANIMAL NUMBER	092	093	101	102	103	111	112	113	121	122	123	131	132	133	141	142	143	151	152	153	161	162	163	171	172
WEEKS ON STUDY	012	069	081	047	073	072	092	087	094	053	063	084	096	098	098	080	090	073	040	098	123	037	034	108	118
RESPIRATORY SYSTEM																									
LUNGS AND BRONCHI PARAGANGLIOMA, METASTATIC SARCOMA, NOS, METASTATIC	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+
TRACHEA SARCOMA, NOS, METASTATIC	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+
HEMATOPOIETIC SYSTEM																									
BONE MARROW	A	+	+	+	+	+	+	–	+	+	+	+	+	+	+	A	+	+	+	–	+	+	+	+	+
SPLEEN HEMANGIOSARCOMA	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+
LYMPH NODES C-CELL CARCINOMA, METASTATIC	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+
THYMUS PARAGANGLIOMA, METASTATIC	A	+	–	+	+	+	+	–	+	+	+	+	–	+	+	A	+	+	–	+	–	–	–	–	+
CIRCULATORY SYSTEM																									
HEART PARAGANGLIOMA, MALIGNANT	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+
DIGESTIVE SYSTEM																									
SALIVARY GLAND	A	+	+	+	+	+	+	+	+	+	+	–	+	+	+	A	–	+	+	+	+	+	+	+	+
LIVER HEMANGIOSARCOMA OSTEOSARCOMA, METASTATIC	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+
BILE DUCT	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+
GALLBLADDER & COMMON BILE DUCT	A	N	N	N	N	N	N	N	N	N	N	N	N	N	N	A	N	+	N	N	+	N	N	N	N
PANCREAS	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+
ESOPHAGUS	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+
STOMACH	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+
SMALL INTESTINE	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+
LARGE INTESTINE	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+
URINARY SYSTEM																									
KIDNEY ADENOMA, NOS TUBULAR-CELL ADENOMA	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+
URINARY BLADDER	A	+	+	+	–	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+
ENDOCRINE SYSTEM																									
PITUITARY	A	–	+	–	–	–	–	+	–	+	+	–	+	+	+	A	–	–	–	+	+	+	+	+	+
ADRENAL CORTICAL ADENOMA CORTICAL CARCINOMA PHEOCHROMOCYTOMA NEURILEMOMA	A	+ X	+	+	+	+	+ X	+	–	+	+	+	+ X	+	+	A	+	+	+	+	+	+	+	+	–
THYROID C-CELL ADENOMA C-CELL CARCINOMA	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	–	+	+	+	+	+	+	+	+
PARATHYROID ADENOMA, NOS	A	–	+	–	–	–	+	–	–	+	+	–	–	+	+	A	–	+	–	+	+	–	+	+	+
PANCREATIC ISLETS ISLET-CELL ADENOMA	A	+	+	+	+	+	+	+	+	+	+	+	+	+ X	+	A	+	+	+	+	+	+	+	+	+
REPRODUCTIVE SYSTEM																									
MAMMARY GLAND	A	N	N	N	N	N	N	N	N	N	N	N	N	N	N	A	N	N	N	N	N	N	N	N	N
TESTIS HEMANGIOMA	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+
PROSTATE	A	+	+	+	–	–	+	+	+	+	+	–	+	+	+	A	+	+	+	+	+	+	+	+	+
NERVOUS SYSTEM																									
BRAIN	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+
MUSCULOSKELETAL SYSTEM																									
MUSCLE FIBROSARCOMA	A	N	N	N	N X	N	N	N	N	N	N	N	N	N	N	A	N	N	N	N	N	N	N	N	N
BODY CAVITIES																									
PLEURA OSTEOSARCOMA	A	N	N	N	N	N	N	N	N	N	N	N	N	N	N	A	N	N	N	N	N	N	N	N	N
ALL OTHER SYSTEMS																									
MULTIPLE ORGANS NOS MALIG.LYMPHOMA, LYMPHOCYTIC TYPE GRANULOCYTIC LEUKEMIA	A	N	N	N	N	N	N	N	N	N	N X	N	N	N	N	A	N	N X	N	N	N	N	N	N	N

+: TISSUE EXAMINED MICROSCOPICALLY
–: REQUIRED TISSUE NOT EXAMINED MICROSCOPICALLY
X: TUMOR INCIDENCE
N: NECROPSY, NO AUTOLYSIS, NO MICROSCOPIC EXAMINATION

: NO TISSUE INFORMATION SUBMITTED
C: NECROPSY, NO HISTOLOGY DUE TO PROTOCOL
A: AUTOLYSIS
M: ANIMAL MISSING
B: NO NECROPSY PERFORMED

TABLE E1. MALE HAMSTERS: TUMOR PATHOLOGY (CONTINUED) SHORT RANGE

ANIMAL NUMBER	173	181	182	183	191	192	193	201	202	203	211	212	213	221	222	223	231	232	233	241	242	243	251	252	253
WEEKS ON STUDY	086	087	087	090	038	065	067	127	108	074	087	094	041	063	091	040	085	066	099	090	021	039	084	075	111
RESPIRATORY SYSTEM																									
LUNGS AND BRONCHI PARAGANGLIOMA, METASTATIC SARCOMA, NOS, METASTATIC	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+
TRACHEA SARCOMA, NOS, METASTATIC	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+
HEMATOPOIETIC SYSTEM																									
BONE MARROW	+	+	+	+	+	+	−	+	+	+	+	+	+	+	+	+	+	−	+	A	+	+	+	+	+
SPLEEN HEMANGIOSARCOMA	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+
LYMPH NODES C-CELL CARCINOMA, METASTATIC	+	+	+	+	+	+	+	+	+	−	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+
THYMUS PARAGANGLIOMA, METASTATIC	+	+	−	+	+	+	+	−	−	+	−	+	−	+	+	−	+	+	−	A	+	−	+	+	+
CIRCULATORY SYSTEM																									
HEART PARAGANGLIOMA, MALIGNANT	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+
DIGESTIVE SYSTEM																									
SALIVARY GLAND	+	+	+	+	+	+	+	+	+	+	+	+	+	−	+	+	+	+	+	A	+	+	+	+	+
LIVER HEMANGIOSARCOMA OSTEOSARCOMA, METASTATIC	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+
BILE DUCT	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+
GALLBLADDER & COMMON BILE DUCT	+	N	N	+	N	N	N	N	N	N	+	+	N	N	N	N	+	N	N	+	A	N	+	N	N
PANCREAS	−	+	−	+	+	+	+	−	+	+	•	•	+	+	+	+	+	+	+	A	+	+	+	+	+
ESOPHAGUS	+	+	+	+	+	+	+	+	+	+	+	−	+	+	+	+	+	+	+	A	+	+	+	+	+
STOMACH	+	+	+	+	+	+	+	+	+	+	+	+	+	−	+	+	+	+	+	A	+	+	+	+	+
SMALL INTESTINE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+
LARGE INTESTINE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+
URINARY SYSTEM																									
KIDNEY ADENOMA, NOS TUBULAR-CELL ADENOMA	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+
URINARY BLADDER	+	+	−	+	+	+	+	+	+	+	+	−	+	+	+	+	+	+	+	A	+	+	+	+	+
ENDOCRINE SYSTEM																									
PITUITARY	+	−	−	+	+	−	−	−	−	+	+	+	+	+	+	−	+	−	+	A	+	+	−	−	
ADRENAL CORTICAL ADENOMA CORTICAL CARCINOMA PHEOCHROMOCYTOMA NEURILEMOMA	+	+	+	+	+	+	+	+	+	+	+ X	+	+	+	+	+	+	+	+ X	+ X	A	+	+	+	+
THYROID C-CELL ADENOMA C-CELL CARCINOMA	+	+	+	+	+	+	+	+	+ X	−	+	+	+	+	+	+	+	+	+	A	+	+	+	−	
PARATHYROID ADENOMA, NOS	+	+	−	−	−	−	−	−	+	−	−	−	−	+	−	−	−	+	+	A	+	+	+	−	
PANCREATIC ISLETS ISLET-CELL ADENOMA	−	+	−	+	+	+	+	−	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+
REPRODUCTIVE SYSTEM																									
MAMMARY GLAND	N	N	N	N	N	N	N	N	+	N	N	N	N	N	N	N	N	N	N	A	N	N	N	N	
TESTIS HEMANGIOMA	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+
PROSTATE	+	−	+	+	+	+	+	+	+	+	−	−	+	+	+	+	+	+	+	A	+	+	+	+	+
NERVOUS SYSTEM																									
BRAIN	+	+	+	+	−	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+
MUSCULOSKELETAL SYSTEM																									
MUSCLE FIBROSARCOMA	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	A	N	N	N	N	
BODY CAVITIES																									
PLEURA OSTEOSARCOMA	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	A	N	N	N	N	
ALL OTHER SYSTEMS																									
MULTIPLE ORGANS NOS MALIG.LYMPHOMA, LYMPHOCYTIC TYPE GRANULOCYTIC LEUKEMIA	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	A	N	N	N	N	

+: TISSUE EXAMINED MICROSCOPICALLY
−: REQUIRED TISSUE NOT EXAMINED MICROSCOPICALLY
X: TUMOR INCIDENCE
N: NECROPSY, NO AUTOLYSIS, NO MICROSCOPIC EXAMINATION

: NO TISSUE INFORMATION SUBMITTED
C: NECROPSY, NO HISTOLOGY DUE TO PROTOCOL
A: AUTOLYSIS
M: ANIMAL MISSING
B: NO NECROPSY PERFORMED

TABLE E1. MALE HAMSTERS: TUMOR PATHOLOGY (CONTINUED) SHORT RANGE

ANIMAL NUMBER	26 11	26 12	26 13	27 11	27 12	27 13	28 11	28 12	28 13	29 11	29 12	29 13	30 11	30 12	30 13	31 11	31 12	31 13	32 12	32 22	32 23	33 11	33 12	33 13	34 11
WEEKS ON STUDY	100 6	101	083	088	072	091	063	081	091	094	061	110	021	039	038	055	055	055	121	091	091	041	077	097	121
RESPIRATORY SYSTEM																									
LUNGS AND BRONCHI	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+
PARAGANGLIOMA, METASTATIC																									
SARCOMA, NOS, METASTATIC																									
TRACHEA	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+
SARCOMA, NOS, METASTATIC																									
HEMATOPOIETIC SYSTEM																									
BONE MARROW	+	+	+	+	-	+	+	+	+	+	+	+	+	+	A	-	+	+	+	+	+	+	+	+	+
SPLEEN	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	-	+	+	-	+	+	+
HEMANGIOSARCOMA																									
LYMPH NODES	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	-	+	+	+	+	+	+
C-CELL CARCINOMA, METASTATIC																									
THYMUS	-	+	+	+	+	-	+	-	-	-	-	-	-	+	A	+	+	+	-	-	-	+	+	+	-
PARAGANGLIOMA, METASTATIC																									
CIRCULATORY SYSTEM																									
HEART	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+
PARAGANGLIOMA, MALIGNANT																									
DIGESTIVE SYSTEM																									
SALIVARY GLAND	+	+	+	+	+	+	+	+	+	+	+	+	-	+	A	+	+	+	-	-	+	+	+	+	+
LIVER	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+
HEMANGIOSARCOMA																									
OSTEOSARCOMA, METASTATIC																									
BILE DUCT	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+
GALLBLADDER & COMMON BILE DUCT	N	N	N	+	N	N	N	N	+	N	N	N	N	N	A	N	N	N	N	N	N	N	N	+	N
PANCREAS	-	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	-	+	+	+	+	+	+
ESOPHAGUS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+
STOMACH	+	+	+	+	+	+	-	+	+	+	+	+	+	+	A	+	+	+	-	+	+	+	+	+	+
SMALL INTESTINE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	-	+	+	+	+	+	+
LARGE INTESTINE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	-	+	+	+	+	+	+
URINARY SYSTEM																									
KIDNEY	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+
ADENOMA, NOS					X																				
TUBULAR-CELL ADENOMA																									
URINARY BLADDER	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+
ENDOCRINE SYSTEM																									
PITUITARY	+	+	+	+	-	+	+	+	+	+	+	+	+	-	A	+	-	+	-	+	+	-	+	+	+
ADRENAL	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+
CORTICAL ADENOMA				X																X					
CORTICAL CARCINOMA													X											X	
PHEOCHROMOCYTOMA			X									X													
NEURILEMOMA																									
THYROID	+	+	+	+	+	+	+	-	+	+	+	+	+	+	A	+	+	+	-	+	+	+	+	+	+
C-CELL ADENOMA																									X
C-CELL CARCINOMA																									
PARATHYROID	-	+	+	+	-	+	+	-	+	+	-	-	-	+	A	+	-	+	-	+	+	+	-	-	+
ADENOMA, NOS																									
PANCREATIC ISLETS	-	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	-	+	+	+	+	+	+
ISLET-CELL ADENOMA																									X
REPRODUCTIVE SYSTEM																									
MAMMARY GLAND	N	N	N	N	N	N	N	N	N	N	N	N	N	N	A	N	N	N	N	N	N	N	N	N	N
TESTIS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+
HEMANGIOMA																									
PROSTATE	+	+	+	+	+	+	-	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+
NERVOUS SYSTEM																									
BRAIN	+	+	+	+	+	+	+	+	+	+	+	+	+	-	A	+	+	+	+	+	+	+	+	+	+
MUSCULOSKELETAL SYSTEM																									
MUSCLE	N	N	N	N	N	N	N	N	N	N	N	N	N	N	A	N	N	N	N	N	N	N	N	N	N
FIBROSARCOMA																									
BODY CAVITIES																									
PLEURA	N	N	N	N	N	N	N	N	N	N	N	N	N	N	A	N	N	N	N	N	N	N	N	N	N
OSTEOSARCOMA																									
ALL OTHER SYSTEMS																									
MULTIPLE ORGANS NOS	N	N	N	N	N	N	N	N	N	N	N	N	N	N	A	N	N	N	N	N	N	N	N	N	N
MALIG.LYMPHOMA, LYMPHOCYTIC TYPE																									
GRANULOCYTIC LEUKEMIA																									

+: TISSUE EXAMINED MICROSCOPICALLY
-: REQUIRED TISSUE NOT EXAMINED MICROSCOPICALLY
X: TUMOR INCIDENCE
N: NECROPSY, NO AUTOLYSIS, NO MICROSCOPIC EXAMINATION
: NO TISSUE INFORMATION SUBMITTED
C: NECROPSY, NO HISTOLOGY DUE TO PROTOCOL
A: AUTOLYSIS
M: ANIMAL MISSING
B: NO NECROPSY PERFORMED

TABLE E1. MALE HAMSTERS: TUMOR PATHOLOGY (CONTINUED) SHORT RANGE

ANIMAL NUMBER	34 2	34 3	35 1	35 2	35 3	36 1	36 2	36 3	37 1	37 2	37 3	38 1	38 2	38 3	39 1	39 2	39 3	40 1	40 2	40 3	41 1	41 2	41 3	42 1	42 2
WEEKS ON STUDY	0 9 8	0 4 2	0 9 8	0 6 8	1 0 2	0 4 3	0 4 4	0 4 2	0 3 7	0 8 0	0 7 1	0 9 0	0 5 9	0 7 2	0 9 0	0 6 8	0 4 9	1 1 3	0 2 1	0 1 9	0 6 7	0 9 8	1 2 0	0 6 3	0 9 8
RESPIRATORY SYSTEM																									
LUNGS AND BRONCHI	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	A	+	+	+	+	+
PARAGANGLIOMA, METASTATIC																									
SARCOMA, NOS, METASTATIC																									
TRACHEA	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	A	+	+	+	+	+
SARCOMA, NOS, METASTATIC																									
HEMATOPOIETIC SYSTEM																									
BONE MARROW	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	A	+	+	+	-	+
SPLEEN	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	A	+	+	+	+	+
HEMANGIOSARCOMA																									
LYMPH NODES	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	A	+	+	+	+	+
C-CELL CARCINOMA, METASTATIC																									
THYMUS	+	-	-	-	-	+	+	+	-	+	+	+	+	+	-	+	+	+	A	A	+	+	+	+	+
PARAGANGLIOMA, METASTATIC																									
CIRCULATORY SYSTEM																									
HEART	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	A	+	+	+	+	+
PARAGANGLIOMA, MALIGNANT																									
DIGESTIVE SYSTEM																									
SALIVARY GLAND	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	A	A	+	+	+	+	+
LIVER	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	A	A	+	+	+	+	+
HEMANGIOSARCOMA							X											X							
OSTEOSARCOMA, METASTATIC																									
BILE DUCT	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	A	A	+	+	+	+	+
GALLBLADDER & COMMON BILE DUCT	+	N	+	+	N	N	N	N	N	N	N	N	+	N	N	+	N	N	A	A	N	N	N	N	+
PANCREAS	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	A	+	+	+	+	+
ESOPHAGUS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	A	+	+	+	+	+
STOMACH	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	A	A	+	+	+	+	+
SMALL INTESTINE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	A	A	+	+	+	+	+
LARGE INTESTINE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	A	A	+	+	+	+	+
URINARY SYSTEM																									
KIDNEY	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	A	+	+	+	+	+
ADENOMA, NOS																									
TUBULAR-CELL ADENOMA																									
URINARY BLADDER	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	A	+	+	+	+	+
ENDOCRINE SYSTEM																									
PITUITARY	+	+	+	+	+	-	+	+	+	+	-	+	+	+	+	-	-	+	A	A	-	+	+	+	+
ADRENAL	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	A	+	+	+	+	+
CORTICAL ADENOMA														X							X		X		
CORTICAL CARCINOMA																									
PHEOCHROMOCYTOMA																									
NEURILEMOMA																									
THYROID	+	+	+	+	+	+	+	+	+	+	+	+	-	+	-	+	+	+	A	A	+	+	+	+	+
C-CELL ADENOMA																									
C-CELL CARCINOMA																									
PARATHYROID	+	+	+	+	+	+	+	-	-	-	+	+	-	-	-	-	+	+	A	A	+	+	-	-	+
ADENOMA, NOS																									
PANCREATIC ISLETS	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	A	+	+	+	+	+
ISLET-CELL ADENOMA														X								X			
REPRODUCTIVE SYSTEM																									
MAMMARY GLAND	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	A	A	N	N	N	N	+
TESTIS	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	A	A	+	+	+	+	+
HEMANGIOMA																									
PROSTATE	+	+	+	+	+	+	+	-	+	+	+	+	+	-	-	+	+	+	A	A	+	+	+	-	+
NERVOUS SYSTEM																									
BRAIN	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	A	+	+	+	+	+
MUSCULOSKELETAL SYSTEM																									
MUSCLE	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	+	N	N	A	A	N	N	N	N	N
FIBROSARCOMA																									
BODY CAVITIES																									
PLEURA	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	A	A	N	N	N	N	N
OSTEOSARCOMA																									
ALL OTHER SYSTEMS																									
MULTIPLE ORGANS NOS	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	A	A	N	N	N	N	N
MALIG.LYMPHOMA, LYMPHOCYTIC TYPE																									
GRANULOCYTIC LEUKEMIA																									

+: TISSUE EXAMINED MICROSCOPICALLY
-: REQUIRED TISSUE NOT EXAMINED MICROSCOPICALLY
X: TUMOR INCIDENCE
N: NECROPSY, NO AUTOLYSIS, NO MICROSCOPIC EXAMINATION

: NO TISSUE INFORMATION SUBMITTED
C: NECROPSY, NO HISTOLOGY DUE TO PROTOCOL
A: AUTOLYSIS
M: ANIMAL MISSING
B: NO NECROPSY PERFORMED

TABLE E1. MALE HAMSTERS: TUMOR PATHOLOGY (CONTINUED) SHORT RANGE

ANIMAL NUMBER	42 33	43 31	43 32	43 33	44 01	44 02	44 03	45 01	45 02	45 03	46 01	46 02	46 03	47 01	47 02	47 03	48 01	48 02	48 03	49 01	49 02	49 03	50 01	50 02	50 03
WEEKS ON STUDY	03 77	09 41	11 00	11 91	04 66	02 11	02 11	08 11	00 81	00 00	05 52	41 01	07 08	07 21	11 41	03 83	09 31	01 03	11 01	51 91	99 66	91 51	01 12	02 23	11 10
RESPIRATORY SYSTEM																									
LUNGS AND BRONCHI PARAGANGLIOMA, METASTATIC SARCOMA, NOS, METASTATIC	+	+	+	+	A	A	-	+	+	+	+	+	+	+	B	+	+	+	+	+	+	+	+	+	+
TRACHEA SARCOMA, NOS, METASTATIC	+	+	+	+	A	A	-	+	+	+	+	+	+	+	B	+	+	+	+	+	+	+	+	-	+
HEMATOPOIETIC SYSTEM																									
BONE MARROW	+	+	+	+	A	A	+	+	+	+	+	+	+	+	B	+	+	+	+	+	+	+	+	+	+
SPLEEN HEMANGIOSARCOMA	+	+	+	+	A	A	+	+	+	+	+	+	+	+	B	+	+	+	+	+	+	+	+	+	+
LYMPH NODES C-CELL CARCINOMA, METASTATIC	+	+	+	+	A	A	+	+	+	+	+	+	+	+	B	+	+	+	+	+	+	+	-	+	+
THYMUS PARAGANGLIOMA, METASTATIC	-	+	-	-	A	A	-	-	+	-	+	-	-	+	B	-	+	-	-	+	+	+	+	-	-
CIRCULATORY SYSTEM																									
HEART PARAGANGLIOMA, MALIGNANT	+	+	+	+	A	A	-	+	+	+	+	+	+	+	B	+	+	+	+	+	+	+	+	-	+
DIGESTIVE SYSTEM																									
SALIVARY GLAND	+	+	+	+	A	A	-	+	+	+	+	+	+	+	B	+	+	+	+	+	+	+	+	-	+
LIVER HEMANGIOSARCOMA OSTEOSARCOMA, METASTATIC	+	+	+	+	A	A	+	+	+	+	+	+	+	+	B	+	+	+	+	+	+	+	+	+	+
BILE DUCT	+	+	+	+	A	A	+	+	+	+	+	+	+	+	B	+	+	+	+	+	+	+	+	+	+
GALLBLADDER & COMMON BILE DUCT	N	N	+	N	A	A	+	N	N	N	N	N	N	N	B	N	+	N	N	+	N	N	N	N	+
PANCREAS	+	+	+	+	A	A	+	+	+	+	+	+	+	+	B	+	+	+	+	+	+	+	+	+	+
ESOPHAGUS	+	+	+	+	A	A	+	+	+	+	+	+	+	+	B	+	+	+	+	+	+	+	-	+	+
STOMACH	+	+	+	+	A	A	-	+	+	+	+	+	+	+	B	+	+	+	+	+	+	+	+	+	+
SMALL INTESTINE	+	+	+	+	A	A	+	+	+	+	+	+	+	+	B	+	+	+	+	+	+	+	-	+	+
LARGE INTESTINE	+	+	+	+	A	A	-	+	+	+	+	+	+	+	B	+	+	+	+	+	+	+	-	+	+
URINARY SYSTEM																									
KIDNEY ADENOMA, NOS TUBULAR-CELL ADENOMA	+	+	+	+	A	A	-	+	+	+	+	+	+	+	B	+	+	+	+	+	+	+	+	+	+
													X	X											
URINARY BLADDER	+	+	+	+	A	A	-	+	+	+	+	+	+	+	B	+	+	+	+	+	+	+	+	-	+
ENDOCRINE SYSTEM																									
PITUITARY	+	-	+	+	A	A	-	+	+	+	+	+	-	+	B	-	+	+	-	+	-	+	+	-	+
ADRENAL CORTICAL ADENOMA CORTICAL CARCINOMA PHEOCHROMOCYTOMA NEURILEMOMA	+	+	+	+	A	A	-	+	+	+	+	+	+	+	B	+	+	+	+	+	+	+	+	-	+
			X	X						X			X				X					X	X		X
		X																							
		X	X																						
THYROID C-CELL ADENOMA C-CELL CARCINOMA	+	+	+	+	A	A	-	+	+	+	+	+	+	+	B	+	+	-	-	+	-	+	+	-	-
PARATHYROID ADENOMA, NOS	+	+	+	-	A	A	-	+	+	+	-	+	-	+	B	+	+	-	-	+	-	+	+	-	-
PANCREATIC ISLETS ISLET-CELL ADENOMA	+	+	+	+	A	A	+	+	+	+	+	+	+	+	B	+	+	+	+	+	+	+	+	+	+ X
REPRODUCTIVE SYSTEM																									
MAMMARY GLAND	N	N	N	N	A	A	N	N	N	N	N	N	N	N	B	N	N	N	N	N	N	N	N	N	N
TESTIS HEMANGIOMA	+	+	+	+	A	A	+	+	+	+	+	+	+	+	B	+	+	+	+	+	+	+	+	-	+
PROSTATE	+	+	+	+	A	A	-	+	+	+	+	+	+	+	B	+	+	-	+	+	+	+	+	-	+
NERVOUS SYSTEM																									
BRAIN	+	+	+	+	A	A	-	+	+	+	+	+	+	+	B	+	+	+	+	+	+	+	+	-	+
MUSCULOSKELETAL SYSTEM																									
MUSCLE FIBROSARCOMA	N	N	N	N	A	A	N	N	N	N	N	N	N	N	B	N	N	N	N	N	N	N	N	N	N
BODY CAVITIES																									
PLEURA OSTEOSARCOMA	N	N	N	N	A	A	N	N	N	N	N	N	N	N	B	N	N	N	N	N	N	N	N	N	N
ALL OTHER SYSTEMS																									
MULTIPLE ORGANS NOS MALIG.LYMPHOMA, LYMPHOCYTIC TYPE GRANULOCYTIC LEUKEMIA	N	N	N	N	A	A	N	N	N	N	N	N	N	N	B	N	N	N	N	N	N	N	N	N	N

+: TISSUE EXAMINED MICROSCOPICALLY
-: REQUIRED TISSUE NOT EXAMINED MICROSCOPICALLY
X: TUMOR INCIDENCE
N: NECROPSY, NO AUTOLYSIS, NO MICROSCOPIC EXAMINATION

: NO TISSUE INFORMATION SUBMITTED
C: NECROPSY, NO HISTOLOGY DUE TO PROTOCOL
A: AUTOLYSIS
M: ANIMAL MISSING
B: NO NECROPSY PERFORMED

TABLE E1. MALE HAMSTERS: TUMOR PATHOLOGY (CONTINUED) SHORT RANGE

ANIMAL NUMBER	511	512	513	521	522	523	531	532	533	541	542	543	552	553	561	562	563	571	572	573	581	582	583	591	592
WEEKS ON STUDY	106	090	110	078	044	131	075	074	071	093	095	106	079	103	112	113	080	101	094	099	086	097	087	064	103
RESPIRATORY SYSTEM																									
LUNGS AND BRONCHI PARAGANGLIOMA, METASTATIC SARCOMA, NOS, METASTATIC	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
TRACHEA SARCOMA, NOS, METASTATIC	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+
HEMATOPOIETIC SYSTEM																									
BONE MARROW	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
SPLEEN HEMANGIOSARCOMA	+	+	+ X	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+
LYMPH NODES C-CELL CARCINOMA, METASTATIC	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+ X	+	+	+	+	+
THYMUS PARAGANGLIOMA, METASTATIC	+	+	-	+	+	-	+	+	+	+	+	+	+	-	-	-	-	+	+	-	+	-	+	-	+
CIRCULATORY SYSTEM																									
HEART PARAGANGLIOMA, MALIGNANT	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
DIGESTIVE SYSTEM																									
SALIVARY GLAND	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+
LIVER HEMANGIOSARCOMA OSTEOSARCOMA, METASTATIC	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
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
PANCREAS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	-	+	+	+	+	+	+	+	+
ESOPHAGUS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
STOMACH	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
SMALL INTESTINE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
LARGE INTESTINE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
URINARY SYSTEM																									
KIDNEY ADENOMA, NOS TUBULAR-CELL ADENOMA	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
URINARY BLADDER	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
ENDOCRINE SYSTEM																									
PITUITARY	-	-	+	+	-	+	+	-	-	+	+	+	+	-	+	+	+	+	+	+	+	-	+	-	-
ADRENAL CORTICAL ADENOMA CORTICAL CARCINOMA PHEOCHROMOCYTOMA NEURILEMOMA	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
THYROID C-CELL ADENOMA C-CELL CARCINOMA	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+ X	+	-	-	+	+
PARATHYROID ADENOMA, NOS	+	+	+	+	+	-	+	-	+	+	-	+	-	-	+	-	+	+	+ X	-	-	-	-	+	-
PANCREATIC ISLETS ISLET-CELL ADENOMA	+	+	+	+	+	+	+	+	+	+	+	+	+	+ X	+	+	-	-	+ X	+ X	+ X	+	+	+	+
REPRODUCTIVE SYSTEM																									
MAMMARY 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
TESTIS HEMANGIOMA	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
PROSTATE	+	+	+	-	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+
NERVOUS SYSTEM																									
BRAIN	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
MUSCULOSKELETAL SYSTEM																									
MUSCLE FIBROSARCOMA	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
BODY CAVITIES																									
PLEURA OSTEOSARCOMA	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
ALL OTHER SYSTEMS																									
MULTIPLE ORGANS NOS MALIG.LYMPHOMA, LYMPHOCYTIC TYPE GRANULOCYTIC LEUKEMIA	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N

+: TISSUE EXAMINED MICROSCOPICALLY
-: REQUIRED TISSUE NOT EXAMINED MICROSCOPICALLY
X: TUMOR INCIDENCE
N: NECROPSY, NO AUTOLYSIS, NO MICROSCOPIC EXAMINATION
: NO TISSUE INFORMATION SUBMITTED
C: NECROPSY, NO HISTOLOGY DUE TO PROTOCOL
A: AUTOLYSIS
M: ANIMAL MISSING
B: NO NECROPSY PERFORMED

TABLE E1. MALE HAMSTERS: TUMOR PATHOLOGY (CONTINUED) SHORT RANGE

ANIMAL NUMBER	593	601	602	603	611	612	613	621	622	623	631	632	633	641	642	643	651	652	653	661	662	663	671	672	673
WEEKS ON STUDY	031	108	104	092	034	094	019	052	040	104	038	061	098	017	097	053	070	090	079	064	130	104	101	086	110
RESPIRATORY SYSTEM																									
LUNGS AND BRONCHI	+	+	+	+	+	+	A	+	+	+	+	+	+	A	+	+	+	+	+	A	+	+	+	+	+
PARAGANGLIOMA, METASTATIC																									
SARCOMA, NOS, METASTATIC																									
TRACHEA	-	+	+	+	+	+	A	+	+	+	+	+	+	A	+	+	+	+	+	A	+	+	+	+	+
SARCOMA, NOS, METASTATIC																									
HEMATOPOIETIC SYSTEM																									
BONE MARROW	+	+	+	+	+	+	A	+	+	+	+	+	+	A	+	+	+	+	+	A	+	+	+	+	+
SPLEEN	+	+	+	+	+	+	A	+	+	+	+	+	+	A	+	+	+	+	+	A	+	+	+	+	+
HEMANGIOSARCOMA																									
LYMPH NODES	+	+	+	+	+	+	A	+	+	+	+	+	+	A	+	+	+	+	+	A	+	+	+	+	+
C-CELL CARCINOMA, METASTATIC																									
THYMUS	+	-	-	-	+	+	A	+	-	+	+	+	+	A	+	+	+	+	+	A	+	-	+	+	-
PARAGANGLIOMA, METASTATIC																									
CIRCULATORY SYSTEM																									
HEART	+	+	+	+	+	+	A	+	+	+	+	+	+	A	+	+	+	+	+	A	+	+	+	+	+
PARAGANGLIOMA, MALIGNANT																									
DIGESTIVE SYSTEM																									
SALIVARY GLAND	-	+	+	+	+	+	A	+	+	+	+	+	+	A	+	+	+	+	+	A	+	+	+	+	+
LIVER	+	+	+	+	+	+	A	+	+	+	+	+	+	A	+	+	+	+	+	A	+	+	+	+	+
HEMANGIOSARCOMA																									
OSTEOSARCOMA, METASTATIC													X												
BILE DUCT	+	+	+	+	+	+	A	+	+	+	+	+	+	A	+	+	+	+	+	A	+	+	+	+	+
GALLBLADDER & COMMON BILE DUCT	N	N	N	+	N	+	A	+	N	N	N	+	N	A	N	N	N	N	+	A	+	N	N	N	N
PANCREAS	+	+	+	+	-	+	A	+	+	+	+	+	-	A	+	+	+	+	+	A	+	+	+	-	+
ESOPHAGUS	+	+	+	+	+	+	A	+	+	+	+	+	+	A	+	+	+	+	+	A	+	+	+	+	+
STOMACH	+	+	+	+	+	+	A	+	+	+	+	+	+	A	+	+	+	+	+	A	+	+	+	+	+
SMALL INTESTINE	+	+	+	+	+	+	A	+	+	+	+	+	+	A	+	+	+	+	+	A	+	+	+	+	+
LARGE INTESTINE	+	+	+	+	-	+	A	+	+	+	+	+	+	A	+	+	+	+	+	A	+	+	+	+	+
URINARY SYSTEM																									
KIDNEY	+	+	+	+	+	+	A	+	+	+	+	+	+	A	+	+	+	+	+	A	+	+	+	+	+
ADENOMA, NOS																									
TUBULAR-CELL ADENOMA																									
URINARY BLADDER	+	+	+	+	+	+	A	+	+	+	+	+	+	A	+	+	+	+	+	A	+	+	+	+	+
ENDOCRINE SYSTEM																									
PITUITARY	-	+	+	+	-	+	A	-	+	+	-	+	+	A	-	+	+	-	+	A	+	-	+	+	+
ADRENAL	+	+	+	+	+	+	A	+	+	+	+	+	+	A	+	+	+	+	+	A	+	+	+	+	+
CORTICAL ADENOMA		X																			X				
CORTICAL CARCINOMA												X													
PHEOCHROMOCYTOMA																									
NEURILEMOMA																									
THYROID	-	+	+	+	+	+	A	+	+	+	+	+	+	A	+	+	+	+	+	A	+	+	+	+	+
C-CELL ADENOMA																									
C-CELL CARCINOMA																									
PARATHYROID	-	+	+	+	+	-	A	+	+	+	-	-	+	A	-	+	+	+	-	A	-	+	+	+	-
ADENOMA, NOS																									
PANCREATIC ISLETS	+	+	+	+	-	+	A	+	+	+	+	+	-	A	+	+	+	+	+	A	+	+	+	-	+
ISLET-CELL ADENOMA			X																X						
REPRODUCTIVE SYSTEM																									
MAMMARY GLAND	N	N	N	N	N	N	A	N	N	N	N	N	N	A	N	N	N	N	N	A	N	N	N	N	N
TESTIS	+	+	+	+	+	+	A	+	+	+	+	+	+	A	+	+	+	+	+	A	+	+	+	+	+
HEMANGIOMA																									
PROSTATE	+	+	+	+	+	+	A	+	+	+	+	-	+	A	+	+	+	+	-	A	+	+	+	+	+
NERVOUS SYSTEM																									
BRAIN	-	+	+	+	+	+	A	+	+	+	-	+	+	A	+	+	+	+	+	A	+	+	+	+	+
MUSCULOSKELETAL SYSTEM																									
MUSCLE	N	N	N	N	N	N	A	N	N	N	N	N	N	A	N	N	N	N	N	A	N	N	N	N	N
FIBROSARCOMA																									
BODY CAVITIES																									
PLEURA	N	N	N	N	N	N	A	N	N	N	N	N	N	A	N	N	N	N	N	A	N	N	N	N	N
OSTEOSARCOMA													X												
ALL OTHER SYSTEMS																									
MULTIPLE ORGANS NOS	N	N	N	N	N	N	A	N	N	N	N	N	N	A	N	N	N	N	N	A	N	N	N	N	N
MALIG.LYMPHOMA, LYMPHOCYTIC TYPE																									
GRANULOCYTIC LEUKEMIA																									

+: TISSUE EXAMINED MICROSCOPICALLY
-: REQUIRED TISSUE NOT EXAMINED MICROSCOPICALLY
X: TUMOR INCIDENCE
N: NECROPSY, NO AUTOLYSIS, NO MICROSCOPIC EXAMINATION
: NO TISSUE INFORMATION SUBMITTED
C: NECROPSY, NO HISTOLOGY DUE TO PROTOCOL
A: AUTOLYSIS
M: ANIMAL MISSING
B: NO NECROPSY PERFORMED

TABLE E1. MALE HAMSTERS: TUMOR PATHOLOGY (CONTINUED) SHORT RANGE

ANIMAL NUMBER	68 11	68 12	68 31	69 11	69 21	69 33	70 11	70 21	70 31	71 11	71 12	71 31	72 11	72 21	72 23	72 31	75 11	75 21	75 31	76 11	76 21	76 31	77 11	77 21	77 31	78 11
WEEKS ON STUDY	045	113	042	091	048	093	061	094	088	093	059	061	099	100	093	112	117	092	105	095	117	112	097	066	107	045
RESPIRATORY SYSTEM																										
LUNGS AND BRONCHI	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	A	–	+	+	+	X	+	+	+	
PARAGANGLIOMA, METASTATIC																										
SARCOMA, NOS, METASTATIC																										
TRACHEA	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	A	–	+	+	+	+	+	+	+	
SARCOMA, NOS, METASTATIC																										
HEMATOPOIETIC SYSTEM																										
BONE MARROW	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	A	+	+	+	+	+	+	+	+	
SPLEEN	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	A	+	+	+	+	+	+	+	+	
HEMANGIOSARCOMA																										
LYMPH NODES	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	A	+	+	+	+	+	+	+	+	
C-CELL CARCINOMA, METASTATIC																										
THYMUS	+	+	+	+	+	+	+	+	–	–	A	+	–	–	+	+	A	+	–	+	–	X	+	–	–	
PARAGANGLIOMA, METASTATIC																										
CIRCULATORY SYSTEM																										
HEART	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	A	–	+	+	+	X	+	+	+	
PARAGANGLIOMA, MALIGNANT																										
DIGESTIVE SYSTEM																										
SALIVARY GLAND	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	A	+	+	+	+	+	+	+	+	
LIVER	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	A	+	+	+	+	+	+	+	+	
HEMANGIOSARCOMA																										
OSTEOSARCOMA, METASTATIC																										
BILE DUCT	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	A	+	+	+	+	+	+	+	+	
GALLBLADDER & COMMON BILE DUCT	+	N	N	N	+	+	+	+	N	N	A	+	N	N	+	N	A	+	N	N	N	N	+	N	+	
PANCREAS	+	+	+	+	+	+	+	+	–	+	A	+	+	+	+	+	A	+	+	+	+	–	–	+	+	
ESOPHAGUS	+	–	+	+	+	+	+	+	+	+	A	+	–	+	+	+	A	+	+	+	+	+	+	+	+	
STOMACH	–	–	+	–	+	+	+	+	+	+	A	+	–	+	+	+	A	+	+	+	+	+	–	+	+	
SMALL INTESTINE	+	–	+	+	+	+	+	+	+	+	A	+	–	+	+	+	A	+	+	+	+	+	–	+	+	
LARGE INTESTINE	–	–	+	+	+	+	+	+	+	+	A	+	–	+	+	+	A	+	+	+	+	–	–	+	+	
URINARY SYSTEM																										
KIDNEY	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	A	+	+	+	+	+	+	+	+	
ADENOMA, NOS																										
TUBULAR-CELL ADENOMA																										
URINARY BLADDER	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	A	+	+	+	+	+	+	+	+	
ENDOCRINE SYSTEM																										
PITUITARY	–	+	–	+	–	+	+	+	+	+	A	–	+	+	+	+	A	+	+	+	+	–	–	+	+	
ADRENAL	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	A	+	+	+	+	+	+	+	+	
CORTICAL ADENOMA																										
CORTICAL CARCINOMA																										
PHEOCHROMOCYTOMA																						X				
NEURILEMOMA																										
THYROID	+	+	+	+	+	–	+	+	+	+	A	–	+	+	+	–	A	–	+	+	+	X	+	+	–	+
C-CELL ADENOMA																										
C-CELL CARCINOMA																										
PARATHYROID	+	+	–	+	+	–	+	+	+	+	A	–	+	+	+	–	A	–	+	–	+	+	+	+	–	+
ADENOMA, NOS				X																						
PANCREATIC ISLETS	+	+	+	+	+	+	+	+	–	+	A	+	+	+	+	+	A	+	+	+	+	–	–	+	+	
ISLET-CELL ADENOMA										X								X			X					
REPRODUCTIVE SYSTEM																										
MAMMARY GLAND	N	N	N	N	N	N	N	N	N	N	A	N	N	N	N	N	A	N	N	N	N	N	N	N	N	
TESTIS	+	+	+	+	+	+	+	+	+	+	A	+	–	+	+	+	A	+	+	+	+	+	+	+	+	
HEMANGIOMA																										
PROSTATE	+	+	–	+	+	–	+	+	+	+	A	+	+	+	+	+	A	+	+	+	+	+	+	+	+	
NERVOUS SYSTEM																										
BRAIN	+	+	+	+	+	+	+	+	+	+	A	–	+	+	+	+	A	+	+	+	+	+	+	+	+	
MUSCULOSKELETAL SYSTEM																										
MUSCLE	N	N	N	N	N	N	N	N	N	N	A	N	N	N	N	N	A	N	N	N	N	N	N	N	N	
FIBROSARCOMA																										
BODY CAVITIES																										
PLEURA	N	N	N	N	N	N	N	N	N	N	A	N	N	N	N	N	A	N	N	N	N	N	N	N	N	
OSTEOSARCOMA																										
ALL OTHER SYSTEMS																										
MULTIPLE ORGANS NOS	N	N	N	N	N	N	N	N	N	N	A	N	N	N	N	N	A	N	N	N	N	N	N	N	N	
MALIG.LYMPHOMA, LYMPHOCYTIC TYPE																							X			
GRANULOCYTIC LEUKEMIA																										

+: TISSUE EXAMINED MICROSCOPICALLY
–: *REQUIRED TISSUE NOT EXAMINED MICROSCOPICALLY*
X: TUMOR INCIDENCE
N: NECROPSY, NO AUTOLYSIS, NO MICROSCOPIC EXAMINATION

: NO TISSUE INFORMATION SUBMITTED
C: NECROPSY, NO HISTOLOGY DUE TO PROTOCOL
A: AUTOLYSIS
M: ANIMAL MISSING
B: NO NECROPSY PERFORMED

TABLE E1. MALE HAMSTERS: TUMOR PATHOLOGY (CONTINUED) SHORT RANGE

ANIMAL NUMBER / WEEKS ON STUDY	TOTAL TISSUES TUMORS
RESPIRATORY SYSTEM	
LUNGS AND BRONCHI PARAGANGLIOMA, METASTATIC SARCOMA, NOS, METASTATIC	231 1 1
TRACHEA SARCOMA, NOS, METASTATIC	228 1
HEMATOPOIETIC SYSTEM	
BONE MARROW	224
SPLEEN HEMANGIOSARCOMA	229 1
LYMPH NODES C-CELL CARCINOMA, METASTATIC	230 1
THYMUS PARAGANGLIOMA, METASTATIC	137 1
CIRCULATORY SYSTEM	
HEART PARAGANGLIOMA, MALIGNANT	230 1
DIGESTIVE SYSTEM	
SALIVARY GLAND	216
LIVER HEMANGIOSARCOMA OSTEOSARCOMA, METASTATIC	232 2 1
BILE DUCT	232
GALLBLADDER & COMMON BILE DUCT	233*
PANCREAS	218
ESOPHAGUS	229
STOMACH	222
SMALL INTESTINE	226
LARGE INTESTINE	222
URINARY SYSTEM	
KIDNEY ADENOMA, NOS TUBULAR-CELL ADENOMA	232 1 2
URINARY BLADDER	228
ENDOCRINE SYSTEM	
PITUITARY	159
ADRENAL CORTICAL ADENOMA CORTICAL CARCINOMA PHEOCHROMOCYTOMA NEURILEMOMA	229 26 8 4 1
THYROID C-CELL ADENOMA C-CELL CARCINOMA	207 3 1
PARATHYROID ADENOMA, NOS	132 3
PANCREATIC ISLETS ISLET-CELL ADENOMA	218 15
REPRODUCTIVE SYSTEM	
MAMMARY GLAND	233*
TESTIS HEMANGIOMA	229 1
PROSTATE	208
NERVOUS SYSTEM	
BRAIN	223
MUSCULOSKELETAL SYSTEM	
MUSCLE FIBROSARCOMA	233* 1
BODY CAVITIES	
PLEURA OSTEOSARCOMA	233* 1
ALL OTHER SYSTEMS	
MULTIPLE ORGANS NOS MALIG.LYMPHOMA, LYMPHOCYTIC TYPE GRANULOCYTIC LEUKEMIA	233* 2 1

+: TISSUE EXAMINED MICROSCOPICALLY
-: REQUIRED TISSUE NOT EXAMINED MICROSCOPICALLY
X: TUMOR INCIDENCE
N: NECROPSY, NO AUTOLYSIS, NO MICROSCOPIC EXAMINATION
: NO TISSUE INFORMATION SUBMITTED
C: NECROPSY, NO HISTOLOGY DUE TO PROTOCOL
A: AUTOLYSIS
M: ANIMAL MISSING
B: NO NECROPSY PERFORMED

TABLE E2.

INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF FEMALE HAMSTERS ADMINISTERED SHORT RANGE CHRYSOTILE ASBESTOS IN THE DIET

CONTROL

ANIMAL NUMBER	021	022	023	041	042	043	061	062	063	071	072	073	081	082	083	091	092	093	101	102	103	111	112	113	121
WEEKS ON STUDY	035	076	052	054	078	057	041	061	064	045	047	079	019	057	091	074	075	067	012	029	037	066	065	073	052
RESPIRATORY SYSTEM																									
LUNGS AND BRONCHI	A	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	A	+	+	
TRACHEA	A	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	A	+	+	
HEMATOPOIETIC SYSTEM																									
BONE MARROW	A	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	A	+	+	
SPLEEN	A	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	-	+	+	+	A	+	+	
LYMPH NODES MALIG.LYMPHOMA, LYMPHOCYTIC TYPE	A	+	+	+	+	+	+	+	+	+	+	+	+	+ X	A	+	+	+	+	+	+	A	+	+	
THYMUS	A	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	A	+	+	
CIRCULATORY SYSTEM																									
HEART	A	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	A	+	+	
DIGESTIVE SYSTEM																									
SALIVARY GLAND	A	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	A	+	+	
LIVER	A	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	A	+	+	
BILE DUCT	A	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	A	+	+	
GALLBLADDER & COMMON BILE DUCT	A	+	+	+	N	N	N	+	N	N	N	+	N	+	A	N	N	N	N	+	N	N	A	+	+
PANCREAS	A	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	A	+	+	
ESOPHAGUS	A	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	A	+	+	
STOMACH	A	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	A	+	+	
SMALL INTESTINE	A	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	A	+	+	
LARGE INTESTINE ADENOCARCINOMA, NOS	A	+	+ X	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	A	+	+	
URINARY SYSTEM																									
KIDNEY	A	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	A	+	+	
URINARY BLADDER	A	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	A	+	+	
ENDOCRINE SYSTEM																									
PITUITARY	A	+	+	-	+	+	-	-	+	+	-	+	-	-	A	-	+	+	+	+	-	+	A	-	+
ADRENAL CORTICAL ADENOMA	A	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	A	+ X	+
THYROID FOLLICULAR-CELL ADENOMA C-CELL ADENOMA	A	+	-	+	+	+	+	+	+	+	+	+	+	+	A	-	+ X	+	+	+	+	+	A	+	+
PARATHYROID ADENOMA, NOS	A	+	-	+	-	+	+	+	+	+	+	+	-	+	A	-	+	+	-	-	+	+	A	-	+
PANCREATIC ISLETS ISLET-CELL ADENOMA ISLET-CELL CARCINOMA	A	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	A	+ X	+
REPRODUCTIVE SYSTEM																									
MAMMARY GLAND	A	N	N	N	N	N	N	N	N	N	N	N	N	N	A	N	N	N	N	N	N	N	A	N	N
VAGINA PAPILLARY ADENOMA	A	N	N	N	N	N	N	N	N	N	N	N	N	N	A	N	N	N	N	N	N	N	A	N	N
UTERUS LEIOMYOMA ENDOMETRIAL STROMAL POLYP	A	+	+	+	+ X	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	A	+	+
OVARY	A	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	A	-	+
BODY CAVITIES																									
PLEURA OSTEOSARCOMA	A	N	N	N	N	N	N	N	N	N	N	N	N	N	A	N	N	N	N	N	N	N	A	N	N
ALL OTHER SYSTEMS																									
MULTIPLE ORGANS NOS MALIGNANT LYMPHOMA, NOS	A	N	N	N	N	N	N	N	N	N	N	N	N	N	A	N	N	N	N	N	N	N	A	N	N
PERINEUM NOS PAPILLOMA, NOS	A														A								A		

+: TISSUE EXAMINED MICROSCOPICALLY
-: REQUIRED TISSUE NOT EXAMINED MICROSCOPICALLY
X: TUMOR INCIDENCE
N: NECROPSY, NO AUTOLYSIS, NO MICROSCOPIC EXAMINATION
: NO TISSUE INFORMATION SUBMITTED
C: NECROPSY, NO HISTOLOGY DUE TO PROTOCOL
A: AUTOLYSIS
M: ANIMAL MISSING
B: NO NECROPSY PERFORMED

TABLE E2. FEMALE HAMSTERS: TUMOR PATHOLOGY (CONTINUED) CONTROL

ANIMAL NUMBER	122	123	141	142	143	151	152	153	161	162	163	171	172	173	181	182	183	191	192	193	201	202	203	211	212
WEEKS ON STUDY	072	055	068	048	071	073	041	045	074	042	062	021	071	056	052	090	052	069	034	053	066	043	052	073	056
RESPIRATORY SYSTEM																									
LUNGS AND BRONCHI	+	A	+	+	+	+	+	+	+	+	+	A	+	+	+	M	+	+	A	+	+	+	+	+	A
TRACHEA	+	A	+	+	+	+	+	+	+	+	+	A	+	+	+	M	+	+	A	+	+	+	+	+	A
HEMATOPOIETIC SYSTEM																									
BONE MARROW	+	A	+	+	+	+	+	+	+	+	+	A	+	+	+	M	+	+	A	+	+	+	+	+	A
SPLEEN	+	A	+	+	+	+	+	+	+	+	+	A	+	+	+	M	+	+	A	+	-	+	+	+	A
LYMPH NODES MALIG.LYMPHOMA, LYMPHOCYTIC TYPE	+	A	+	+	+	+	+	+	+	+	+	A	+	+	+	M	+	+	A	+	+	+	+	+	A
THYMUS	+	A	-	+	+	-	+	+	+	+	+	A	+	+	+	M	+	+	A	+	+	+	+	+	A
CIRCULATORY SYSTEM																									
HEART	+	A	+	+	+	+	+	+	+	+	+	A	+	+	+	M	+	+	A	+	+	+	+	+	A
DIGESTIVE SYSTEM																									
SALIVARY GLAND	+	A	+	+	+	+	+	+	-	+	+	A	+	+	+	M	+	+	A	+	-	+	+	+	A
LIVER	+	A	+	+	+	+	+	+	+	+	+	A	+	+	+	M	+	+	A	+	+	+	+	+	A
BILE DUCT	+	A	+	+	+	+	+	+	+	+	+	A	+	+	+	M	+	+	A	+	+	+	+	+	A
GALLBLADDER & COMMON BILE DUCT	N	A	N	N	N	N	N	N	N	N	N	A	N	+	+	M	N	+	A	+	N	N	+	+	A
PANCREAS	+	A	-	+	+	+	+	+	+	+	+	A	+	+	+	M	+	+	A	+	-	+	+	+	A
ESOPHAGUS	+	A	+	+	+	+	+	+	+	+	+	A	+	+	+	M	+	+	A	+	+	+	+	+	A
STOMACH	+	A	+	+	-	+	+	+	+	+	+	A	+	+	+	M	+	+	A	+	+	+	+	+	A
SMALL INTESTINE	+	A	+	+	+	+	+	+	+	+	+	A	+	+	+	M	+	+	A	+	+	+	+	+	A
LARGE INTESTINE ADENOCARCINOMA, NOS	+	A	+	+	+	+	+	+	+	+	+	A	+	+	+	M	+	+	A	+	+	+	+	+	A
URINARY SYSTEM																									
KIDNEY	+	A	+	+	+	+	+	+	+	+	+	A	+	+	+	M	+	+	A	+	+	+	+	+	A
URINARY BLADDER	+	A	+	+	+	+	+	+	+	+	+	A	+	+	+	M	+	+	A	+	+	+	+	+	A
ENDOCRINE SYSTEM																									
PITUITARY	+	A	-	+	+	+	-	+	+	+	-	A	-	-	+	M	+	-	A	+	-	-	-	+	A
ADRENAL CORTICAL ADENOMA	+	A	+	+	+	+	+	+	+	+	+	A	+	+	+	M	+	+	A	+	-	+	+	+	A
THYROID FOLLICULAR-CELL ADENOMA C-CELL ADENOMA	+	A	-	+	+	+	+	+	+	+	+	A	+ X	+	+	M	+	+	A	-	+	+	+	+	A
PARATHYROID ADENOMA, NOS	+	A	-	+	-	+	-	-	-	-	+	A	+	+	-	M	-	-	A	-	+	+	+	-	A
PANCREATIC ISLETS ISLET-CELL ADENOMA ISLET-CELL CARCINOMA	+	A	-	+	+	+	+	+	+	+	+	A	+	+	+	M	+	+	A	+	-	+	+	+	A
REPRODUCTIVE SYSTEM																									
MAMMARY GLAND	N	A	N	N	N	N	N	N	N	N	N	A	N	N	N	M	N	N	A	N	N	N	N	N	A
VAGINA PAPILLARY ADENOMA	N	A	N	N	N	N	N	N	N	N	N	A	N	N	N	M	N	N	A	N	N	N	N	N	A
UTERUS LEIOMYOMA ENDOMETRIAL STROMAL POLYP	+	A	+	+	+	+	+	+	+	+	+	A	+	+	+	M	+	+	A	+	+	+	+	+	A
OVARY	+	A	+	+	+	+	+	+	+	+	+	A	+	+	+	M	+	+	A	+	+	+	+	+	A
BODY CAVITIES																									
PLEURA OSTEOSARCOMA	N	A	N	N	N	N	N	N	N	N	N	A	N	N	N	M	N	N	A	N	N	N	N	N	A
ALL OTHER SYSTEMS																									
MULTIPLE ORGANS NOS MALIGNANT LYMPHOMA, NOS	N	A	N	N	N	N	N	N	N	N	N	A	N	N	N	M	N	N	A	N	N	N	N	N	A
PERINEUM NOS PAPILLOMA, NOS		A										A	X			M			A						A

+: TISSUE EXAMINED MICROSCOPICALLY
-: REQUIRED TISSUE NOT EXAMINED MICROSCOPICALLY
X: TUMOR INCIDENCE
N: NECROPSY, NO AUTOLYSIS, NO MICROSCOPIC EXAMINATION
: NO TISSUE INFORMATION SUBMITTED
C: NECROPSY, NO HISTOLOGY DUE TO PROTOCOL
A: AUTOLYSIS
M: ANIMAL MISSING
B: NO NECROPSY PERFORMED

TABLE E2. FEMALE HAMSTERS: TUMOR PATHOLOGY (CONTINUED) CONTROL

ANIMAL NUMBER	223	241	242	243	261	262	263	281	282	283	291	292	293	301	302	303	311	312	313	321	322	323	331	332	333
WEEKS ON STUDY	058	012	016	066	078	071	070	058	052	080	046	046	072	068	030	076	070	068	029	071	064	077	054	054	053
RESPIRATORY SYSTEM																									
LUNGS AND BRONCHI	+	A	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
TRACHEA	+	A	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
HEMATOPOIETIC SYSTEM																									
BONE MARROW	+	A	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
SPLEEN	+	A	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
LYMPH NODES MALIG.LYMPHOMA, LYMPHOCYTIC TYPE	+	A	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
THYMUS	+	A	A	+	+	-	+	+	+	+	-	+	+	+	+	+	+	-	+	+	+	+	+	+	+
CIRCULATORY SYSTEM																									
HEART	+	A	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
DIGESTIVE SYSTEM																									
SALIVARY GLAND	+	A	A	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+
LIVER	+	A	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
BILE DUCT	+	A	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
GALLBLADDER & COMMON BILE DUCT	+	A	A	N	N	N	N	N	+	N	N	+	N	N	N	+	N	+	N	+	N	N	+	+	+
PANCREAS	+	A	A	+	+	-	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+
ESOPHAGUS	+	A	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
STOMACH	+	A	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
SMALL INTESTINE	+	A	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
LARGE INTESTINE ADENOCARCINOMA, NOS	+	A	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
URINARY SYSTEM																									
KIDNEY	+	A	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
URINARY BLADDER	+	A	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
ENDOCRINE SYSTEM																									
PITUITARY	+	A	A	+	-	-	+	+	+	+	+	-	+	+	+	-	+	+	-	+	+	-	-	+	-
ADRENAL CORTICAL ADENOMA	+	A	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
THYROID FOLLICULAR-CELL ADENOMA C-CELL ADENOMA	+	A	A	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
PARATHYROID ADENOMA, NOS	+	A	A	+	-	-	+	+	-	+	+	-	-	+	-	+	+	+	+	+	+	+	+	+	+
PANCREATIC ISLETS ISLET-CELL ADENOMA ISLET-CELL CARCINOMA	+	A	A	+	+	-	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+
REPRODUCTIVE SYSTEM																									
MAMMARY GLAND	N	A	A	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	+	N	N	N
VAGINA PAPILLARY ADENOMA	N	A	A	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
UTERUS LEIOMYOMA ENDOMETRIAL STROMAL POLYP	+	A	A	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
OVARY	+	A	A	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
BODY CAVITIES																									
PLEURA OSTEOSARCOMA	N	A	A	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
ALL OTHER SYSTEMS																									
MULTIPLE ORGANS NOS MALIGNANT LYMPHOMA, NOS	N	A	A	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
PERINEUM NOS PAPILLOMA, NOS		A	A																						

+: TISSUE EXAMINED MICROSCOPICALLY
-: REQUIRED TISSUE NOT EXAMINED MICROSCOPICALLY
X: TUMOR INCIDENCE
N: NECROPSY, NO AUTOLYSIS, NO MICROSCOPIC EXAMINATION

: NO TISSUE INFORMATION SUBMITTED
C: NECROPSY, NO HISTOLOGY DUE TO PROTOCOL
A: AUTOLYSIS
M: ANIMAL MISSING
B: NO NECROPSY PERFORMED

TABLE E2. FEMALE HAMSTERS: TUMOR PATHOLOGY (CONTINUED) CONTROL

ANIMAL NUMBER	341	342	343	351	352	353	381	382	383	391	392	393	401	402	403	411	412	413	421	422	423	431	432	433	461
WEEKS ON STUDY	085	068	040	059	076	057	066	049	015	051	079	079	047	046	047	049	046	083	065	063	051	066	071	068	064
RESPIRATORY SYSTEM																									
LUNGS AND BRONCHI	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
TRACHEA	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
HEMATOPOIETIC SYSTEM																									
BONE MARROW	+	+	+	+	-	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+
SPLEEN	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
LYMPH NODES MALIG.LYMPHOMA, LYMPHOCYTIC TYPE	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
THYMUS	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+
CIRCULATORY SYSTEM																									
HEART	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
DIGESTIVE SYSTEM																									
SALIVARY GLAND	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
LIVER	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
BILE DUCT	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
GALLBLADDER & COMMON BILE DUCT	N	+	N	+	N	+	N	+	A	N	N	N	N	N	N	+	N	+	N	N	N	N	N	N	N
PANCREAS	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+
ESOPHAGUS	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
STOMACH	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
SMALL INTESTINE	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
LARGE INTESTINE ADENOCARCINOMA, NOS	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
URINARY SYSTEM																									
KIDNEY	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
URINARY BLADDER	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
ENDOCRINE SYSTEM																									
PITUITARY	+	+	+	+	-	+	+	+	A	-	+	-	+	+	+	+	+	+	+	+	+	+	-	-	+
ADRENAL CORTICAL ADENOMA	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+ X	-	+
THYROID FOLLICULAR-CELL ADENOMA C-CELL ADENOMA	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+ X
PARATHYROID ADENOMA, NOS	+	+	+	-	+	+	-	+	A	-	+ X	+	+	+	+	-	+	+	+	-	-	+	+	-	+
PANCREATIC ISLETS ISLET-CELL ADENOMA ISLET-CELL CARCINOMA	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+
REPRODUCTIVE SYSTEM																									
MAMMARY GLAND	N	N	N	N	N	N	N	N	A	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
VAGINA PAPILLARY ADENOMA	N	N	N	N	N	N	N	N	A	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
UTERUS LEIOMYOMA ENDOMETRIAL STROMAL POLYP	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
OVARY	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
BODY CAVITIES																									
PLEURA OSTEOSARCOMA	N	N	N	N	N	N	N	N	A	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
ALL OTHER SYSTEMS																									
MULTIPLE ORGANS NOS MALIGNANT LYMPHOMA, NOS	N	N	N	N	N	N	N	N	A	N	N X	N	N	N	N	N	N	N	N	N	N	N	N	N	N
PERINEUM NOS PAPILLOMA, NOS									A																

+: TISSUE EXAMINED MICROSCOPICALLY
-: REQUIRED TISSUE NOT EXAMINED MICROSCOPICALLY
X: TUMOR INCIDENCE
N: NECROPSY, NO AUTOLYSIS, NO MICROSCOPIC EXAMINATION

: NO TISSUE INFORMATION SUMMITTED
C: NECROPSY, NO HISTOLOGY DUE TO PROTOCOL
A: AUTOLYSIS
M: ANIMAL MISSING
B: NO NECROPSY PERFORMED

TABLE E2. FEMALE HAMSTERS: TUMOR PATHOLOGY (CONTINUED) CONTROL

ANIMAL NUMBER	4 6 2	4 6 3	4 7 1	4 7 2	4 7 3	4 8 1	4 8 2	4 8 3	5 0 1	5 0 2	5 0 3	5 1 1	5 1 2	5 1 3	5 2 1	5 2 2	5 2 3	5 3 1	5 3 2	5 3 3	5 4 1	5 4 2	5 4 3	5 5 1	5 5 2	5 5 3	TOTAL
WEEKS ON STUDY	0 6 3	0 5 5	0 5 5	0 5 1	0 3 2	0 5 7	0 7 1	0 6 3	0 5 3	0 4 3	0 6 2	0 8 7	0 5 1	0 5 7	0 6 2	0 2 1	0 4 5	0 7 5	0 5 9	0 5 2	0 5 7	0 4 1	0 8 2	0 4 6	0 3 7	0 3 8	TISSUES TUMORS
RESPIRATORY SYSTEM																											
LUNGS AND BRONCHI	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+		114
TRACHEA	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+		114
HEMATOPOIETIC SYSTEM																											
BONE MARROW	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+		112
SPLEEN	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+		112
LYMPH NODES MALIG.LYMPHOMA, LYMPHOCYTIC TYPE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+		114 1
THYMUS	+	+	+	+	-	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	A	+		106
CIRCULATORY SYSTEM																											
HEART	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+		114
DIGESTIVE SYSTEM																											
SALIVARY GLAND	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+		109
LIVER	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+		114
BILE DUCT	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+		114
GALLBLADDER & COMMON BILE DUCT	N	+	+	N	+	N	N	+	N	+	N	+	N	N	+	N	N	+	+	+	N	N	N	A	N		114*
PANCREAS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+		109
ESOPHAGUS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+		114
STOMACH	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+		113
SMALL INTESTINE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+		114
LARGE INTESTINE ADENOCARCINOMA, NOS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+		114 1
URINARY SYSTEM																											
KIDNEY	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+		114
URINARY BLADDER	-	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	A	+		112
ENDOCRINE SYSTEM																											
PITUITARY	-	+	+	-	-	+	+	+	+	+	+	+	-	+	+	-	+	+	+	+	-	+	+	A	+		77
ADRENAL CORTICAL ADENOMA	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+ X	A	+		112 4
THYROID FOLLICULAR-CELL ADENOMA C-CELL ADENOMA	+	+	+	+	+	+ X	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	A	+		107 2 2
PARATHYROID ADENOMA, NOS	+ X	-	-	-	+	+	-	-	+	+	-	-	-	-	+	-	-	+ X	-	+	+	-	-	-	A	+	68 3
PANCREATIC ISLETS ISLET-CELL ADENOMA ISLET-CELL CARCINOMA	+	+	+	+	+	+	+	+	+	+	+	+ X	+	+	+	+	+	+	+	+	+	+	+	+	A	+	109 2 1
REPRODUCTIVE SYSTEM																											
MAMMARY GLAND	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	A	N		114*
VAGINA PAPILLARY ADENOMA	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	A	N		114* 1
UTERUS LEIOMYOMA ENDOMETRIAL STROMAL POLYP	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+ X	+	+	+	+	+	+	A	+		113 2 1
OVARY	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+		112
BODY CAVITIES																											
PLEURA OSTEOSARCOMA	N	N	N	N	N	N X	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	A	N		114* 1
ALL OTHER SYSTEMS																											
MULTIPLE ORGANS NOS MALIGNANT LYMPHOMA, NOS	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	A	N		114* 1
PERINEUM NOS PAPILLOMA, NOS																								A			1

+: TISSUE EXAMINED MICROSCOPICALLY
-: REQUIRED TISSUE NOT EXAMINED MICROSCOPICALLY
X: TUMOR INCIDENCE
N: NECROPSY, NO AUTOLYSIS, NO MICROSCOPIC EXAMINATION

: NO TISSUE INFORMATION SUBMITTED
C: NECROPSY, NO HISTOLOGY DUE TO PROTOCOL
A: AUTOLYSIS
M: ANIMAL MISSING
B: NO NECROPSY PERFORMED

TABLE E2.

INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF FEMALE HAMSTERS ADMINISTERED SHORT RANGE CHRYSOTILE ASBESTOS IN THE DIET

SHORT RANGE CHRYSOTILE

ANIMAL NUMBER	011	012	013	021	022	023	031	032	033	051	052	053	061	062	063	071	072	073	081	082	083	091	092	093	101
WEEKS ON STUDY	076	067	060	063	054	043	038	011	919	060	044	058	074	063	059	029	061	081	060	027	054	062	073	078	055
INTEGUMENTARY SYSTEM																									
SUBCUTANEOUS TISSUE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	M	+	+	+	+	+	+	+	+	+
SARCOMA, NOS	X																								
FIBROSARCOMA																									
LIPOMA																									
RESPIRATORY SYSTEM																									
LUNGS AND BRONCHI	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	M	+	+	+	+	+	+	+	+	+
SARCOMA, NOS, METASTATIC	X																								
TRACHEA	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	M	+	+	+	+	-	+	+	+	+
HEMATOPOIETIC SYSTEM																									
BONE MARROW	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	M	+	+	+	+	+	+	+	+	+
SPLEEN	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	M	+	+	+	+	+	+	+	+	+
HEMANGIOMA																									
LYMPH NODES	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	M	+	+	+	+	+	+	+	+	+
THYMUS	-	+	+	+	+	-	-	+	+	-	+	+	+	+	+	M	+	+	+	+	+	+	+	-	+
CIRCULATORY SYSTEM																									
HEART	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	M	+	+	+	+	-	+	+	+	+
DIGESTIVE SYSTEM																									
SALIVARY GLAND	+	+	-	+	+	+	+	+	+	+	+	+	+	+	-	M	-	+	+	+	+	+	+	+	+
LIVER	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	M	+	+	+	+	+	+	+	+	+
BILE DUCT	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	M	+	+	+	+	+	+	+	+	+
GALLBLADDER & COMMON BILE DUCT	N	N	+	N	N	N	N	N	N	N	N	N	N	N	+	M	+	N	+	N	N	+	N	N	N
PANCREAS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	M	-	+	+	+	+	-	+	+	
ESOPHAGUS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	M	+	+	+	+	+	+	+	+	+
STOMACH	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	M	+	+	+	+	+	+	+	+	+
SMALL INTESTINE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	M	+	+	+	+	+	+	+	+	+
LARGE INTESTINE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	M	+	+	+	+	+	+	+	+	+
ADENOCARCINOMA, NOS																									
URINARY SYSTEM																									
KIDNEY	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	M	+	+	+	+	+	+	+	+	+
URINARY BLADDER	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	M	+	+	+	+	+	+	+	+	+
ENDOCRINE SYSTEM																									
PITUITARY	+	-	+	-	+	+	+	-	+	+	+	+	+	+	+	M	+	+	+	-	-	-	-	-	+
CHROMOPHOBE ADENOMA																									
ADRENAL	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	M	+	+	+	+	+	+	+	+	+
CORTICAL ADENOMA													X												
PHEOCHROMOCYTOMA																									
NEURILEMOMA																									
THYROID	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	M	+	+	+	+	-	+	+	+	+
PARATHYROID	-	+	+	+	-	+	-	-	+	-	+	-	-	+	+	M	-	+	+	+	-	-	-	-	-
ADENOMA, NOS																									
PANCREATIC ISLETS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	M	-	•	•	+	+	+	-	+	+
ISLET-CELL ADENOMA	X																								
REPRODUCTIVE SYSTEM																									
MAMMARY GLAND	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	N	N	N	N	N	N	N	N	N
UTERUS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	M	+	+	+	+	+	+	+	+	+
PAPILLOMA, NOS																									
PAPILLARY CARCINOMA																									
ADENOMA, NOS																									
PAPILLARY ADENOMA																									
LEIOMYOMA																									
OVARY	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	M	+	+	+	+	+	+	-	+	+
FIBROMA																									
ALL OTHER SYSTEMS																									
MULTIPLE ORGANS NOS	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	N	N	N	N	N	N	N	N	N
MALIG.LYMPHOMA, LYMPHOCYTIC TYPE									X																
SITE UNKNOWN																M									
SARCOMA, NOS																									
OSTEOSARCOMA																									

+: TISSUE EXAMINED MICROSCOPICALLY
-: REQUIRED TISSUE NOT EXAMINED MICROSCOPICALLY
X: TUMOR INCIDENCE
N: NECROPSY, NO AUTOLYSIS, NO MICROSCOPIC EXAMINATION

: NO TISSUE INFORMATION SUBMITTED
C: NECROPSY, NO HISTOLOGY DUE TO PROTOCOL
A: AUTOLYSIS
M: ANIMAL MISSING
B: NO NECROPSY PERFORMED

TABLE E2. FEMALE HAMSTERS: TUMOR PATHOLOGY (CONTINUED) SHORT RANGE

ANIMAL NUMBER	102	103	111	112	113	121	122	123	131	132	133	141	142	143	151	152	153	161	162	163	171	172	173	182	183
WEEKS ON STUDY	066	037	062	072	079	080	070	081	071	117	069	052	076	072	043	017	074	051	071	049	057	069	063	066	036
INTEGUMENTARY SYSTEM																									
SUBCUTANEOUS TISSUE	+	+	+	+	+	+	+	+	+	+	+	+	N	+	+	A	N	+	+	A	+	+	+	+	A
SARCOMA, NOS																									
FIBROSARCOMA																									
LIPOMA																									
RESPIRATORY SYSTEM																									
LUNGS AND BRONCHI	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	A	+	+	+	+	A
SARCOMA, NOS, METASTATIC																									
TRACHEA	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	A	+	+	+	+	A
HEMATOPOIETIC SYSTEM																									
BONE MARROW	+	+	+	+	+	+	+	+	+	+	+	-	+	+	A	+	+	+	A	+	+	+	+	+	A
SPLEEN	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	A	+	+	+	+	+	A
HEMANGIOMA																									
LYMPH NODES	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	A	+	+	+	+	+	A
THYMUS	+	+	+	+	+	+	+	+	+	+	+	+	+	-	A	+	+	+	A	+	+	+	+	+	A
CIRCULATORY SYSTEM																									
HEART	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	A	+	+	+	+	+	A
DIGESTIVE SYSTEM																									
SALIVARY GLAND	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	A	+	+	+	+	+	A
LIVER	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	A	+	+	+	+	+	A
BILE DUCT	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	A	+	+	+	+	+	A
GALLBLADDER & COMMON BILE DUCT	N	N	+	N	N	N	N	N	N	N	N	N	N	N	A	N	N	N	A	+	N	N	N	A	
PANCREAS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	A	+	+	+	+	+	A
ESOPHAGUS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	A	+	+	+	+	+	A
STOMACH	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	A	+	+	+	+	+	A
SMALL INTESTINE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	A	+	+	+	+	+	A
LARGE INTESTINE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	A	+	+	+	+	+	A
ADENOCARCINOMA, NOS																									
URINARY SYSTEM																									
KIDNEY	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	A	+	+	+	+	+	A
URINARY BLADDER	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	A	+	+	+	+	+	A
ENDOCRINE SYSTEM																									
PITUITARY	-	A	-	+	+	+	+	-	-	-	+	-	+	+	A	+	+	-	A	-	-	+	+	A	
CHROMOPHOBE ADENOMA																									
ADRENAL	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	A	+	+	+	+	+	A
CORTICAL ADENOMA																									
PHEOCHROMOCYTOMA																									
NEURILEMOMA																									
THYROID	-	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	A	+	+	+	+	+	A
PARATHYROID	-	+	-	-	+	+	+	+	+	+	-	+	-	+	A	+	+	+	A	-	+	+	-	-	A
ADENOMA, NOS																									
PANCREATIC ISLETS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	A	+	+	+	+	+	A
ISLET-CELL ADENOMA																									
REPRODUCTIVE SYSTEM																									
MAMMARY GLAND	N	N	N	N	N	N	N	N	N	N	N	N	N	N	A	N	N	N	A	N	N	N	N	A	
UTERUS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	A	+	+	+	+	+	A
PAPILLOMA, NOS																									
PAPILLARY CARCINOMA																									
ADENOMA, NOS																									
PAPILLARY ADENOMA																									
LEIOMYOMA																									
OVARY	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	A	+	+	+	+	+	A
FIBROMA																									
ALL OTHER SYSTEMS																									
MULTIPLE ORGANS NOS	N	N	N	N	N	N	N	N	N	N	N	N	N	N	A	N	N	N	A	N	N	N	N	A	
MALIG.LYMPHOMA, LYMPHOCYTIC TYPE																									
SITE UNKNOWN															A				A						A
SARCOMA, NOS													X												
OSTEOSARCOMA																									

+: TISSUE EXAMINED MICROSCOPICALLY
-: REQUIRED TISSUE NOT EXAMINED MICROSCOPICALLY
X: TUMOR INCIDENCE
N: NECROPSY, NO AUTOLYSIS, NO MICROSCOPIC EXAMINATION
!: NO TISSUE INFORMATION SUMMITED
C: NECROPSY, NO HISTOLOGY DUE TO PROTOCOL
A: AUTOLYSIS
M: ANIMAL MISSING
B: NO NECROPSY PERFORMED

TABLE E2. FEMALE HAMSTERS: TUMOR PATHOLOGY (CONTINUED) SHORT RANGE

ANIMAL NUMBER	191	192	193	201	202	203	211	212	213	221	222	223	231	232	233	241	242	243	251	252	253	261	262	263	271
WEEKS ON STUDY	053	063	071	066	076	067	043	056	052	035	088	079	073	074	072	062	065	020	070	018	068	051	064	065	065
INTEGUMENTARY SYSTEM																									
SUBCUTANEOUS TISSUE	A	+	N	N	+	+	+	+	+	A	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+
SARCOMA, NOS																									
FIBROSARCOMA																									
LIPOMA																									
RESPIRATORY SYSTEM																									
LUNGS AND BRONCHI	A	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+
SARCOMA, NOS, METASTATIC																									
TRACHEA	A	+	+	+	+	+	+	+	+	A	+	+	+	+	+	-	+	A	+	+	+	+	+	+	+
HEMATOPOIETIC SYSTEM																									
BONE MARROW	A	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+
SPLEEN	A	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+
HEMANGIOMA																									
LYMPH NODES	A	-	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+
THYMUS	A	+	+	+	+	+	-	+	+	A	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+
CIRCULATORY SYSTEM																									
HEART	A	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+
DIGESTIVE SYSTEM																									
SALIVARY GLAND	A	+	+	+	+	+	+	-	+	A	+	+	+	+	+	+	+	A	-	+	+	+	+	+	+
LIVER	A	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+
BILE DUCT	A	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+
GALLBLADDER & COMMON BILE DUCT	A	N	+	N	N	N	N	N	N	A	+	N	+	+	N	N	+	A	+	N	+	N	N	+	+
PANCREAS	A	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+
ESOPHAGUS	A	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+
STOMACH	A	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	A	+	+	+	+	+	+	-
SMALL INTESTINE	A	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+
LARGE INTESTINE	A	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+
ADENOCARCINOMA, NOS																									
URINARY SYSTEM																									
KIDNEY	A	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+
URINARY BLADDER	A	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	A	+	-	+	+	+	+	+
ENDOCRINE SYSTEM																									
PITUITARY	A	-	+	-	-	+	-	+	-	A	+	+	-	+	+	-	+	A	+	+	+	+	+	-	+
CHROMOPHOBE ADENOMA																									
ADRENAL	A	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+
CORTICAL ADENOMA					X																X				
PHEOCHROMOCYTOMA																									
NEURILEMOMA														X											
THYROID	A	+	+	+	+	+	+	+	+	A	+	+	-	+	+	-	+	A	+	+	+	+	+	+	+
PARATHYROID	A	-	-	+	+	+	+	+	+	A	+	+	-	+	+	-	+	A	+	+	+	-	-	-	+
ADENOMA, NOS																									
PANCREATIC ISLETS	A	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+
ISLET-CELL ADENOMA																									
REPRODUCTIVE SYSTEM																									
MAMMARY GLAND	A	N	N	N	N	N	N	N	N	A	N	N	N	N	N	N	N	A	N	N	N	N	N	N	N
UTERUS	A	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+
PAPILLOMA, NOS																									
PAPILLARY CARCINOMA																									
ADENOMA, NOS																									
PAPILLARY ADENOMA																									
LEIOMYOMA															X										
OVARY	A	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+
FIBROMA																									
ALL OTHER SYSTEMS																									
MULTIPLE ORGANS NOS	A	N	N	N	N	N	N	N	N	A	N	N	N	N	N	N	N	A	N	N	N	N	N	N	N
MALIG.LYMPHOMA, LYMPHOCYTIC TYPE																									
SITE UNKNOWN	A									A								A							
SARCOMA, NOS																									
OSTEOSARCOMA																									

+: TISSUE EXAMINED MICROSCOPICALLY
-: REQUIRED TISSUE NOT EXAMINED MICROSCOPICALLY
X: TUMOR INCIDENCE
N: NECROPSY, NO AUTOLYSIS, NO MICROSCOPIC EXAMINATION

: NO TISSUE INFORMATION SUBMITTED
C: NECROPSY, NO HISTOLOGY DUE TO PROTOCOL
A: AUTOLYSIS
M: ANIMAL MISSING
B: NO NECROPSY PERFORMED

TABLE E2. FEMALE HAMSTERS: TUMOR PATHOLOGY (CONTINUED) SHORT RANGE

ANIMAL NUMBER	272	273	281	282	283	291	292	293	301	302	303	311	312	313	321	322	323	331	332	333	341	342	343	351	352
WEEKS ON STUDY	043	035	057	071	081	053	069	058	066	052	072	073	035	058	065	059	063	103	015	016	060	065	073	080	052
INTEGUMENTARY SYSTEM																									
SUBCUTANEOUS TISSUE	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	N	A	+	+	+	+	+	+
SARCOMA, NOS																									
FIBROSARCOMA																									
LIPOMA																									
RESPIRATORY SYSTEM																									
LUNGS AND BRONCHI	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+
SARCOMA, NOS, METASTATIC																									
TRACHEA	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+
HEMATOPOIETIC SYSTEM																									
BONE MARROW	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	-	A	+	+	+	+	+	+
SPLEEN	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+
HEMANGIOMA																									
LYMPH NODES	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+
THYMUS	+	+	+	-	+	+	+	+	+	A	+	+	-	+	+	+	+	-	A	+	+	+	+	+	+
CIRCULATORY SYSTEM																									
HEART	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+
DIGESTIVE SYSTEM																									
SALIVARY GLAND	+	+	+	+	+	-	+	-	+	A	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+
LIVER	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+
BILE DUCT	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+
GALLBLADDER & COMMON BILE DUCT	N	N	N	N	N	+	N	N	N	A	N	N	N	+	N	+	N	+	A	N	+	+	N	N	N
PANCREAS	+	+	+	-	+	+	+	+	+	A	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+
ESOPHAGUS	+	+	+	+	+	+	+	+	-	A	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+
STOMACH	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+
SMALL INTESTINE	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+
LARGE INTESTINE	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+
ADENOCARCINOMA, NOS																									
URINARY SYSTEM																									
KIDNEY	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+
URINARY BLADDER	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	-	A	-	+	+	+	+	+
ENDOCRINE SYSTEM																									
PITUITARY	-	+	-	-	+	+	+	+	+	A	-	-	+	-	-	-	-	-	A	-	-	+	+	+	-
CHROMOPHOBE ADENOMA																									
ADRENAL	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+
CORTICAL ADENOMA																									
PHEOCHROMOCYTOMA																									
NEURILEMOMA																									
THYROID	+	+	+	+	+	-	+	+	+	A	+	+	+	+	+	+	+	+	A	-	+	+	+	+	+
PARATHYROID	-	-	-	+	+	-	+	+	+	A	-	+	+	+	+	+	-	+	A	-	+	-	-	+	-
ADENOMA, NOS																		X							
PANCREATIC ISLETS	+	+	+	-	+	+	+	+	+	A	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+
ISLET-CELL ADENOMA																									
REPRODUCTIVE SYSTEM																									
MAMMARY GLAND	N	N	N	N	N	N	N	N	N	A	N	N	N	N	N	N	N	N	A	N	N	N	N	N	N
UTERUS	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+
PAPILLOMA, NOS																								X	
PAPILLARY CARCINOMA																									
ADENOMA, NOS																									
PAPILLARY ADENOMA																									
LEIOMYOMA																									
OVARY	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+
FIBROMA																									
ALL OTHER SYSTEMS																									
MULTIPLE ORGANS NOS	N	N	N	N	N	N	N	N	N	A	N	N	N	N	N	N	N	N	A	N	N	N	N	N	N
MALIG.LYMPHOMA, LYMPHOCYTIC TYPE																									X
SITE UNKNOWN										A									A						
SARCOMA, NOS																									
OSTEOSARCOMA																									

+: TISSUE EXAMINED MICROSCOPICALLY
-: REQUIRED TISSUE NOT EXAMINED MICROSCOPICALLY
X: TUMOR INCIDENCE
N: NECROPSY, NO AUTOLYSIS, NO MICROSCOPIC EXAMINATION

: NO TISSUE INFORMATION SUBMITTED
C: NECROPSY, NO HISTOLOGY DUE TO PROTOCOL
A: AUTOLYSIS
M: ANIMAL MISSING
B: NO NECROPSY PERFORMED

TABLE E2. FEMALE HAMSTERS: TUMOR PATHOLOGY (CONTINUED) SHORT RANGE

ANIMAL NUMBER	353	361	362	363	371	372	373	381	382	383	391	392	393	421	422	423	431	432	433	441	442	443	451	452	453
WEEKS ON STUDY	036	067	040	070	119	114	084	043	050	073	069	047	057	095	076	053	077	070	071	024	0521	061	063	081	062
INTEGUMENTARY SYSTEM																									
SUBCUTANEOUS TISSUE	+	+	+	+	A	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A
SARCOMA, NOS																									
FIBROSARCOMA																									
LIPOMA																									
RESPIRATORY SYSTEM																									
LUNGS AND BRONCHI	+	+	+	+	A	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A
SARCOMA, NOS, METASTATIC																									
TRACHEA	+	+	+	+	A	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A
HEMATOPOIETIC SYSTEM																									
BONE MARROW	-	+	+	+	A	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A
SPLEEN	+	+	+	+	A	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A
HEMANGIOMA																								X	
LYMPH NODES	+	+	+	+	A	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A
THYMUS	-	+	-	+	A	A	+	+	+	+	+	+	+	+	-	+	-	+	+	+	+	+	+	+	A
CIRCULATORY SYSTEM																									
HEART	+	+	+	+	A	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A
DIGESTIVE SYSTEM																									
SALIVARY GLAND	+	+	+	+	A	A	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	A
LIVER	+	+	+	+	A	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A
BILE DUCT	+	+	+	+	A	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A
GALLBLADDER & COMMON BILE DUCT	N	N	N	+	A	A	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	A
PANCREAS	+	+	+	+	A	A	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	A
ESOPHAGUS	+	+	+	+	A	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A
STOMACH	+	+	+	+	A	A	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	A
SMALL INTESTINE	+	+	+	+	A	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A
LARGE INTESTINE	+	+	+	+	A	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A
ADENOCARCINOMA, NOS																									
URINARY SYSTEM																									
KIDNEY	+	+	+	+	A	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A
URINARY BLADDER	+	+	+	+	A	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A
ENDOCRINE SYSTEM																									
PITUITARY	+	-	+	+	A	A	+	+	+	-	-	+	+	+	-	+	+	+	-	-	+	+	+	-	+	A
CHROMOPHOBE ADENOMA																									
ADRENAL	+	+	+	+	A	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A
CORTICAL ADENOMA															X		X								
PHEOCHROMOCYTOMA																									
NEURILEMOMA																									
THYROID	+	+	+	+	A	A	+	+	+	-	+	+	+	+	-	+	+	+	+	+	+	+	+	+	A
PARATHYROID	+	+	+	+	A	A	+	+	+	-	+	+	-	-	-	-	+	+	+	+	+	+	-	+	A
ADENOMA, NOS																									
PANCREATIC ISLETS	+	+	+	+	A	A	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	A
ISLET-CELL ADENOMA																									
REPRODUCTIVE SYSTEM																									
MAMMARY GLAND	N	N	N	N	A	A	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	A
UTERUS	+	+	+	+	A	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A
PAPILLOMA, NOS																									
PAPILLARY CARCINOMA																									
ADENOMA, NOS															X										
PAPILLARY ADENOMA														X											
LEIOMYOMA																									
OVARY	+	+	+	+	A	A	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	A
FIBROMA																									
ALL OTHER SYSTEMS																									
MULTIPLE ORGANS NOS	N	N	N	N	A	A	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	A
MALIG.LYMPHOMA, LYMPHOCYTIC TYPE																									
SITE UNKNOWN					A	A																			A
SARCOMA, NOS																									
OSTEOSARCOMA																									

+: TISSUE EXAMINED MICROSCOPICALLY
-: REQUIRED TISSUE NOT EXAMINED MICROSCOPICALLY
X: TUMOR INCIDENCE
N: NECROPSY, NO AUTOLYSIS, NO MICROSCOPIC EXAMINATION

: NO TISSUE INFORMATION SUBMITTED
C: NECROPSY, NO HISTOLOGY DUE TO PROTOCOL
A: AUTOLYSIS
M: ANIMAL MISSING
B: NO NECROPSY PERFORMED

TABLE E2. FEMALE HAMSTERS: TUMOR PATHOLOGY (CONTINUED) SHORT RANGE

ANIMAL NUMBER	46 1	46 2	46 3	47 1	47 2	47 3	48 1	48 2	48 3	49 1	49 2	49 3	50 1	50 2	50 3	51 1	51 2	51 3	52 1	52 2	52 3	53 1	53 2	53 3	54 1
WEEKS ON STUDY	06 7	05 8	08 4	06 4	03 5	02 5	08 1	06 7	06 6	03 8	06 7	04 5	06 1	05 3	09 0	09 0	05 0	07 7	04 5	06 0	04 5	05 6	07 0	07 1	01 4
INTEGUMENTARY SYSTEM																									
SUBCUTANEOUS TISSUE	+	+	+	+	+	+	+	N	N	+	+	+	N	+	A	+	+	+	+	+	+	+	+	+	A
SARCOMA, NOS																									
FIBROSARCOMA																									
LIPOMA																									
RESPIRATORY SYSTEM																									
LUNGS AND BRONCHI	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	A
SARCOMA, NOS, METASTATIC																									
TRACHEA	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	A
HEMATOPOIETIC SYSTEM																									
BONE MARROW	+	+	+	+	+	+	+	+	-	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	A
SPLEEN	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	A
HEMANGIOMA																									
LYMPH NODES	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	A
THYMUS	+	+	-	+	-	+	+	+	+	-	+	+	+	+	A	+	+	+	+	+	+	+	+	+	A
CIRCULATORY SYSTEM																									
HEART	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	A
DIGESTIVE SYSTEM																									
SALIVARY GLAND	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	A
LIVER	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	A
BILE DUCT	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	A
GALLBLADDER & COMMON BILE DUCT	N	N	+	N	N	N	N	N	N	N	N	N	N	N	A	+	N	N	N	+	N	N	N	+	A
PANCREAS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	-	+	+	+	+	+	+	+	+	A
ESOPHAGUS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	A
STOMACH	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	A
SMALL INTESTINE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	A
LARGE INTESTINE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	A
ADENOCARCINOMA, NOS																									
URINARY SYSTEM																									
KIDNEY	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	A
URINARY BLADDER	+	+	+	-	+	+	+	+	-	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	A
ENDOCRINE SYSTEM																									
PITUITARY	-	+	+	+	+	+	+	-	-	+	-	-	+	+	A	-	+	+	-	-	+	-	-	+	A
CHROMOPHOBE ADENOMA																									
ADRENAL	+	+	+	+	+	+	+	+	-	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	A
CORTICAL ADENOMA																									
PHEOCHROMOCYTOMA																									
NEURILEMOMA																									
THYROID	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	-	+	+	A
PARATHYROID	+	+	-	-	+	+	+	-	+	+	+	+	-	-	A	+	-	+	-	-	+	-	-	+	A
ADENOMA, NOS																									
PANCREATIC ISLETS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	-	+	+	+	+	+	+	+	+	A
ISLET-CELL ADENOMA																									
REPRODUCTIVE SYSTEM																									
MAMMARY GLAND	N	N	N	N	N	N	N	N	N	N	N	N	N	N	A	N	N	N	N	N	N	N	N	N	A
UTERUS	+	+	+	-	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	A
PAPILLOMA, NOS																									
PAPILLARY CARCINOMA																									
ADENOMA, NOS																									
PAPILLARY ADENOMA																									
LEIOMYOMA																									
OVARY	+	+	+	-	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	A
FIBROMA																									
ALL OTHER SYSTEMS																									
MULTIPLE ORGANS NOS	N	N	N	N	N	N	N	N	N	N	N	N	N	N	A	N	N	N	N	N	N	N	N	N	A
MALIG.LYMPHOMA, LYMPHOCYTIC TYPE																									
SITE UNKNOWN															A										A
SARCOMA, NOS																									
OSTEOSARCOMA																									

+: TISSUE EXAMINED MICROSCOPICALLY
-: REQUIRED TISSUE NOT EXAMINED MICROSCOPICALLY
X: TUMOR INCIDENCE
N: NECROPSY, NO AUTOLYSIS, NO MICROSCOPIC EXAMINATION

: NO TISSUE INFORMATION SUBMITTED
C: NECROPSY, NO HISTOLOGY DUE TO PROTOCOL
A: AUTOLYSIS
M: ANIMAL MISSING
B: NO NECROPSY PERFORMED

TABLE E2. FEMALE HAMSTERS: TUMOR PATHOLOGY (CONTINUED) SHORT RANGE

ANIMAL NUMBER	542	543	561	562	563	571	572	573	601	602	603	611	612	613	621	622	623	631	632	633	641	642	643	651	652
WEEKS ON STUDY	064	014	057	102	063	062	076	074	084	071	071	074	071	080	060	062	066	058	028	084	074	062	068	061	032
INTEGUMENTARY SYSTEM																									
SUBCUTANEOUS TISSUE	+	A	+	A	+	+	+	+	+	+	+	+	+	N	+	+	+	+	+	+	A	+	+	+
SARCOMA, NOS																									
FIBROSARCOMA																									
LIPOMA																									X
RESPIRATORY SYSTEM																									
LUNGS AND BRONCHI	+	A	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+
SARCOMA, NOS, METASTATIC									X																
TRACHEA	+	A	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+
HEMATOPOIETIC SYSTEM																									
BONE MARROW	+	A	+	A	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	A	+	+	+
SPLEEN	+	A	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+
HEMANGIOMA																									
LYMPH NODES	+	A	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+
THYMUS	+	A	+	A	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+
CIRCULATORY SYSTEM																									
HEART	+	A	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+
DIGESTIVE SYSTEM																									
SALIVARY GLAND	+	A	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	-	+	+
LIVER	+	A	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+
BILE DUCT	+	A	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+
GALLBLADDER & COMMON BILE DUCT	N	A	N	A	N	N	N	N	N	N	N	N	N	+	+	N	N	+	N	N	N	A	N	+	N
PANCREAS	+	A	+	A	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	A	+	+	+
ESOPHAGUS	+	A	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+
STOMACH	+	A	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+
SMALL INTESTINE	+	A	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+
LARGE INTESTINE	+	A	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+
ADENOCARCINOMA, NOS																									
URINARY SYSTEM																									
KIDNEY	+	A	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+
URINARY BLADDER	-	A	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+
ENDOCRINE SYSTEM																									
PITUITARY	-	A	+	A	+	+	+	+	-	-	+	+	-	+	+	+	+	+	-	+	A	-	+	-
CHROMOPHOBE ADENOMA																									
ADRENAL	+	A	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	-
CORTICAL ADENOMA									X																
PHEOCHROMOCYTOMA																									
NEURILEMOMA																									
THYROID	+	A	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	A	+	+	+
PARATHYROID	+	A	-	A	-	-	+	+	+	+	+	-	+	+	-	-	-	-	-	+	-	A	-	-	-
ADENOMA, NOS																									
PANCREATIC ISLETS	+	A	+	A	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	A	+	+	+
ISLET-CELL ADENOMA																									
REPRODUCTIVE SYSTEM																									
MAMMARY GLAND	N	A	N	A	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	A	N	N	N
UTERUS	-	A	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+
PAPILLOMA, NOS																									
PAPILLARY CARCINOMA																									
ADENOMA, NOS																									
PAPILLARY ADENOMA																									
LEIOMYOMA																									
OVARY	-	A	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+
FIBROMA																									
ALL OTHER SYSTEMS																									
MULTIPLE ORGANS NOS	N	A	N	A	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	A	N	N	N
MALIG.LYMPHOMA, LYMPHOCYTIC TYPE																									
SITE UNKNOWN		A		A																		A			
SARCOMA, NOS									X																
OSTEOSARCOMA																									

+: TISSUE EXAMINED MICROSCOPICALLY
-: REQUIRED TISSUE NOT EXAMINED MICROSCOPICALLY
X: TUMOR INCIDENCE
N: NECROPSY, NO AUTOLYSIS, NO MICROSCOPIC EXAMINATION
: NO TISSUE INFORMATION SUBMITTED
C: NECROPSY, NO HISTOLOGY DUE TO PROTOCOL
A: AUTOLYSIS
M: ANIMAL MISSING
B: NO NECROPSY PERFORMED

TABLE E2. FEMALE HAMSTERS: TUMOR PATHOLOGY (CONTINUED) SHORT RANGE

ANIMAL NUMBER	653	661	662	663	671	672	673	681	682	683	701	702	703	711	712	713	721	722	723	731	732	733	751	752	753
WEEKS ON STUDY	049	019	063	045	067	041	015	054	043	059	056	074	050	045	021	091	064	067	044	044	048	069	056	048	032	058
INTEGUMENTARY SYSTEM																										
SUBCUTANEOUS TISSUE	+	A	+	+	+	A	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
SARCOMA, NOS																										
FIBROSARCOMA																										
LIPOMA																										
RESPIRATORY SYSTEM																										
LUNGS AND BRONCHI	+	A	+	+	+	A	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
SARCOMA, NOS, METASTATIC																										
TRACHEA	+	A	+	+	+	A	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
HEMATOPOIETIC SYSTEM																										
BONE MARROW	+	A	+	+	+	A	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
SPLEEN	+	A	+	+	+	A	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
HEMANGIOMA																										
LYMPH NODES	+	A	+	+	+	A	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
THYMUS	+	A	+	+	+	A	A	+	+	+	+	+	+	+	+	+	+	–	+	+	+	+	+	+	+	+
CIRCULATORY SYSTEM																										
HEART	+	A	+	+	+	A	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
DIGESTIVE SYSTEM																										
SALIVARY GLAND	–	A	+	+	+	A	A	+	+	+	+	+	+	+	+	+	+	+	+	–	+	+	+	+	+	+
LIVER	+	A	+	+	+	A	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
BILE DUCT	+	A	+	+	+	A	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
GALLBLADDER & COMMON BILE DUCT	+	A	N	+	N	A	A	N	N	N	N	N	+	N	N	+	N	N	N	+	N	N	N	N	+
PANCREAS	–	A	+	+	+	A	A	+	+	+	+	+	+	+	+	+	+	+	+	–	+	+	+	+	+	+
ESOPHAGUS	+	A	+	+	+	A	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
STOMACH	+	A	+	+	+	A	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
SMALL INTESTINE	+	A	+	+	+	A	A	+	+	+	+	+	+	+	–	+	+	+	+	+	+	+	+	+	+	+
LARGE INTESTINE	+	A	+	+	+	A	A	+	+	+	+	+	+	+	–	+	+	+	+	+	+	+	+	+	+	+
ADENOCARCINOMA, NOS																										
URINARY SYSTEM																										
KIDNEY	+	A	+	+	+	A	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
URINARY BLADDER	+	A	+	+	+	A	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
ENDOCRINE SYSTEM																										
PITUITARY	–	A	–	+	–	A	A	+	+	+	–	+	–	+	+	+	–	+	–	–	+	–	–	+	–
CHROMOPHOBE ADENOMA																										
ADRENAL	+	A	+	+	+	A	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
CORTICAL ADENOMA										X																
PHEOCHROMOCYTOMA												X														
NEURILEMOMA																										
THYROID	+	A	–	+	+	A	A	+	+	+	+	+	+	+	+	+	+	+	+	+	–	+	+	+	+	+
PARATHYROID	+	A	–	+	+	A	A	+	+	+	–	+	+	+	+	+	+	+	+	–	+	–	–	+	+	+
ADENOMA, NOS																										
PANCREATIC ISLETS	–	A	+	+	+	A	A	+	+	+	+	+	+	+	+	+	+	+	+	–	+	+	+	+	+	+
ISLET-CELL ADENOMA																					X					
REPRODUCTIVE SYSTEM																										
MAMMARY GLAND	N	A	N	N	N	A	A	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
UTERUS	+	A	+	+	+	A	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
PAPILLOMA, NOS																										
PAPILLARY CARCINOMA																										
ADENOMA, NOS																										
PAPILLARY ADENOMA																										
LEIOMYOMA																										
OVARY	+	A	+	+	+	A	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
FIBROMA																										
ALL OTHER SYSTEMS																										
MULTIPLE ORGANS NOS	N	A	N	N	N	A	A	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
MALIG.LYMPHOMA, LYMPHOCYTIC TYPE																										
SITE UNKNOWN		A				A	A																			
SARCOMA, NOS																										
OSTEOSARCOMA																										

+: TISSUE EXAMINED MICROSCOPICALLY
–: REQUIRED TISSUE NOT EXAMINED MICROSCOPICALLY
X: TUMOR INCIDENCE
N: NECROPSY, NO AUTOLYSIS, NO MICROSCOPIC EXAMINATION
: NO TISSUE INFORMATION SUBMITTED
C: NECROPSY, NO HISTOLOGY DUE TO PROTOCOL
A: AUTOLYSIS
M: ANIMAL MISSING
B: NO NECROPSY PERFORMED

TABLE E2. FEMALE HAMSTERS: TUMOR PATHOLOGY (CONTINUED) SHORT RANGE

ANIMAL NUMBER	761	762	763	781	782	783	791	792	793	801	802	803	811	812	813	831	832	833	841	842	843	851	852	853	861
WEEKS ON STUDY	081	070	061	071	069	075	070	062	076	074	078	066	060	065	075	059	060	065	030	072	017	098	051	038	057
INTEGUMENTARY SYSTEM																									
SUBCUTANEOUS TISSUE	+	+	+	+	N	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+
SARCOMA, NOS																									
FIBROSARCOMA																						X			
LIPOMA																									
RESPIRATORY SYSTEM																									
LUNGS AND BRONCHI	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+
SARCOMA, NOS, METASTATIC																									
TRACHEA	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+
HEMATOPOIETIC SYSTEM																									
BONE MARROW	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+
SPLEEN	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	-	+
HEMANGIOMA																									
LYMPH NODES	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+
THYMUS	+	-	+	-	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	A	-	+	+	+
CIRCULATORY SYSTEM																									
HEART	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+
DIGESTIVE SYSTEM																									
SALIVARY GLAND	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+
LIVER	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+
BILE DUCT	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+
GALLBLADDER & COMMON BILE DUCT	N	N	+	N	N	N	+	N	+	N	N	N	N	+	+	N	+	N	N	N	A	+	+	N	N
PANCREAS	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	-	+	-	A	+	+	+	+
ESOPHAGUS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+
STOMACH	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	-	+
SMALL INTESTINE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+
LARGE INTESTINE	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+
ADENOCARCINOMA, NOS													X												
URINARY SYSTEM																									
KIDNEY	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+
URINARY BLADDER	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+
ENDOCRINE SYSTEM																									
PITUITARY	+	-	+	+	-	+	+	+	+	-	+	+	-	+	-	-	-	-	-	-	A	+	+	+	-
CHROMOPHOBE ADENOMA																									
ADRENAL	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+
CORTICAL ADENOMA												X													
PHEOCHROMOCYTOMA			X																						
NEURILEMOMA																									
THYROID	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+
PARATHYROID	+	+	+	-	-	-	+	-	+	+	-	-	-	-	+	+	+	-	+	-	A	+	+	+	-
ADENOMA, NOS									X													X			
PANCREATIC ISLETS	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	-	+	-	A	+	+	+	+
ISLET-CELL ADENOMA																									
REPRODUCTIVE SYSTEM																									
MAMMARY GLAND	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	A	N	N	N	N
UTERUS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+
PAPILLOMA, NOS																									
PAPILLARY CARCINOMA																						X			
ADENOMA, NOS																									
PAPILLARY ADENOMA																									
LEIOMYOMA																									
OVARY	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+
FIBROMA					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	A	N	N	N	N
MALIG.LYMPHOMA, LYMPHOCYTIC TYPE																									
SITE UNKNOWN																					A				
SARCOMA, NOS																									
OSTEOSARCOMA																									

+: TISSUE EXAMINED MICROSCOPICALLY
-: REQUIRED TISSUE NOT EXAMINED MICROSCOPICALLY
X: TUMOR INCIDENCE
N: NECROPSY, NO AUTOLYSIS, NO MICROSCOPIC EXAMINATION
: NO TISSUE INFORMATION SUBMITTED
C: NECROPSY, NO HISTOLOGY DUE TO PROTOCOL
A: AUTOLYSIS
M: ANIMAL MISSING
B: NO NECROPSY PERFORMED

TABLE E2. FEMALE HAMSTERS: TUMOR PATHOLOGY (CONTINUED) SHORT RANGE

ANIMAL NUMBER	8621	8631	8711	8721	8731	8811	8821	8831	8911	8921	8931	9011	9021	9031	9111	9121	9131	9211	9221	9231	9311	9321	9331	9411	9421	9431	TOTAL
WEEKS ON STUDY	0517	0413	0715	0516	0712	0513	0810	0633	0811	0517	0557	0622	0691	0445	0558	0710	0600	0801	0611	0591	0545	0668	0221	0710	0761	0881	TISSUES TUMORS
INTEGUMENTARY SYSTEM																											
SUBCUTANEOUS TISSUE	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	228*
SARCOMA, NOS																											1
FIBROSARCOMA																											1
LIPOMA																											1
RESPIRATORY SYSTEM																											
LUNGS AND BRONCHI	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	228
SARCOMA, NOS, METASTATIC																											2
TRACHEA	+	A	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	225
HEMATOPOIETIC SYSTEM																											
BONE MARROW	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	222
SPLEEN	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	226
HEMANGIOMA																											1
LYMPH NODES	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	227
THYMUS	+	A	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	204
CIRCULATORY SYSTEM																											
HEART	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	227
DIGESTIVE SYSTEM																											
SALIVARY GLAND	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	217
LIVER	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	228
BILE DUCT	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	228
GALLBLADDER & COMMON BILE DUCT	N	A	N	N	N	N	N	N	N	N	N	N	N	N	N	+	N	N	N	+	+	N	N	A	+	N	N	228*
PANCREAS	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	217
ESOPHAGUS	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	227
STOMACH	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	224
SMALL INTESTINE	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	227
LARGE INTESTINE	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	226
ADENOCARCINOMA, NOS																											1
URINARY SYSTEM																											
KIDNEY	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	228
URINARY BLADDER	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	221
ENDOCRINE SYSTEM																											
PITUITARY	-	A	+	-	+	+	-	-	+	-	-	~	+	+	+	+	+	+	~	-	-	+	A	-	+	+	132
CHROMOPHOBE ADENOMA			X																								1
ADRENAL	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	226
CORTICAL ADENOMA											X																8
PHEOCHROMOCYTOMA																											3
NEURILEMOMA																											1
THYROID	+	A	+	+	+	+	+	+	+	+	+	+	~	-	+	+	+	+	+	+	+	+	A	+	+	+	214
PARATHYROID	+	A	+	+	+	+	-	-	+	-	+	~	-	+	+	+	+	+	+	-	+	+	A	+	+	+	139
ADENOMA, NOS																											3
PANCREATIC ISLETS	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	217
ISLET-CELL ADENOMA																											2
REPRODUCTIVE SYSTEM																											
MAMMARY GLAND	N	A	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	A	N	N	N	228*
UTERUS	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	226
PAPILLOMA, NOS																											1
PAPILLARY CARCINOMA																											1
ADENOMA, NOS																											1
PAPILLARY ADENOMA																											1
LEIOMYOMA																											1
OVARY	+	A	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	222
FIBROMA																											1
ALL OTHER SYSTEMS																											
MULTIPLE ORGANS NOS	N	A	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	A	N	N	N	228*
MALIG.LYMPHOMA, LYMPHOCYTIC TYPE																											2
SITE UNKNOWN		A																					A				
SARCOMA, NOS																											1
OSTEOSARCOMA																											1

+: TISSUE EXAMINED MICROSCOPICALLY
-: REQUIRED TISSUE NOT EXAMINED MICROSCOPICALLY
X: TUMOR INCIDENCE
N: NECROPSY, NO AUTOLYSIS, NO MICROSCOPIC EXAMINATION

: NO TISSUE INFORMATION SUBMITTED
C: NECROPSY, NO HISTOLOGY DUE TO PROTOCOL
A: AUTOLYSIS
M: ANIMAL MISSING
B: NO NECROPSY PERFORMED

TABLE E3.

INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF MALE HAMSTERS ADMINISTERED INTERMEDIATE RANGE CHRYSOTILE ASBESTOS IN THE DIET

CONTROL

ANIMAL NUMBER	011	012	013	021	022	023	031	032	033	041	042	043	051	052	053	061	062	063	081	082	083	091	092	093	101
WEEKS ON STUDY	103	097	091	081	119	117	090	103	099	053	106	114	103	031	034	033	103	042	111	101	118	033	113	065	096
INTEGUMENTARY SYSTEM																									
SUBCUTANEOUS TISSUE SARCOMA, NOS	+	+	+	+	+	+	+	+	+	+	+	+	+	N	+	+	+	+	+	+	+ X	+	+	+	+
RESPIRATORY SYSTEM																									
LUNGS AND BRONCHI	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
TRACHEA	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
HEMATOPOIETIC SYSTEM																									
BONE MARROW	•	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
SPLEEN	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
LYMPH NODES ADENOCARCINOMA, NOS, METASTATIC	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
THYMUS	-	+	+	-	-	-	-	+	-	+	-	-	+	-	+	-	-	+	-	-	-	+	-	+	+
CIRCULATORY SYSTEM																									
HEART	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
DIGESTIVE SYSTEM																									
SALIVARY GLAND	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+
LIVER ADENOCARCINOMA, NOS, METASTATIC	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
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	+
PANCREAS	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
ESOPHAGUS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
STOMACH	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
SMALL INTESTINE ADENOCARCINOMA, NOS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
LARGE INTESTINE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
URINARY SYSTEM																									
KIDNEY ADENOCARCINOMA, NOS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
URINARY BLADDER	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
ENDOCRINE SYSTEM																									
PITUITARY	+	-	+	+	-	-	+	-	-	+	+	+	+	+	+	+	+	-	+	+	+	-	+	-	+
ADRENAL	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
CORTICAL ADENOMA					X							X													
CORTICAL CARCINOMA													X										X		
PHEOCHROMOCYTOMA																					X				
GANGLIONEUROMA																									
NEUROBLASTOMA		X											X												
THYROID	+	+	+	-	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
C-CELL ADENOMA							X																		
C-CELL CARCINOMA																								X	
PARATHYROID	-	+	+	-	-	-	+	+	+	-	+	+	+	+	+	-	+	+	+	+	-	+	-	+	+
ADENOMA, NOS											X														
PANCREATIC ISLETS	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
ISLET-CELL ADENOMA												X	X						X						
REPRODUCTIVE SYSTEM																									
MAMMARY 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
TESTIS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
PROSTATE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+
NERVOUS SYSTEM																									
BRAIN	+	-	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
ALL OTHER SYSTEMS																									
MULTIPLE ORGANS NOS MALIG.LYMPHOMA, HISTIOCYTIC TYPE	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N

+: TISSUE EXAMINED MICROSCOPICALLY
-: REQUIRED TISSUE NOT EXAMINED MICROSCOPICALLY
X: TUMOR INCIDENCE
N: NECROPSY, NO AUTOLYSIS, NO MICROSCOPIC EXAMINATION

: NO TISSUE INFORMATION SUBMITTED
C: NECROPSY, NO HISTOLOGY DUE TO PROTOCOL
A: AUTOLYSIS
M: ANIMAL MISSING
B: NO NECROPSY PERFORMED

TABLE E3. MALE HAMSTERS: TUMOR PATHOLOGY (CONTINUED) CONTROL

ANIMAL NUMBER	102	103	111	112	113	122	123	124	131	132	133	151	152	153	161	162	163	171	172	173	181	182	183	191	192
WEEKS ON STUDY	036	098	079	120	021	156	161	172	052	013	052	090	099	083	119	136	020	043	122	111	073	075	078	116	068
INTEGUMENTARY SYSTEM																									
SUBCUTANEOUS TISSUE SARCOMA, NOS	+	+	+	+	A	+	+	+	+	+	+	A	+	N	+	+	A	A	+	N	A	+	+	+	+
RESPIRATORY SYSTEM																									
LUNGS AND BRONCHI	+	+	+	+	A	+	+	+	+	+	+	A	+	+	+	+	A	A	+	+	A	+	+	+	+
TRACHEA	+	+	+	+	A	+	+	+	+	+	+	A	+	+	+	+	A	A	+	+	A	+	+	+	+
HEMATOPOIETIC SYSTEM																									
BONE MARROW	+	+	+	+	A	+	+	-	+	+	+	A	+	+	+	+	A	A	+	-	A	+	+	+	+
SPLEEN	+	+	+	+	A	+	+	+	+	+	+	A	+	+	+	+	A	A	+	+	A	+	+	+	+
LYMPH NODES ADENOCARCINOMA, NOS, METASTATIC	+	+	+	+	A	+	+	+	+	+	+	A	+	+	+	+	A	A	+	+	A	+	+	+	+
THYMUS	+	+	+	+	A	-	+	+	+	-	+	A	+	+	-	+	A	A	+	+	A	+	+	+	+
CIRCULATORY SYSTEM																									
HEART	+	+	+	+	A	+	+	+	+	+	+	A	+	+	+	+	A	A	+	+	A	+	+	+	+
DIGESTIVE SYSTEM																									
SALIVARY GLAND	+	+	+	+	A	+	+	+	+	+	+	A	+	-	+	+	A	A	+	+	A	+	+	+	+
LIVER ADENOCARCINOMA, NOS, METASTATIC	+	+	+	+	A	+	+	+	+	+	+	A	+	+	+	+	A	A	+	+	A	+	+	+	+
BILE DUCT	+	+	+	+	A	+	+	+	+	+	+	A	+	+	+	+	A	A	+	+	A	+	+	+	+
GALLBLADDER & COMMON BILE DUCT	N	N	N	N	A	+	N	+	+	N	+	A	N	N	+	N	A	A	N	N	A	+	N	N	N
PANCREAS	+	+	+	+	A	+	+	+	+	+	+	A	+	+	+	+	A	A	+	+	A	+	-	+	+
ESOPHAGUS	+	+	+	+	A	+	+	+	+	+	+	A	+	+	+	+	A	A	+	+	A	+	+	+	+
STOMACH	+	+	+	+	A	+	+	+	+	+	+	A	+	+	+	+	A	A	+	+	A	+	+	+	+
SMALL INTESTINE ADENOCARCINOMA, NOS	+	+	+	+	A	+	+	+	+	+	+	A	+	+	+	+	A	A	+	+	A	+	+	+	+
LARGE INTESTINE	+	+	+	+	A	+	+	+	+	+	+	A	+	+	+	+	A	A	+	+	A	+	+	+	+
URINARY SYSTEM																									
KIDNEY ADENOCARCINOMA, NOS	+	+	+	+	A	+	+	+	+	+	+	A	+ X	+	+	+	A	A	+	+	A	+	+	+	+
URINARY BLADDER	+	+	+	+	A	+	+	+	+	+	+	A	+	+	+	+	A	A	+	+	A	+	+	+	+
ENDOCRINE SYSTEM																									
PITUITARY	-	+	-	-	A	+	+	+	+	+	-	A	+	+	+	+	A	A	+	-	A	+	+	-	+
ADRENAL CORTICAL ADENOMA CORTICAL CARCINOMA PHEOCHROMOCYTOMA GANGLIONEUROMA NEUROBLASTOMA	+	+ X	+	+	A	+	+	+	+	+	+	A	+	+	+	+	A	A	+	+	A	+	+	+	+
THYROID C-CELL ADENOMA C-CELL CARCINOMA	+	+	-	-	A	-	+	+	+	+	-	A	+	+	+	+	A	A	+	-	A	+	+	+	+
PARATHYROID ADENOMA, NOS	+	+	-	-	A	-	-	+	+	-	A	+	+	+	+	+	A	A	A	+	A	+	-	-	-
PANCREATIC ISLETS ISLET-CELL ADENOMA	+	+	+	+	A	+	+	+	+	+	+	A	+	+	+	+	A	A	+	+	A	+	-	+	+
REPRODUCTIVE SYSTEM																									
MAMMARY GLAND	N	N	N	N	A	N	N	N	N	N	N	A	N	N	N	N	A	A	N	N	A	N	N	N	N
TESTIS	+	+	+	+	A	+	+	+	+	+	+	A	+	+	+	+	A	A	+	+	A	+	+	+	+
PROSTATE	+	+	-	+	A	+	+	+	+	+	+	A	+	+	+	+	A	A	+	+	A	+	+	+	+
NERVOUS SYSTEM																									
BRAIN	+	+	+	+	A	+	+	+	+	+	+	A	+	+	+	+	A	A	+	+	A	+	+	+	+
ALL OTHER SYSTEMS																									
MULTIPLE ORGANS NOS MALIG.LYMPHOMA, HISTIOCYTIC TYPE	N	N	N	N	A	N	N	N	N	N	N	A	N	N	N	N	A	A	N	N	A	N	N	N	N

+: TISSUE EXAMINED MICROSCOPICALLY
-: REQUIRED TISSUE NOT EXAMINED MICROSCOPICALLY
X: TUMOR INCIDENCE
N: NECROPSY, NO AUTOLYSIS, NO MICROSCOPIC EXAMINATION
: NO TISSUE INFORMATION SUBMITTED
C: NECROPSY, NO HISTOLOGY DUE TO PROTOCOL
A: AUTOLYSIS
M: ANIMAL MISSING
B: NO NECROPSY PERFORMED

TABLE E3. MALE HAMSTERS: TUMOR PATHOLOGY (CONTINUED) CONTROL

ANIMAL NUMBER	193	201	202	203	211	212	213	221	222	223	231	232	233	251	252	253	261	262	263	271	272	273	281	282	283
WEEKS ON STUDY	1 0 4	1 0 4	0 9 3	0 3 2	1 0 9	1 0 9	1 0 1	1 0 5	0 6 3	1 1 5	0 8 7	0 4 6	0 4 3	1 1 1	0 2 2	0 5 1	0 8 8	0 9 3	0 3 3	1 0 7	1 1 5	0 2 4	0 3 1	0 6 3	0 2 3
INTEGUMENTARY SYSTEM																									
SUBCUTANEOUS TISSUE SARCOMA, NOS	+	+	+	+	+	+	+	+	+	+	+	+	A	+	A	+	+	+	+	+	+	A	+	+	+
RESPIRATORY SYSTEM																									
LUNGS AND BRONCHI	+	+	+	+	+	+	+	+	+	+	+	+	A	+	A	+	+	+	+	+	+	A	+	+	+
TRACHEA	+	+	+	+	+	+	+	+	+	+	+	+	A	+	A	+	+	+	+	+	+	A	+	+	+
HEMATOPOIETIC SYSTEM																									
BONE MARROW	+	+	+	+	+	+	+	+	+	+	+	+	A	+	A	+	+	+	+	+	+	A	+	+	+
SPLEEN	+	+	+	+	+	+	+	+	+	+	+	+	A	+	A	–	+	+	+	+	+	A	+	+	+
LYMPH NODES ADENOCARCINOMA, NOS, METASTATIC	+	+	+	+	+	+	+	+	+	+	+	+	A	+	A	+	+	+	+	+	+	A	+	+	+
THYMUS	–	+	+	+	–	+	–	+	+	–	+	+	A	–	A	+	+	+	+	+	–	A	–	+	+
CIRCULATORY SYSTEM																									
HEART	+	+	+	+	+	+	+	+	+	+	+	+	A	+	A	+	+	+	+	+	+	A	+	+	+
DIGESTIVE SYSTEM																									
SALIVARY GLAND	+	+	+	+	+	+	+	+	+	+	+	+	A	+	A	+	+	+	+	+	+	A	+	+	+
LIVER ADENOCARCINOMA, NOS, METASTATIC	+	+	+	+	+	+	+	+	+	+	+	+	A	+	A	+	+	+	+	+	+	A	+	+	+
BILE DUCT	+	+	+	+	+	+	+	+	+	+	+	+	A	+	A	+	+	+	+	+	+	A	+	+	+
GALLBLADDER & COMMON BILE DUCT	N	N	N	N	+	N	N	N	+	N	N	+	A	N	A	+	N	N	N	+	N	A	+	N	N
PANCREAS	+	+	+	+	+	+	+	+	+	+	+	+	A	+	A	+	+	+	+	+	+	A	+	+	+
ESOPHAGUS	+	+	+	+	+	+	+	+	+	+	+	+	A	+	A	+	+	+	+	+	+	A	+	+	+
STOMACH	+	+	+	+	+	+	+	+	+	+	+	+	A	+	A	+	+	+	+	+	+	A	+	+	+
SMALL INTESTINE ADENOCARCINOMA, NOS	+	+	+	+	+	+	+	+	+	+	+	+	A	+	A	+	+	+	+	+	+	A	+	+	+
LARGE INTESTINE	+	+	+	+	+	+	+	+	+	+	+	+	A	+	A	+	+	+	+	+	+	A	+	+	+
URINARY SYSTEM																									
KIDNEY ADENOCARCINOMA, NOS	+	+	+	+	+	+ X	+	+	+	+	+	+	A	+	A	+	+	+	+	+	+	A	+	+	+
URINARY BLADDER	+	+	+	+	–	+	+	+	+	+	+	+	A	+	A	+	+	+	+	+	+	A	+	+	+
ENDOCRINE SYSTEM																									
PITUITARY	+	–	+	–	+	–	–	+	+	+	–	+	A	+	A	+	+	+	–	+	–	A	–	–	–
ADRENAL CORTICAL ADENOMA CORTICAL CARCINOMA PHEOCHROMOCYTOMA GANGLIONEUROMA NEUROBLASTOMA	+	+	+	+	+	+	+	+	+	+ X	+ X	+	A X	+	A	+	+	+	+	+	+ X	A	+	+	+
THYROID C-CELL ADENOMA C-CELL CARCINOMA	+	+	+	+	+	+	+	+	+	+ X	–	+	A	+	A	+	+	+	+	+	+	A	+	+	+
PARATHYROID ADENOMA, NOS	+	–	+	+	+	+	–	–	+	–	–	+	A	+	A	–	–	+	+	–	+	A	+	–	+
PANCREATIC ISLETS ISLET-CELL ADENOMA	+ X	+	+	+	+	+	+	+	+	+	+	+	A	+ X	A	+	+	+	+	+	+	A	+	+	+
REPRODUCTIVE SYSTEM																									
MAMMARY GLAND	N	N	N	N	N	N	N	N	N	N	N	N	A	N	A	N	N	N	N	N	N	A	N	N	N
TESTIS	+	+	+	+	+	+	+	+	+	+	+	+	A	+	A	+	+	+	+	+	+	A	+	+	+
PROSTATE	+	+	+	+	+	+	+	+	+	+	+	+	A	+	A	+	+	+	+	+	+	A	+	+	+
NERVOUS SYSTEM																									
BRAIN	+	+	+	–	+	+	+	+	+	+	+	+	A	+	A	+	+	+	+	+	+	A	+	+	+
ALL OTHER SYSTEMS																									
MULTIPLE ORGANS NOS MALIG.LYMPHOMA, HISTIOCYTIC TYPE	N	N	N	N	N	N	N	N	N	N	N	N	A	N	A	N	N	N	N	N	N	A	N	N	N

+: TISSUE EXAMINED MICROSCOPICALLY
–: REQUIRED TISSUE NOT EXAMINED MICROSCOPICALLY
X: TUMOR INCIDENCE
N: NECROPSY, NO AUTOLYSIS, NO MICROSCOPIC EXAMINATION

: NO TISSUE INFORMATION SUBMITTED
C: NECROPSY; NO HISTOLOGY DUE TO PROTOCOL
A: AUTOLYSIS
M: ANIMAL MISSING
B: NO NECROPSY PERFORMED

TABLE E3. MALE HAMSTERS: TUMOR PATHOLOGY (CONTINUED) CONTROL

ANIMAL NUMBER	291	292	293	301	302	303	311	312	313	321	322	323	331	332	333	341	342	343	351	352	353	361	362	363	371
WEEKS ON STUDY	101	101	093	091	068	108	110	093	126	102	053	103	041	111	082	033	035	063	037	038	098	103	035	035	102
INTEGUMENTARY SYSTEM																									
SUBCUTANEOUS TISSUE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	N	A	+	+	+	+	+	+	N	+	+
SARCOMA, NOS																									
RESPIRATORY SYSTEM																									
LUNGS AND BRONCHI	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+
TRACHEA	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+
HEMATOPOIETIC SYSTEM																									
BONE MARROW	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	A	+	+	+	+	+	+	+	+	+
SPLEEN	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	A	-	+	+	+	+	+	+	+	+
LYMPH NODES	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+
ADENOCARCINOMA, NOS, METASTATIC														Xa											
THYMUS	+	+	+	-	-	-	+	-	-	-	+	-	+	+	-	A	-	+	+	+	+	+	+	+	-
CIRCULATORY SYSTEM																									
HEART	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+
DIGESTIVE SYSTEM																									
SALIVARY GLAND	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	A	-	+	+	+	+	+	+	+	+
LIVER	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+
ADENOCARCINOMA, NOS, METASTATIC														X											
BILE DUCT	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+
GALLBLADDER & COMMON BILE DUCT	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	A	N	N	+	N	N	N	N	N	N
PANCREAS	+	-	+	+	-	+	+	+	+	+	+	+	+	+	+	A	-	+	+	+	+	+	+	+	+
ESOPHAGUS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+
STOMACH	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	-	+	+	+	+	+	+	+	+
SMALL INTESTINE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+
ADENOCARCINOMA, NOS														X											
LARGE INTESTINE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+
URINARY SYSTEM																									
KIDNEY	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	A	+	+	+	+	+	+	+	+	+
ADENOCARCINOMA, NOS																									
URINARY BLADDER	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	-	+	+	+	+	+	+
ENDOCRINE SYSTEM																									
PITUITARY	-	+	-	+	+	+	+	+	+	+	+	-	-	+	+	A	-	+	-	-	+	+	-	+	+
ADRENAL	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	A	+	+	+	+	+	+	+	+	+
CORTICAL ADENOMA		X				X			X	X															
CORTICAL CARCINOMA																									
PHEOCHROMOCYTOMA																									
GANGLIONEUROMA																									X
NEUROBLASTOMA																									
THYROID	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	-
C-CELL ADENOMA			X																						
C-CELL CARCINOMA																									
PARATHYROID	-	+	+	+	+	-	-	+	+	+	+	+	+	-	-	A	-	-	+	-	+	-	+	+	-
ADENOMA, NOS																									
PANCREATIC ISLETS	+	-	+	+	-	+	+	+	+	+	+	+	+	+	+	A	-	+	+	+	+	+	+	+	+
ISLET-CELL ADENOMA									X	X															
REPRODUCTIVE SYSTEM																									
MAMMARY GLAND	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	A	N	N	N	N	N	N	N	N	N
TESTIS	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+
PROSTATE	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	A	+	-	+	+	+	+	+	+	+
NERVOUS SYSTEM																									
BRAIN	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+
ALL OTHER SYSTEMS																									
MULTIPLE ORGANS NOS	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	A	N	N	N	N	N	N	N	N	N
MALIG.LYMPHOMA, HISTIOCYTIC TYPE																									

a: MULTIPLE OCCURENCE OF MORPHOLOGY

+: TISSUE EXAMINED MICROSCOPICALLY
-: REQUIRED TISSUE NOT EXAMINED MICROSCOPICALLY
X: TUMOR INCIDENCE
N: NECROPSY, NO AUTOLYSIS, NO MICROSCOPIC EXAMINATION
: NO TISSUE INFORMATION SUBMITTED
C: NECROPSY; NO HISTOLOGY DUE TO PROTOCOL
A: AUTOLYSIS
M: ANIMAL MISSING
B: NO NECROPSY PERFORMED

TABLE E3. MALE HAMSTERS: TUMOR PATHOLOGY (CONTINUED) CONTROL

ANIMAL NUMBER	37 2	37 3	38 1	38 2	38 3	39 1	39 2	39 3	40 1	40 2	40 3	41 1	41 2	41 3	42 1	42 2	42 3	43 1	43 2	43 3	44 1	44 2	44 3	45 1	45 2	45 3	TOTAL
WEEKS ON STUDY	061	124	089	048	025	079	041	051	079	097	035	114	027	070	086	088	053	074	041	068	096	073	090	061	081	071	TISSUES TUMORS
INTEGUMENTARY SYSTEM																											
SUBCUTANEOUS TISSUE SARCOMA, NOS	+	+	+	+	+	+	+	+	N	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	116M 1
RESPIRATORY SYSTEM																											
LUNGS AND BRONCHI	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	116
TRACHEA	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	116
HEMATOPOIETIC SYSTEM																											
BONE MARROW	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	113
SPLEEN	+	+	+	+	+	+	+	+	–	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	112
LYMPH NODES ADENOCARCINOMA, NOS, METASTATIC	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	116 1
THYMUS	+	–	–	+	+	+	+	+	–	+	+	–	A	+	+	+	+	+	+	+	+	+	–	+	+	+	76
CIRCULATORY SYSTEM																											
HEART	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	116
DIGESTIVE SYSTEM																											
SALIVARY GLAND	+	+	+	+	–	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	–	+	+	+	110
LIVER ADENOCARCINOMA, NOS, METASTATIC	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	116 1
BILE DUCT	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	116
GALLBLADDER & COMMON BILE DUCT	N	N	N	+	+	N	N	N	+	+	N	N	A	N	N	N	N	+	N	N	N	+	N	N	N	N	116M
PANCREAS	+	+	+	+	–	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	110
ESOPHAGUS	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	116
STOMACH	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	115
SMALL INTESTINE ADENOCARCINOMA, NOS	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	116 1
LARGE INTESTINE	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	116
URINARY SYSTEM																											
KIDNEY ADENOCARCINOMA, NOS	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	115 2
URINARY BLADDER	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	113
ENDOCRINE SYSTEM																											
PITUITARY	+	+	+	+	–	–	+	+	+	+	–	+	A	+	+	+	–	–	+	+	+	+	–	+	+	–	77
ADRENAL CORTICAL ADENOMA CORTICAL CARCINOMA PHEOCHROMOCYTOMA GANGLIONEUROMA NEUROBLASTOMA	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	115 7 3 5 1 2
THYROID C-CELL ADENOMA C-CELL CARCINOMA	+	+	–	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	106 3 1
PARATHYROID ADENOMA, NOS	+	+	–	+	–	+	+	–	+	+	+	–	A	–	+	+	–	+	+	+	+	+	+	+	–	–	71 1
PANCREATIC ISLETS ISLET-CELL ADENOMA	+	+	+	+	–	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	110 7
REPRODUCTIVE SYSTEM																											
MAMMARY GLAND	N	N	N	N	N	N	N	N	N	N	N	N	A	N	N	N	N	N	N	N	N	N	N	N	N	N	116M
TESTIS	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	–	+	+	+	+	+	114
PROSTATE	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	112
NERVOUS SYSTEM																											
BRAIN	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	–	+	+	+	+	+	+	+	+	112
ALL OTHER SYSTEMS																											
MULTIPLE ORGANS NOS MALIG.LYMPHOMA, HISTIOCYTIC TYPE	N	N	N	N	N	N	N	N	N	N	N	N	A	N	N	N	N	N	N	N	N X	M	N	N	N	N	116M 1

+: TISSUE EXAMINED MICROSCOPICALLY
–: REQUIRED TISSUE NOT EXAMINED MICROSCOPICALLY
X: TUMOR INCIDENCE
N: NECROPSY, NO AUTOLYSIS, NO MICROSCOPIC EXAMINATION
: NO TISSUE INFORMATION SUBMITTED
C: NECROPSY; NO HISTOLOGY DUE TO PROTOCOL
A: AUTOLYSIS
M: ANIMAL MISSING
B: NO NECROPSY PERFORMED

TABLE E3.

INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF MALE HAMSTERS ADMINISTERED INTERMEDIATE RANGE CHRYSOTILE ASBESTOS IN THE DIET

INTERMEDIATE RANGE CHRYSOTILE

ANIMAL NUMBER	011	012	013	021	022	023	031	032	033	041	042	043	051	052	053	061	062	063	071	072	073	081	082	083	091
WEEKS ON STUDY	082	094	089	103	080	086	017	079	051	092	092	076	103	100	090	072	029	096	117	065	083	102	099	078	106
RESPIRATORY SYSTEM																									
LUNGS AND BRONCHI	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+
TRACHEA CARCINOMA,NOS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+
HEMATOPOIETIC SYSTEM																									
BONE MARROW	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	–	+	+	+	+	+
SPLEEN HEMANGIOMA	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+
LYMPH NODES CARCINOMA,NOS C-CELL CARCINOMA, METASTATIC SARCOMA, NOS, METASTATIC MALIG.LYMPHOMA, HISTIOCYTIC TYPE	–	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+
THYMUS	+	–	–	–	+	+	+	+	+	–	–	–	+	+	+	+	A	–	+	+	–	–	–	+	–
CIRCULATORY SYSTEM																									
HEART	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+
DIGESTIVE SYSTEM																									
SALIVARY GLAND	–	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	–	+	+	+	+	+
LIVER	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+
BILE DUCT	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+
GALLBLADDER & COMMON BILE DUCT	N	N	N	N	N	N	N	N	+	N	N	N	N	N	N	N	A	N	+	N	N	N	N	N	N
PANCREAS	+	+	+	+	–	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+
ESOPHAGUS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+
STOMACH CARCINOMA-IN-SITU, NOS SQUAMOUS CELL PAPILLOMA PAPILLARY ADENOMA	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+
SMALL INTESTINE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+
LARGE INTESTINE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	–	+	+	+	+	+	+
URINARY SYSTEM																									
KIDNEY TUBULAR-CELL ADENOCARCINOMA	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+
URINARY BLADDER	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+
ENDOCRINE SYSTEM																									
PITUITARY	+	+	+	+	+	+	A	+	–	+	–	+	+	+	+	+	A	–	–	+	+	+	+	+	+
ADRENAL CORTICAL ADENOMA CORTICAL CARCINOMA PHEOCHROMOCYTOMA PHEOCHROMOCYTOMA, MALIGNANT NEUROBLASTOMA	+	+	+	+	+	+	+	+	+	+	+	+	+ X	+	+	+	A	+	+	+	+ X	+	+ X	+ X	+
THYROID ADENOMA, NOS C-CELL ADENOMA C-CELL CARCINOMA	–	+	–	+	+	+	+	–	+	+	–	+	+	+	+	+	A	+	+	–	+	+	+	–	+ X
PARATHYROID ADENOMA, NOS	–	+	–	+	+	+	+	–	–	+	–	+	+	+	+	+	A	+	–	–	–	+	+	–	+
PANCREATIC ISLETS ISLET-CELL ADENOMA ISLET-CELL CARCINOMA	+	+ X	+	+	–	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+
REPRODUCTIVE SYSTEM																									
MAMMARY GLAND	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	A	N	N	N	N	N	N	N	N
TESTIS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+
PROSTATE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+
NERVOUS SYSTEM																									
BRAIN	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+
ALL OTHER SYSTEMS																									
MULTIPLE ORGANS NOS CARCINOMA, NOS, METASTATIC FIBROSARCOMA MALIG.LYMPHOMA, LYMPHOCYTIC TYPE MALIG.LYMPHOMA, HISTIOCYTIC TYPE	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	A	N	N	N	N	N	N	N	N

+: TISSUE EXAMINED MICROSCOPICALLY
–: REQUIRED TISSUE NOT EXAMINED MICROSCOPICALLY
X: TUMOR INCIDENCE
N: NECROPSY, NO AUTOLYSIS, NO MICROSCOPIC EXAMINATION

: NO TISSUE INFORMATION SUBMITTED
C: NECROPSY, NO HISTOLOGY DUE TO PROTOCOL
A: AUTOLYSIS
M: ANIMAL MISSING
B: NO NECROPSY PERFORMED

TABLE E3. MALE HAMSTERS: TUMOR PATHOLOGY (CONTINUED) INTERMEDIATE RANGE

ANIMAL NUMBER	092	093	101	102	103	111	112	113	121	122	123	131	132	133	141	142	143	151	152	153	161	162	163	171	172
WEEKS ON STUDY	102	096	024	085	052	013	111	101	088	105	085	084	073	088	090	091	055	099	082	039	080	110	082	116	109
RESPIRATORY SYSTEM																									
LUNGS AND BRONCHI	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
TRACHEA	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
CARCINOMA,NOS																									
HEMATOPOIETIC SYSTEM																									
BONE MARROW	+	+	+	+	+	-	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+
SPLEEN	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+
HEMANGIOMA																									
LYMPH NODES	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
CARCINOMA,NOS								X																	
C-CELL CARCINOMA, METASTATIC																									
SARCOMA, NOS, METASTATIC																									
MALIG.LYMPHOMA, HISTIOCYTIC TYPE																									
THYMUS	-	+	+	+	+	-	+	-	-	-	+	+	-	+	-	+	-	+	-	+	+	+	+	-	-
CIRCULATORY SYSTEM																									
HEART	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
DIGESTIVE SYSTEM																									
SALIVARY GLAND	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
LIVER	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
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	+	+
PANCREAS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	-	-	+	+	+	+	+	-	-	+
ESOPHAGUS	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
STOMACH	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
CARCINOMA-IN-SITU, NOS																									
SQUAMOUS CELL PAPILLOMA																									
PAPILLARY ADENOMA																						X			
SMALL INTESTINE	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
LARGE INTESTINE	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
URINARY SYSTEM																									
KIDNEY	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
TUBULAR-CELL ADENOCARCINOMA																									
URINARY BLADDER	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
ENDOCRINE SYSTEM																									
PITUITARY	+	-	-	+	+	+	-	+	+	+	+	-	-	+	+	+	+	+	+	+	+	+	+	+	+
ADRENAL	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
CORTICAL ADENOMA	X						X	X	X						X										
CORTICAL CARCINOMA																		X							
PHEOCHROMOCYTOMA																									
PHEOCHROMOCYTOMA, MALIGNANT												X													
NEUROBLASTOMA																									
THYROID	+	+	+	+	+	+	-	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+
ADENOMA, NOS																									
C-CELL ADENOMA																									
C-CELL CARCINOMA																									
PARATHYROID	+	+	-	+	+	-	-	-	+	-	+	+	-	+	-	+	+	+	+	-	-	-	-	+	-
ADENOMA, NOS																									
PANCREATIC ISLETS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	-	-	+	+	+	+	+	-	-	+
ISLET-CELL ADENOMA								X																	
ISLET-CELL CARCINOMA																									
REPRODUCTIVE SYSTEM																									
MAMMARY 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
TESTIS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
PROSTATE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+
NERVOUS SYSTEM																									
BRAIN	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
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																	
FIBROSARCOMA																									
MALIG.LYMPHOMA, LYMPHOCYTIC TYPE		X																							
MALIG.LYMPHOMA, HISTIOCYTIC TYPE																X									

+: TISSUE EXAMINED MICROSCOPICALLY
-: REQUIRED TISSUE NOT EXAMINED MICROSCOPICALLY
X: *TUMOR INCIDENCE*
N: NECROPSY, NO AUTOLYSIS, NO MICROSCOPIC EXAMINATION

: NO TISSUE INFORMATION SUBMITTED
C: NECROPSY; NO HISTOLOGY DUE TO PROTOCOL
A: AUTOLYSIS
M: ANIMAL MISSING
B: NO NECROPSY PERFORMED

TABLE E3. MALE HAMSTERS: TUMOR PATHOLOGY (CONTINUED) INTERMEDIATE RANGE

ANIMAL NUMBER	17 3	18 1	18 2	18 3	19 1	19 2	19 3	20 1	20 2	20 3	21 1	21 2	21 3	22 0	22 2	22 3	23 1	23 2	23 3	24 1	24 2	24 3	25 1	25 2	25 3
WEEKS ON STUDY	079	091	083	517	017	115	089	080	067	095	091	083	091	061	079	102	094	081	051	097	079	091	098	094	069
RESPIRATORY SYSTEM																									
LUNGS AND BRONCHI	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+
TRACHEA	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+
CARCINOMA,NOS																									
HEMATOPOIETIC SYSTEM																									
BONE MARROW	+	+	+	+	+	+	+	+	+	+	+	−	+	A	+	+	+	+	+	+	+	+	+	+	+
SPLEEN	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+
HEMANGIOMA																									
LYMPH NODES	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+
CARCINOMA,NOS																									
C-CELL CARCINOMA, METASTATIC																									
SARCOMA, NOS, METASTATIC																									
MALIG.LYMPHOMA, HISTIOCYTIC TYPE																									
THYMUS	+	−	−	+	+	−	−	+	+	−	+	+	−	A	−	−	−	+	+	−	+	+	+	−	+
CIRCULATORY SYSTEM																									
HEART	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+
DIGESTIVE SYSTEM																									
SALIVARY GLAND	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+
LIVER	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+
BILE DUCT	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+
GALLBLADDER & COMMON BILE DUCT	+	N	N	N	N	N	N	N	N	N	N	N	N	A	N	N	N	N	N	N	+	N	N	N	N
PANCREAS	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+
ESOPHAGUS	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+
STOMACH	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+
CARCINOMA-IN-SITU, NOS																									
SQUAMOUS CELL PAPILLOMA																									
PAPILLARY ADENOMA																									
SMALL INTESTINE	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+
LARGE INTESTINE	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+
URINARY SYSTEM																									
KIDNEY	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+
TUBULAR-CELL ADENOCARCINOMA																									
URINARY BLADDER	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+
ENDOCRINE SYSTEM																									
PITUITARY	+	+	+	+	−	−	+	−	+	−	+	+	+	A	−	+	+	+	−	+	+	+	+	+	−
ADRENAL	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+
CORTICAL ADENOMA																X					X				
CORTICAL CARCINOMA																									
PHEOCHROMOCYTOMA													X							X					
PHEOCHROMOCYTOMA, MALIGNANT																									
NEUROBLASTOMA																									
THYROID	+	+	+	+	+	−	+	−	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	−
ADENOMA, NOS																X									
C-CELL ADENOMA		X																							
C-CELL CARCINOMA										X															
PARATHYROID	+	−	+	−	−	−	+	−	−	+	+	+	+	A	+	−	+	+	−	+	−	−	−	+	+
ADENOMA, NOS																								X	
PANCREATIC ISLETS	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+
ISLET-CELL ADENOMA						X				X														X	
ISLET-CELL CARCINOMA																									
REPRODUCTIVE SYSTEM																									
MAMMARY GLAND	N	N	N	N	N	N	N	N	N	N	N	N	N	A	N	N	N	N	N	N	N	N	N	N	N
TESTIS	+	+	+	+	+	+	−	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+
PROSTATE	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+
NERVOUS SYSTEM																									
BRAIN	+	+	+	+	+	+	+	+	+	−	+	+	+	A	−	−	+	+	+	+	+	+	+	+	+
ALL OTHER SYSTEMS																									
MULTIPLE ORGANS NOS	N	N	N	N	N	N	N	N	N	N	N	N	N	A	N	N	N	N	N	N	N	N	N	N	N
CARCINOMA, NOS, METASTATIC																									
FIBROSARCOMA																									
MALIG.LYMPHOMA, LYMPHOCYTIC TYPE												X													
MALIG.LYMPHOMA, HISTIOCYTIC TYPE																									

+: TISSUE EXAMINED MICROSCOPICALLY
−: REQUIRED TISSUE NOT EXAMINED MICROSCOPICALLY
X: TUMOR INCIDENCE
N: NECROPSY, NO AUTOLYSIS, NO MICROSCOPIC EXAMINATION

: NO TISSUE INFORMATION SUBMITTED
C: NECROPSY, NO HISTOLOGY DUE TO PROTOCOL
A: AUTOLYSIS
M: ANIMAL MISSING
B: NO NECROPSY PERFORMED

TABLE E3. MALE HAMSTERS: TUMOR PATHOLOGY (CONTINUED) INTERMEDIATE RANGE

ANIMAL NUMBER	261	262	263	271	272	273	281	282	283	291	293	301	302	303	311	312	313	321	322	323	331	332	333	341	342
WEEKS ON STUDY	078	115	076	098	100	098	076	078	116	036	118	101	106	082	104	113	095	091	101	078	026	062	075	122	102
RESPIRATORY SYSTEM																									
LUNGS AND BRONCHI	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
TRACHEA	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
CARCINOMA,NOS																									
HEMATOPOIETIC SYSTEM																									
BONE MARROW	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
SPLEEN	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+
HEMANGIOMA																									
LYMPH NODES	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
CARCINOMA,NOS																									
C-CELL CARCINOMA, METASTATIC																									
SARCOMA, NOS, METASTATIC																									
MALIG.LYMPHOMA, HISTIOCYTIC TYPE																									
THYMUS	+	-	-	-	-	-	-	+	-	+	-	-	-	-	-	-	-	+	-	-	+	-	-	-	-
CIRCULATORY SYSTEM																									
HEART	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
DIGESTIVE SYSTEM																									
SALIVARY GLAND	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
LIVER	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
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	+	+	+	+	+	-	+	+	+	+	+.	+	+	+	+	+	+	+	+	+	+	+	+	+	+
ESOPHAGUS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
STOMACH	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
CARCINOMA-IN-SITU, NOS																								X	
SQUAMOUS CELL PAPILLOMA																									
PAPILLARY ADENOMA																									
SMALL INTESTINE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
LARGE INTESTINE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
URINARY SYSTEM																									
KIDNEY	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
TUBULAR-CELL ADENOCARCINOMA																									
URINARY BLADDER	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
ENDOCRINE SYSTEM																									
PITUITARY	+	+	-	+	+	-	+	+	+	A	+	+	+	-	+	+	+	+	+	-	+	+	+	+	+
ADRENAL	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
CORTICAL ADENOMA					X	X							X		X										
CORTICAL CARCINOMA				X																					
PHEOCHROMOCYTOMA																							X		
PHEOCHROMOCYTOMA, MALIGNANT																									
NEUROBLASTOMA																									
THYROID	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	-	+	+	+	+
ADENOMA, NOS												X													
C-CELL ADENOMA																									
C-CELL CARCINOMA																									
PARATHYROID	+	+	-	-	-	+	+	+	-	+	+	+	+	+	-	-	-	+	-	-	+	+	-	-	+
ADENOMA, NOS																									
PANCREATIC ISLETS	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
ISLET-CELL ADENOMA							X		X																
ISLET-CELL CARCINOMA																									
REPRODUCTIVE SYSTEM																									
MAMMARY 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
TESTIS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
PROSTATE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+
NERVOUS SYSTEM																									
BRAIN	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
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																									
FIBROSARCOMA																									
MALIG.LYMPHOMA, LYMPHOCYTIC TYPE																						X			
MALIG.LYMPHOMA, HISTIOCYTIC TYPE																									

+: TISSUE EXAMINED MICROSCOPICALLY
-: REQUIRED TISSUE NOT EXAMINED MICROSCOPICALLY
X: TUMOR INCIDENCE
N: NECROPSY, NO AUTOLYSIS, NO MICROSCOPIC EXAMINATION

: NO TISSUE INFORMATION SUBMITTED
C: NECROPSY, NO HISTOLOGY DUE TO PROTOCOL
A: AUTOLYSIS
M: ANIMAL MISSING
B: NO NECROPSY PERFORMED

TABLE E3. MALE HAMSTERS: TUMOR PATHOLOGY (CONTINUED) INTERMEDIATE RANGE

ANIMAL NUMBER	34313	35111	35212	35313	36111	36212	36313	37111	37212	37313	38111	38212	38313	38911	39211	39312	39513	40111	40212	40313	41111	41212	41313	42111	42212	42313
WEEKS ON STUDY	092	065	088	064	094	074	105	055	057	080	084	084	083	078	098	118	095	091	113	080	093	094	117	104	096	099	116
RESPIRATORY SYSTEM																										
LUNGS AND BRONCHI	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
TRACHEA	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
CARCINOMA,NOS																										
HEMATOPOIETIC SYSTEM																										
BONE MARROW	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
SPLEEN	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+
HEMANGIOMA																										
LYMPH NODES	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
CARCINOMA,NOS																										
C-CELL CARCINOMA, METASTATIC																										
SARCOMA, NOS, METASTATIC																										
MALIG.LYMPHOMA, HISTIOCYTIC TYPE																										
THYMUS	-	+	-	-	-	+	-	-	+	+	-	+	-	+	-	-	-	+	-	-	-	+	-	+		
CIRCULATORY SYSTEM																										
HEART	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
DIGESTIVE SYSTEM																										
SALIVARY GLAND	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+
LIVER	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
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	-	+	+	-	+	+	+	-	+	+	+	+	+	+	+	-	+	+	+	+	-	+	+	+		
ESOPHAGUS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
STOMACH	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
CARCINOMA-IN-SITU, NOS																										
SQUAMOUS CELL PAPILLOMA																										
PAPILLARY ADENOMA																										
SMALL INTESTINE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
LARGE INTESTINE	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
URINARY SYSTEM																										
KIDNEY	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
TUBULAR-CELL ADENOCARCINOMA																										
URINARY BLADDER	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
ENDOCRINE SYSTEM																										
PITUITARY	+	+	+	+	+	+	+	-	+	+	-	+	+	+	+	+	-	+	+	+	-	-	+	+	+	+
ADRENAL	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
CORTICAL ADENOMA							X			X									X							
CORTICAL CARCINOMA													X													
PHEOCHROMOCYTOMA																										
PHEOCHROMOCYTOMA, MALIGNANT																										
NEUROBLASTOMA																										
THYROID	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
ADENOMA, NOS																										
C-CELL ADENOMA																						X				
C-CELL CARCINOMA																										
PARATHYROID	+	-	-	-	-	+	-	-	-	+	-	+	+	-	+	+	+	+	+	+	-	-	-	-	-	+
ADENOMA, NOS																										
PANCREATIC ISLETS	-	+	+	-	+	+	+	-	+	+	+	+	+	+	+	+	-	+	+	+	+	+	-	+	+	+
ISLET-CELL ADENOMA												X										X				
ISLET-CELL CARCINOMA																										
REPRODUCTIVE SYSTEM																										
MAMMARY 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	N
TESTIS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
PROSTATE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	
NERVOUS SYSTEM																										
BRAIN	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
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	N
CARCINOMA, NOS, METASTATIC			X																							
FIBROSARCOMA																										
MALIG.LYMPHOMA, LYMPHOCYTIC TYPE														X												
MALIG.LYMPHOMA, HISTIOCYTIC TYPE																										

+: TISSUE EXAMINED MICROSCOPICALLY
-: REQUIRED TISSUE NOT EXAMINED MICROSCOPICALLY
X: TUMOR INCIDENCE
N: NECROPSY, NO AUTOLYSIS, NO MICROSCOPIC EXAMINATION

: NO TISSUE INFORMATION SUBMITTED
C: NECROPSY, NO HISTOLOGY DUE TO PROTOCOL
A: AUTOLYSIS
M: ANIMAL MISSING
B: NO NECROPSY PERFORMED

TABLE E3. MALE HAMSTERS: TUMOR PATHOLOGY (CONTINUED) INTERMEDIATE RANGE

ANIMAL NUMBER	43111	43212	43313	44141	44242	44343	45111	45212	45313	46111	46211	46311	47111	47212	47313	48111	48212	48313	49111	49212	49312	50111	50212	50312	51111
WEEKS ON STUDY	09|0	11|8	10|4	07|5	11|1	09|8	07|3	02|1	08|6	13|9	11|4	06|3	04|1	09|2	01|1	10|3	09|0	06|3	06|2	09|2	08|6	08|5	08|4	08|5	10|3
RESPIRATORY SYSTEM																									
LUNGS AND BRONCHI	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	A	+	+	
TRACHEA	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	A	+	+	
CARCINOMA,NOS																									
HEMATOPOIETIC SYSTEM																									
BONE MARROW	+	+	+	+	+	+	+	+	+	-	+	+	A	+	+	-	+	+	+	+	+	A	+	+	
SPLEEN	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	A	+	+	
HEMANGIOMA																									
LYMPH NODES	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	A	+	+	
CARCINOMA,NOS		X																							
C-CELL CARCINOMA, METASTATIC					X																				
SARCOMA, NOS, METASTATIC																									
MALIG.LYMPHOMA, HISTIOCYTIC TYPE																									
THYMUS	-	+	-	-	-	-	-	+	+	-	+	+	A	-	-	+	-	+	-	+	-	+	A	-	+
CIRCULATORY SYSTEM																									
HEART	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	A	+	+
DIGESTIVE SYSTEM																									
SALIVARY GLAND	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	A	+	+
LIVER	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	A	+	+
BILE DUCT	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	A	+	+
GALLBLADDER & COMMON BILE DUCT	N	N	N	N	+	N	N	+	N	N	+	N	A	N	N	N	N	N	N	N	N	N	A	N	N
PANCREAS	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	A	-	+
ESOPHAGUS	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	A	+	+
STOMACH	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	A	+	+
CARCINOMA-IN-SITU, NOS																									
SQUAMOUS CELL PAPILLOMA																									
PAPILLARY ADENOMA																									
SMALL INTESTINE	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	A	+	+
LARGE INTESTINE	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	A	+	+
URINARY SYSTEM																									
KIDNEY	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	A	+	+
TUBULAR-CELL ADENOCARCINOMA																									
URINARY BLADDER	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	A	+	+
ENDOCRINE SYSTEM																									
PITUITARY	+	+	+	+	+	-	+	-	+	+	+	-	A	+	+	+	+	+	+	+	+	+	A	+	+
ADRENAL	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	A	+	+
CORTICAL ADENOMA																									
CORTICAL CARCINOMA											X														
PHEOCHROMOCYTOMA																									
PHEOCHROMOCYTOMA, MALIGNANT																									
NEUROBLASTOMA							X																		
THYROID	+	+	-	+	+	+	-	+	+	+	+	-	A	+	-	+	+	+	+	+	+	+	A	+	+
ADENOMA, NOS																									
C-CELL ADENOMA		X																							
C-CELL CARCINOMA											X														
PARATHYROID	+	-	-	+	+	-	-	+	+	+	+	-	A	+	-	-	+	+	-	+	-	+	A	+	+
ADENOMA, NOS											X														
PANCREATIC ISLETS	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	A	-	+
ISLET-CELL ADENOMA																									
ISLET-CELL CARCINOMA																									
REPRODUCTIVE SYSTEM																									
MAMMARY GLAND	N	N	N	N	N	N	N	N	N	N	N	N	A	N	N	N	N	N	N	N	N	N	A	N	N
TESTIS	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	A	+	+
PROSTATE	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	A	+	+
NERVOUS SYSTEM																									
BRAIN	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	A	+	+
ALL OTHER SYSTEMS																									
MULTIPLE ORGANS NOS	N	N	N	N	N	N	N	N	N	N	N	N	A	N	N	N	N	N	N	N	N	N	A	N	N
CARCINOMA, NOS, METASTATIC																									
FIBROSARCOMA																									
MALIG.LYMPHOMA, LYMPHOCYTIC TYPE																									
MALIG.LYMPHOMA, HISTIOCYTIC TYPE																									

+: TISSUE EXAMINED MICROSCOPICALLY
-: REQUIRED TISSUE NOT EXAMINED MICROSCOPICALLY
X: TUMOR INCIDENCE
N: NECROPSY, NO AUTOLYSIS, NO MICROSCOPIC EXAMINATION

: NO TISSUE INFORMATION SUBMITTED
C: NECROPSY, NO HISTOLOGY DUE TO PROTOCOL
A: AUTOLYSIS
M: ANIMAL MISSING
B: NO NECROPSY PERFORMED

TABLE E3. MALE HAMSTERS: TUMOR PATHOLOGY (CONTINUED) INTERMEDIATE RANGE

ANIMAL NUMBER	512	513	521	522	523	531	532	533	541	542	543	551	552	553	571	572	573	581	582	583	591	592	593	601	602
WEEKS ON STUDY	088	072	120	039	043	064	117	067	111	104	086	101	063	085	080	079	082	092	100	094	117	047	049	030	027
RESPIRATORY SYSTEM																									
LUNGS AND BRONCHI	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
TRACHEA	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
CARCINOMA,NOS																									
HEMATOPOIETIC SYSTEM																									
BONE MARROW	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
SPLEEN	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
HEMANGIOMA													X												
LYMPH NODES	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
CARCINOMA,NOS																									
C-CELL CARCINOMA, METASTATIC																									
SARCOMA, NOS, METASTATIC																									
MALIG.LYMPHOMA, HISTIOCYTIC TYPE																									
THYMUS	-	+	+	+	+	+	-	+	-	-	+	-	+	+	+	+	-	+	-	-	+	+	+	+	+
CIRCULATORY SYSTEM																									
HEART	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
DIGESTIVE SYSTEM																									
SALIVARY GLAND	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+
LIVER	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
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
PANCREAS	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
ESOPHAGUS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
STOMACH	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
CARCINOMA-IN-SITU, NOS												X													
SQUAMOUS CELL PAPILLOMA																									
PAPILLARY ADENOMA																									
SMALL INTESTINE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
LARGE INTESTINE	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
URINARY SYSTEM																									
KIDNEY	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
TUBULAR-CELL ADENOCARCINOMA																		X							
URINARY BLADDER	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
ENDOCRINE SYSTEM																									
PITUITARY	+	+	-	-	+	-	+	+	+	+	+	+	+	-	+	+	+	+	+	-	+	+	+	-	-
ADRENAL	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
CORTICAL ADENOMA							X																		
CORTICAL CARCINOMA			X																						
PHEOCHROMOCYTOMA																	X								
PHEOCHROMOCYTOMA, MALIGNANT																									
NEUROBLASTOMA																									
THYROID	+	+	+	+	+	+	+	-	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+
ADENOMA, NOS																		X							
C-CELL ADENOMA																									
C-CELL CARCINOMA																									
PARATHYROID	-	+	-	+	+	-	-	-	+	+	+	+	+	-	-	+	-	-	+	-	+	-	-	-	
ADENOMA, NOS																									
PANCREATIC ISLETS	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
ISLET-CELL ADENOMA									X						X										
ISLET-CELL CARCINOMA																									
REPRODUCTIVE SYSTEM																									
MAMMARY 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
TESTIS	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+
PROSTATE	+	+	+	+	+	+	+	+	+	+	+	+	+	-	-	+	+	+	+	+	+	+	+	+	+
NERVOUS SYSTEM																									
BRAIN	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
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																									
FIBROSARCOMA																									
MALIG.LYMPHOMA, LYMPHOCYTIC TYPE								X																	
MALIG.LYMPHOMA, HISTIOCYTIC TYPE																									

+: TISSUE EXAMINED MICROSCOPICALLY
-: REQUIRED TISSUE NOT EXAMINED MICROSCOPICALLY
X: TUMOR INCIDENCE
N: NECROPSY, NO AUTOLYSIS, NO MICROSCOPIC EXAMINATION

: NO TISSUE INFORMATION SUBMITTED
C: NECROPSY, NO HISTOLOGY DUE TO PROTOCOL
A: AUTOLYSIS
M: ANIMAL MISSING
B: NO NECROPSY PERFORMED

TABLE E3. MALE HAMSTERS: TUMOR PATHOLOGY (CONTINUED) INTERMEDIATE RANGE

ANIMAL NUMBER	603	611	612	613	621	622	623	631	632	633	641	642	643	651	652	653	661	662	663	671	672	673	681	682	683
WEEKS ON STUDY	083	061	093	090	031	083	060	109	092	089	086	052	103	102	038	067	094	086	055	053	092	055	086	091	096
RESPIRATORY SYSTEM																									
LUNGS AND BRONCHI	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
TRACHEA	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
CARCINOMA,NOS																									
HEMATOPOIETIC SYSTEM																									
BONE MARROW	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
SPLEEN	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
HEMANGIOMA																									
LYMPH NODES	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
CARCINOMA,NOS																									
C-CELL CARCINOMA, METASTATIC																									
SARCOMA, NOS, METASTATIC																									
MALIG.LYMPHOMA, HISTIOCYTIC TYPE																								X	
THYMUS	+	-	+	+	A	+	+	+	-	-	-	+	-	-	+	+	-	+	+	-	+	+	+	-	-
CIRCULATORY SYSTEM																									
HEART	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
DIGESTIVE SYSTEM																									
SALIVARY GLAND	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
LIVER	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
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
PANCREAS	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	-	+	-
ESOPHAGUS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
STOMACH	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
CARCINOMA-IN-SITU, NOS																									
SQUAMOUS CELL PAPILLOMA				.																					
PAPILLARY ADENOMA																									
SMALL INTESTINE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
LARGE INTESTINE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
URINARY SYSTEM																									
KIDNEY	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
TUBULAR-CELL ADENOCARCINOMA																									
URINARY BLADDER	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
ENDOCRINE SYSTEM																									
PITUITARY	+	-	+	+	A	+	-	+	+	-	+	+	-	+	+	-	+	+	+	-	+	-	+	-	+
ADRENAL	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
CORTICAL ADENOMA														X			X	X							
CORTICAL CARCINOMA			X																						
PHEOCHROMOCYTOMA						X																		X	
PHEOCHROMOCYTOMA, MALIGNANT																									
NEUROBLASTOMA																									
THYROID	+	+	+	+	A	+	+	-	+	+	-	+	+	+	+	-	+	+	+	+	+	+	+	+	+
ADENOMA, NOS																									
C-CELL ADENOMA																									
C-CELL CARCINOMA																									
PARATHYROID	+	-	+	+	A	+	-	-	+	+	-	-	+	+	+	-	+	+	+	-	+	+	+	+	+
ADENOMA, NOS			X																						
PANCREATIC ISLETS	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	-	+	-
ISLET-CELL ADENOMA	X																X								
ISLET-CELL CARCINOMA														X											
REPRODUCTIVE SYSTEM																									
MAMMARY 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
TESTIS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
PROSTATE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+
NERVOUS SYSTEM																									
BRAIN	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+
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																									
FIBROSARCOMA																									
MALIG.LYMPHOMA, LYMPHOCYTIC TYPE																									
MALIG.LYMPHOMA, HISTIOCYTIC TYPE																									

+: TISSUE EXAMINED MICROSCOPICALLY
-: REQUIRED TISSUE NOT EXAMINED MICROSCOPICALLY
X: TUMOR INCIDENCE
N: NECROPSY, NO AUTOLYSIS, NO MICROSCOPIC EXAMINATION

: NO TISSUE INFORMATION SUBMITTED
C: NECROPSY, NO HISTOLOGY DUE TO PROTOCOL
A: AUTOLYSIS
M: ANIMAL MISSING
B: NO NECROPSY PERFORMED

TABLE E3. MALE HAMSTERS: TUMOR PATHOLOGY (CONTINUED) INTERMEDIATE RANGE

ANIMAL NUMBER	691	692	693	701	702	703	721	722	723	731	732	733	741	742	743	751	752	753	761	762	763	771	772	773	781
WEEKS ON STUDY	113	015	044	092	078	109	102	071	084	036	047	119	061	083	091	114	106	077	089	090	083	076	076	109	062
RESPIRATORY SYSTEM																									
LUNGS AND BRONCHI	+	+	+	+	A	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+
TRACHEA	+	+	+	+	A	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+
CARCINOMA,NOS																									
HEMATOPOIETIC SYSTEM																									
BONE MARROW	+	+	+	+	A	-	+	+	+	+	+	+	A	+	+	+	+	+	+	-	+	+	+	+	+
SPLEEN	+	+	+	+	A	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+
HEMANGIOMA																									
LYMPH NODES	+	+	+	+	A	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+
CARCINOMA,NOS																									
C-CELL CARCINOMA, METASTATIC																									
SARCOMA, NOS, METASTATIC																									
MALIG.LYMPHOMA, HISTIOCYTIC TYPE																									
THYMUS	-	+	+	-	A	-	+	+	+	+	+	+	A	+	-	-	-	+	-	-	+	-	-	+	+
CIRCULATORY SYSTEM																									
HEART	+	+	+	+	A	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+
DIGESTIVE SYSTEM																									
SALIVARY GLAND	+	+	+	+	A	+	+	+	+	-	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+
LIVER	+	+	+	+	A	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+
BILE DUCT	+	+	+	+	A	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+
GALLBLADDER & COMMON BILE DUCT	N	N	N	N	A	N	N	N	+	+	N	+	A	N	N	N	N	N	N	N	N	N	N	N	N
PANCREAS	+	+	+	+	A	+	+	+	+	+	+	+	A	+	+	+	+	+	+	-	+	+	+	+	+
ESOPHAGUS	+	+	+	+	A	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+
STOMACH	+	+	+	+	A	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+
CARCINOMA-IN-SITU, NOS																									
SQUAMOUS CELL PAPILLOMA																									
PAPILLARY ADENOMA																									
SMALL INTESTINE	+	+	+	+	A	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+
LARGE INTESTINE	+	+	+	+	A	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+
URINARY SYSTEM																									
KIDNEY	+	+	+	+	A	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+
TUBULAR-CELL ADENOCARCINOMA																									
URINARY BLADDER	+	+	+	+	A	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+
ENDOCRINE SYSTEM																									
PITUITARY	+	+	+	+	A	+	+	-	+	-	-	+	A	-	+	-	-	-	-	-	+	+	+	+	+
ADRENAL	+	+	+	+	A	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+
CORTICAL ADENOMA																	X								
CORTICAL CARCINOMA															X										
PHEOCHROMOCYTOMA																			X						
PHEOCHROMOCYTOMA, MALIGNANT																				X					
NEUROBLASTOMA																									
THYROID	+	+	+	-	A	+	-	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+
ADENOMA, NOS																									
C-CELL ADENOMA																									
C-CELL CARCINOMA	X																								
PARATHYROID	+	-	-	-	A	-	-	+	+	-	+	+	A	-	+	-	-	+	+	+	+	+	-	+	+
ADENOMA, NOS											X														
PANCREATIC ISLETS	+	+	+	+	A	+	+	+	+	+	+	+	A	+	+	+	+	+	+	-	+	+	+	+	+
ISLET-CELL ADENOMA											X														
ISLET-CELL CARCINOMA																									
REPRODUCTIVE SYSTEM																									
MAMMARY GLAND	N	N	N	N	A	N	N	N	N	N	N	N	A	N	N	N	N	N	N	N	N	N	N	N	N
TESTIS	+	+	+	+	A	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+
PROSTATE	+	+	+	+	A	+	+	+	+	+	+	+	A	+	+	+	+	+	-	-	+	+	+	+	+
NERVOUS SYSTEM																									
BRAIN	+	+	+	+	A	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+
ALL OTHER SYSTEMS																									
MULTIPLE ORGANS NOS	N	N	N	N	A	N	N	N	N	N	N	N	A	N	N	N	N	N	N	N	N	N	N	N	N
CARCINOMA, NOS, METASTATIC																									
FIBROSARCOMA																									
MALIG.LYMPHOMA, LYMPHOCYTIC TYPE																									
MALIG.LYMPHOMA, HISTIOCYTIC TYPE																									

+: TISSUE EXAMINED MICROSCOPICALLY
-: REQUIRED TISSUE NOT EXAMINED MICROSCOPICALLY
X: TUMOR INCIDENCE
N: NECROPSY, NO AUTOLYSIS, NO MICROSCOPIC EXAMINATION
: NO TISSUE INFORMATION SUBMITTED
C: NECROPSY, NO HISTOLOGY DUE TO PROTOCOL
A: AUTOLYSIS
M: ANIMAL MISSING
B: NO NECROPSY PERFORMED

TABLE E3. MALE HAMSTERS: TUMOR PATHOLOGY (CONTINUED) INTERMEDIATE RANGE

ANIMAL NUMBER	782	783	791	792	793	801	802	803	811	812	813	821	822	823	831	832	833	841	842	843	851	852	853	861	862	863	TOTAL TISSUES TUMORS
WEEKS ON STUDY	081	085	035	097	084	021	078	094	083	083	211	074	103	099	072	098	076	080	081	079	098	049	100	048	087	052	
RESPIRATORY SYSTEM																											
LUNGS AND BRONCHI	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	245
TRACHEA	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	244
CARCINOMA,NOS											X																1
HEMATOPOIETIC SYSTEM																											
BONE MARROW	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	235
SPLEEN	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	242
HEMANGIOMA																											1
LYMPH NODES	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	244
CARCINOMA,NOS																											1
C-CELL CARCINOMA, METASTATIC																											1
SARCOMA, NOS, METASTATIC																											1
MALIG.LYMPHOMA, HISTIOCYTIC TYPE																											1
THYMUS	-	-	-	-	+	-	+	-	-	-	+	-	+	-	+	-	-	+	+	+	+	+	+	+	-	+	122
CIRCULATORY SYSTEM																											
HEART	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	245
DIGESTIVE SYSTEM																											
SALIVARY GLAND	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	240
LIVER	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	244
BILE DUCT	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	244
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	245M
PANCREAS	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	226
ESOPHAGUS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	244
STOMACH	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	244
CARCINOMA-IN-SITU, NOS																											1
SQUAMOUS CELL PAPILLOMA																											1
PAPILLARY ADENOMA																											1
SMALL INTESTINE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	244
LARGE INTESTINE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	241
URINARY SYSTEM																											
KIDNEY	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	245
TUBULAR-CELL ADENOCARCINOMA																											1
URINARY BLADDER	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	244
ENDOCRINE SYSTEM																											
PITUITARY	-	+	+	-	+	+	-	-	+	+	+	+	+	+	+	+	-	-	+	+	+	-	+	-	+	+	182
ADRENAL	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	244
CORTICAL ADENOMA						X											X										24
CORTICAL CARCINOMA																											7
PHEOCHROMOCYTOMA																			X								9
PHEOCHROMOCYTOMA, MALIGNANT																											2
NEUROBLASTOMA																											1
THYROID	+	+	+	-	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	216
ADENOMA, NOS																											1
C-CELL ADENOMA																											5
C-CELL CARCINOMA																											4
PARATHYROID	-	+	-	-	+	+	+	+	+	-	+	-	+	-	+	+	-	-	+	+	-	+	+	-	+	+	138
ADENOMA, NOS																											4
PANCREATIC ISLETS	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	226
ISLET-CELL ADENOMA																							X				15
ISLET-CELL CARCINOMA																											1
REPRODUCTIVE SYSTEM																											
MAMMARY 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	N	245M
TESTIS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	-	+	+	+	+	+	+	+	241
PROSTATE	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	235
NERVOUS SYSTEM																											
BRAIN	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	238
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	N	245M
CARCINOMA, NOS, METASTATIC																											1
FIBROSARCOMA																											1
MALIG.LYMPHOMA, LYMPHOCYTIC TYPE		X				X										X										8
MALIG.LYMPHOMA, HISTIOCYTIC TYPE																											1

+: TISSUE EXAMINED MICROSCOPICALLY
-: REQUIRED TISSUE NOT EXAMINED MICROSCOPICALLY
X: TUMOR INCIDENCE
N: NECROPSY, NO AUTOLYSIS, NO MICROSCOPIC EXAMINATION

: NO TISSUE INFORMATION SUBMITTED
C: NECROPSY, NO HISTOLOGY DUE TO PROTOCOL
A: AUTOLYSIS
M: ANIMAL MISSING
B: NO NECROPSY PERFORMED

TABLE E4.

INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF FEMALE HAMSTERS ADMINISTERED INTERMEDIATE RANGE CHRYSOTILE ASBESTOS IN THE DIET

CONTROL

ANIMAL NUMBER	021	022	023	031	032	033	041	042	043	051	052	053	061	062	063	071	072	073	081	082	083	091	092	093	101
WEEKS ON STUDY	063	075	048	070	068	059	018	020	072	057	057	065	018	061	082	034	071	061	064	058	075	054	040	051	098
RESPIRATORY SYSTEM																									
LUNGS AND BRONCHI	+	+	+	+	+	+	+	+	+	+	+	+	A	+	A	A	+	+	+	+	+	+	+	+	+
TRACHEA	+	+	+	+	+	+	-	+	+	+	+	+	A	+	A	A	+	+	+	+	+	+	+	+	+
HEMATOPOIETIC SYSTEM																									
BONE MARROW	+	+	+	-	+	+	+	+	+	+	+	+	A	+	A	A	+	-	+	+	+	-	+	+	
SPLEEN	+	+	+	+	+	+	+	+	+	+	+	+	A	+	A	A	+	+	+	+	+	+	+	+	+
LYMPH NODES	+	+	+	+	+	+	+	+	+	+	+	+	A	+	A	A	+	+	+	+	+	+	+	+	+
THYMUS	+	-	+	-	+	+	-	-	-	+	+	-	A	+	A	A	+	+	-	+	+	+	+	+	+
CIRCULATORY SYSTEM																									
HEART	+	+	+	+	+	+	-	+	+	+	+	+	A	+	A	A	+	+	+	+	+	+	+	+	+
DIGESTIVE SYSTEM																									
SALIVARY GLAND	+	+	+	+	+	+	+	+	+	+	-	+	A	-	A	A	+	+	+	+	+	+	+	+	+
LIVER	+	+	+	+	+	+	+	+	+	+	+	+	A	+	A	A	+	+	+	+	+	+	+	+	+
BILE DUCT	+	+	+	+	+	+	+	+	+	+	+	+	A	+	A	A	+	+	+	+	+	+	+	+	+
GALLBLADDER & COMMON BILE DUCT	N	N	N	N	N	N	N	N	+	N	N	N	A	N	A	A	N	N	N	N	N	+	N	+	N
PANCREAS	+	+	+	+	+	+	+	+	+	+	+	+	A	+	A	A	+	+	+	+	+	+	+	+	+
ESOPHAGUS	+	+	+	+	+	+	-	+	+	+	+	+	A	+	A	A	+	+	+	+	+	+	+	+	+
STOMACH	+	+	+	+	+	+	-	+	+	+	+	+	A	+	A	A	+	+	+	+	+	+	+	+	+
SMALL INTESTINE	+	+	+	+	+	+	-	+	+	+	+	+	A	+	A	A	+	+	+	+	+	+	+	+	+
LARGE INTESTINE ADENOMA, NOS	+	+	+	+	+	+	-	+	+	+	+	+	A	+	A	A	+	+	+	+	+	+	+	+	+
RECTUM FIBROMA	+	+	+	+	+	+	N	N	+	+	+	+	A	+	A	A	+	+	+	+	+	+	+	+	+
URINARY SYSTEM																									
KIDNEY ADENOCARCINOMA, NOS	+	+	+	+	+	+	+	+	+	+	+	+	A	+	A	A	+	+	+	+	+	+	+	+	+
URINARY BLADDER	+	+	+	+	+	+	+	+	+	+	+	+	A	+	A	A	-	+	+	+	+	+	+	+	+
ENDOCRINE SYSTEM																									
PITUITARY ADENOMA, NOS CHROMOPHOBE ADENOMA	-	-	-	-	+	+	-	-	+	-	-	-	A	+	A	A	-	+	+	-	-	+	+	+	+
ADRENAL CORTICAL ADENOMA	+	+	+	+	+	+	-	+	+	+	+	+	A	+	A	A	+	+	+	+	+	+	+	+	+
THYROID C-CELL ADENOMA	+	-	+	+	+	+	+	+	+	+	+	+	A	+	A	A	+	+	+	+	+	+	+	+	+
										X															
PARATHYROID ADENOMA, NOS	+	-	-	-	+	+	-	+	+	-	-	+	A	+	A	A	+	-	-	+	-	-	-	+	-
PANCREATIC ISLETS ISLET-CELL ADENOMA	+	+	+	+	+	+	+	+	+	+	+	+	A	+	A	A	+	+	+	+	+	+	+	+	+ X
REPRODUCTIVE SYSTEM																									
MAMMARY GLAND	N	N	N	N	N	N	N	N	N	N	+	N	A	N	A	A	N	N	N	N	N	N	N	N	N
UTERUS LEIOMYOMA	+	+	+	+	+	+	+	+	+	+	+	+	A	+	A	A	+	+	+	+	+	+	+	+	+
OVARY	+	+	+	+	+	+	+	+	+	+	+	+	A	+	A	A	+	+	+	+	+	+	+	+	+

+: TISSUE EXAMINED MICROSCOPICALLY
-: REQUIRED TISSUE NOT EXAMINED MICROSCOPICALLY
X: TUMOR INCIDENCE
N: NECROPSY, NO AUTOLYSIS, NO MICROSCOPIC EXAMINATION
: NO TISSUE INFORMATION SUBMITTED
C: NECROPSY, NO HISTOLOGY DUE TO PROTOCOL
A: AUTOLYSIS
M: ANIMAL MISSING
B: NO NECROPSY PERFORMED

TABLE E4. FEMALE HAMSTERS: TUMOR PATHOLOGY (CONTINUED) CONTROL

ANIMAL NUMBER	102	103	111	112	113	122	123	131	132	133	141	142	143	151	152	153	161	162	163	171	172	173	191	192
WEEKS ON STUDY	044	044	049	067	066	056	064	069	057	057	061	080	061	081	047	064	051	079	060	031	032	084	011	064	064
RESPIRATORY SYSTEM																									
LUNGS AND BRONCHI	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	A	+	+	+	A	+	+
TRACHEA	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	A	+	+	+	A	+	+
HEMATOPOIETIC SYSTEM																									
BONE MARROW	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	A	+	+	+	A	+	+
SPLEEN	+	-	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	A	+	+	+	A	+	+
LYMPH NODES	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	A	+	+	+	A	+	+
THYMUS	+	+	+	+	+	+	+	+	+	+	+	+	-	A	-	+	+	A	+	-	+	A	+	+	+
CIRCULATORY SYSTEM																									
HEART	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	A	+	+	+	A	+	+
DIGESTIVE SYSTEM																									
SALIVARY GLAND	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	A	+	+	+	A	+	+
LIVER	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	A	+	+	+	A	+	+
BILE DUCT	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	A	+	+	+	A	+	+
GALLBLADDER & COMMON BILE DUCT	N	N	+	N	+	+	N	N	N	N	N	N	N	N	A	N	N	N	A	+	N	N	A	N	N
PANCREAS	+	-	+	+	+	+	+	+	+	+	+	-	+	A	+	+	+	A	+	+	+	A	+	+	
ESOPHAGUS	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	A	+	+	+	A	+	+	
STOMACH	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	A	+	+	+	A	+	+	
SMALL INTESTINE	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	A	+	+	+	A	+	+	
LARGE INTESTINE ADENOMA, NOS	+	+	+	+	+	+	+	+	+	+	+	X	+	+	A	+	+	+	A	+	+	+	A	+	+
RECTUM FIBROMA	+	+	+	+	+	+	+	+	+	+	+	+	N	+	A	+	+	+	A	+	+	+	A	+	+
URINARY SYSTEM																									
KIDNEY ADENOCARCINOMA, NOS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	A	+	+	+	A	+	+
URINARY BLADDER	+	+	+	+	+	-	+	+	-	+	+	+	+	-	A	+	+	+	A	+	+	+	A	+	+
ENDOCRINE SYSTEM																									
PITUITARY ADENOMA, NOS CHROMOPHOBE ADENOMA	-	+	+	+	-	-	+	+	+	-	+	-	+	+	A	+	-	+	A	-	-	+	A	-	+ X
ADRENAL CORTICAL ADENOMA	+	+	+	+	+	+	+	+	+	+	+	+ X	+	+	A	+	+	+ X	A	+	+	+	A	+	+ X
THYROID C-CELL ADENOMA	+	+	+	+	+ X	+	+	+	+	+	+	+	+	+	A	+	+	+	A	+	+	+	A	+	+
PARATHYROID ADENOMA, NOS	-	+	+	+	+	+	+	+	+	+	+	-	-	+	A	+	-	-	A	-	+	-	A	+	+
PANCREATIC ISLETS ISLET-CELL ADENOMA	+	-	+	+	+	+	+	+	+	+	+	+	-	+	A	+	+	+	A	+	+	+ X	A	+	+
REPRODUCTIVE SYSTEM																									
MAMMARY GLAND	N	N	N	N	N	N	N	N	N	N	N	N	N	N	A	N	N	N	A	N	N	N	A	N	N
UTERUS LEIOMYOMA	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	A	+	+	+	A	+	+
OVARY	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	-	A	+	+	+	A	+	+

+: TISSUE EXAMINED MICROSCOPICALLY
-: *REQUIRED TISSUE NOT EXAMINED MICROSCOPICALLY*
X: TUMOR INCIDENCE
N: NECROPSY, NO AUTOLYSIS, NO MICROSCOPIC EXAMINATION
: NO TISSUE INFORMATION SUBMITTED
C: NECROPSY, NO HISTOLOGY DUE TO PROTOCOL
A: AUTOLYSIS
M: ANIMAL MISSING
B: NO NECROPSY PERFORMED

TABLE E4. FEMALE HAMSTERS: TUMOR PATHOLOGY (CONTINUED) CONTROL

ANIMAL NUMBER	193	201	202	203	221	222	223	231	232	233	241	242	243	251	252	253	261	262	263	281	282	283	291	292	293
WEEKS ON STUDY	068	063	045	064	037	050	042	043	037	081	041	071	042	046	085	075	053	055	055	080	021	062	065	031	066
RESPIRATORY SYSTEM																									
LUNGS AND BRONCHI	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
TRACHEA	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
HEMATOPOIETIC SYSTEM																									
BONE MARROW	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
SPLEEN	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
LYMPH NODES	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
THYMUS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	-	+	-	+
CIRCULATORY SYSTEM																									
HEART	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
DIGESTIVE SYSTEM																									
SALIVARY GLAND	-	+	+	+	+	+	+	-	-	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+
LIVER	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
BILE DUCT	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
GALLBLADDER & COMMON BILE DUCT	N	N	+	+	+	+	N	N	+	N	+	+	+	+	N	N	N	N	N	+	N	N	N	N	N
PANCREAS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
ESOPHAGUS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
STOMACH	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
SMALL INTESTINE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
LARGE INTESTINE ADENOMA, NOS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
RECTUM FIBROMA	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+ X	+	+	+	+	+
URINARY SYSTEM																									
KIDNEY ADENOCARCINOMA, NOS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
URINARY BLADDER	+	+	+	+	+	+	+	+	+	-	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+
ENDOCRINE SYSTEM																									
PITUITARY ADENOMA, NOS CHROMOPHOBE ADENOMA	-	-	+	+	-	+	+	+	+	-	-	+	+	+	+	+	-	-	-	+	+	+	+	-	-
ADRENAL CORTICAL ADENOMA	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
THYROID C-CELL ADENOMA	+	+	+	+	+	+	+	+	+	+ X	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
PARATHYROID ADENOMA, NOS	+	-	+	-	+	+	+	-	+	+	+	+	+	+	+	+	+	+	-	+	+	-	+	+	-
PANCREATIC ISLETS ISLET-CELL ADENOMA	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
REPRODUCTIVE SYSTEM																									
MAMMARY 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
UTERUS LEIOMYOMA	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+ X	+	+	+	+	+
OVARY	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+

+: TISSUE EXAMINED MICROSCOPICALLY
-: REQUIRED TISSUE NOT EXAMINED MICROSCOPICALLY
X: TUMOR INCIDENCE
N: NECROPSY, NO AUTOLYSIS, NO MICROSCOPIC EXAMINATION
: NO TISSUE INFORMATION SUBMITTED
C: NECROPSY, NO HISTOLOGY DUE TO PROTOCOL
A: AUTOLYSIS
M: ANIMAL MISSING
B: NO NECROPSY PERFORMED

TABLE E4. FEMALE HAMSTERS: TUMOR PATHOLOGY (CONTINUED) CONTROL

ANIMAL NUMBER	30111	30123	30133	31111	31123	31133	32111	32122	32233	33111	33122	33133	36111	36122	36233	37111	37122	37233	39111	39122	39233	41111	41122	41233	42111
WEEKS ON STUDY	03 6	06 0	03 4	05 1	02 7	06 5	05 7	04 7	06 7	06 9	06 3	06 3	03 5	06 4	08 4	03 0	02 0	06 7	05 3	06 3	03 2	06 4	06 8	07 3	05 0
RESPIRATORY SYSTEM																									
LUNGS AND BRONCHI	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+
TRACHEA	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+
HEMATOPOIETIC SYSTEM																									
BONE MARROW	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	-	+
SPLEEN	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+
LYMPH NODES	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+
THYMUS	+	+	+	+	-	-	+	+	-	+	+	+	+	-	+	+	-	+	+	+	A	+	+	+	+
CIRCULATORY SYSTEM																									
HEART	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+
DIGESTIVE SYSTEM																									
SALIVARY GLAND	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+
LIVER	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+
BILE DUCT	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+
GALLBLADDER & COMMON BILE DUCT	N	+	N	+	N	N	N	N	+	N	N	N	N	N	N	N	+	+	+	N	A	N	N	+	+
PANCREAS	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	A	+	+	+	+
ESOPHAGUS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+
STOMACH	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+
SMALL INTESTINE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+
LARGE INTESTINE ADENOMA, NOS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+
RECTUM FIBROMA	N	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+
URINARY SYSTEM																									
KIDNEY ADENOCARCINOMA, NOS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+
URINARY BLADDER	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+
ENDOCRINE SYSTEM																									
PITUITARY ADENOMA, NOS CHROMOPHOBE ADENOMA	+	+	-	+	-	-	-	+	+	+	-	+	+	-	+	+	-	+	+	-	A	+	-	-	+
ADRENAL CORTICAL ADENOMA	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+ X	+	+	+
THYROID C-CELL ADENOMA	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+
PARATHYROID ADENOMA, NOS	+	+	+	-	+	+	-	+	+	+ X	-	-	+	+	-	+	-	+	+	-	A	+	-	+	+
PANCREATIC ISLETS ISLET-CELL ADENOMA	+	+	+	+	+	+	+	+	+ X	+	+	+	-	+	+	+	+	+	+	+	A	+	+	+	+
REPRODUCTIVE SYSTEM																									
MAMMARY GLAND	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	A	N	N	N	N
UTERUS LEIOMYOMA	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+
OVARY	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+

+: TISSUE EXAMINED MICROSCOPICALLY
-: REQUIRED TISSUE NOT EXAMINED MICROSCOPICALLY
X: TUMOR INCIDENCE
N: NECROPSY, NO AUTOLYSIS, NO MICROSCOPIC EXAMINATION
: NO TISSUE INFORMATION SUBMITTED
C: NECROPSY, NO HISTOLOGY DUE TO PROTOCOL
A: AUTOLYSIS
M: ANIMAL MISSING
B: NO NECROPSY PERFORMED

TABLE E4. FEMALE HAMSTERS: TUMOR PATHOLOGY (CONTINUED) CONTROL

ANIMAL NUMBER	422	423	441	442	443	451	452	453	461	462	463	481	482	483	491	492	493	511	512	513	541	542	543	551	552	553	TOTAL
WEEKS ON STUDY	039	063	084	062	065	079	062	045	033	054	062	046	074	079	066	037	072	052	041	076	037	069	070	086	068	060	TISSUES TUMORS
RESPIRATORY SYSTEM																											
LUNGS AND BRONCHI	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	●	+	+	+	+	+	+	119
TRACHEA	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	118
HEMATOPOIETIC SYSTEM																											
BONE MARROW	+	+	+	+	+	+	+	+	+	+	+	+	+	+	●	+	●	+	+	+	+	+	+	+	+	+	114
SPLEEN	+	+	+	●	+	+	+	+	●	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	118
LYMPH NODES	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	119
THYMUS	+	+	+	+	+	+	-	+	-	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	-	97
CIRCULATORY SYSTEM																											
HEART	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	118
DIGESTIVE SYSTEM																											
SALIVARY GLAND	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	112
LIVER	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	119
BILE DUCT	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	119
GALLBLADDER & COMMON BILE DUCT	N	+	N	N	N	N	N	+	N	N	+	+	N	N	N	+	+	N	+	N	N	+	N	N	N	N	119*
PANCREAS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	116
ESOPHAGUS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	118
STOMACH	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	118
SMALL INTESTINE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	118
LARGE INTESTINE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	118
ADENOMA, NOS																											1
RECTUM	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	N	+	+	+	+	+	119*
FIBROMA																									1		1
URINARY SYSTEM																											
KIDNEY	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	119
ADENOCARCINOMA, NOS																											1
URINARY BLADDER	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	111
ENDOCRINE SYSTEM																											
PITUITARY	-	-	+	+	-	+	-	+	+	+	-	-	+	+	-	+	+	-	+	-	+	-	-	+	+	+	67
ADENOMA, NOS																											1
CHROMOPHOBE ADENOMA																									X		1
ADRENAL	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	118
CORTICAL ADENOMA										X															X		6
THYROID	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	115
C-CELL ADENOMA																											3
PARATHYROID	-	-	+	+	+	-	+	+	+	+	-	-	+	-	+	+	+	-	+	+	+	-	-	+	+	+	77
ADENOMA, NOS																											1
PANCREATIC ISLETS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	116
ISLET-CELL ADENOMA						X									X												5
REPRODUCTIVE SYSTEM																											
MAMMARY 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	N	119*
UTERUS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	119
LEIOMYOMA																											1
OVARY	+	+	+	+	-	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	115

+: TISSUE EXAMINED MICROSCOPICALLY
-: REQUIRED TISSUE NOT EXAMINED MICROSCOPICALLY
X: TUMOR INCIDENCE
N: NECROPSY, NO AUTOLYSIS, NO MICROSCOPIC EXAMINATION
: NO TISSUE INFORMATION SUBMITTED
C: NECROPSY, NO HISTOLOGY DUE TO PROTOCOL
A: AUTOLYSIS
M: ANIMAL MISSING
B: NO NECROPSY PERFORMED

TABLE E4.

INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF FEMALE HAMSTERS ADMINISTERED INTERMEDIATE RANGE CHRYSOTILE ASBESTOS IN THE DIET

INTERMEDIATE RANGE CHRYSOTILE

ANIMAL NUMBER	011	012	013	021	022	023	031	032	033	041	042	043	061	062	063	071	072	073	081	082	091	092	093	101	102
WEEKS ON STUDY	046	044	042	070	054	072	073	055	054	054	078	014	053	049	073	047	068	062	071	070	043	063	044	074	062
INTEGUMENTARY SYSTEM																									
SKIN	+	+	+	+	+	+	+	+	+	+	+	N	+	+	+	+	+	N	+	+	+	+	+	+	+
MALIGNANT MELANOMA																									
SUBCUTANEOUS TISSUE	+	+	+	+	+	+	+	+	+	+	+	N	+	+	+	+	+	N	+	+	+	+	+	+	+
SARCOMA, NOS														X											
RESPIRATORY SYSTEM																									
LUNGS AND BRONCHI	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+
TRACHEA	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+
HEMATOPOIETIC SYSTEM																									
BONE MARROW	+	+	+	+	+	+	+	-	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+
SPLEEN	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
HEMANGIOMA																									
LYMPH NODES	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
MALIG.LYMPHOMA, HISTIOCYTIC TYPE																									
THYMUS	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+
CIRCULATORY SYSTEM																									
HEART	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+
DIGESTIVE SYSTEM																									
SALIVARY GLAND	+	+	+	-	+	+	+	+	+	+	+	-	-	+	+	+	+	-	+	+	+	+	+	+	+
LIVER	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
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
PANCREAS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
ESOPHAGUS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
STOMACH	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
PAPILLARY ADENOMA																									
SMALL INTESTINE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
LARGE INTESTINE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
URINARY SYSTEM																									
KIDNEY	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
URINARY BLADDER	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
ENDOCRINE SYSTEM																									
PITUITARY	+	-	+	-	+	+	+	-	-	+	+	-	-	-	+	-	+	+	+	+	-	+	-	+	
ADENOMA, NOS																									
CHROMOPHOBE CARCINOMA																									
ADRENAL	+	+	-	+	+	+	+	+	-	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+
CORTICAL ADENOMA				X													X			X					
CORTICAL CARCINOMA																									
PHEOCHROMOCYTOMA							X																		
THYROID	+	-	+	+	+	+	+	+	+	+	+	-	+	-	+	+	+	+	+	-	+	+	+	+	+
FOLLICULAR-CELL ADENOMA																									
C-CELL ADENOMA																									
PARATHYROID	+	-	+	+	-	+	+	-	+	-	-	-	+	-	+	+	+	-	+	-	+	+	+	+	-
ADENOMA, NOS																									
PANCREATIC ISLETS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
ISLET-CELL ADENOMA																									
REPRODUCTIVE SYSTEM																									
MAMMARY 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
UTERUS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
PAPILLOMA, NOS																									
ADENOMA, NOS																									
ADENOCARCINOMA, NOS																									
PAPILLARY ADENOMA																									
LEIOMYOMA																									
OVARY	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
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
SARCOMA, NOS																									
BODY CAVITIES																									
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
OSTEOMA																									
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
MALIG.LYMPHOMA, HISTIOCYTIC TYPE																									

+: TISSUE EXAMINED MICROSCOPICALLY
-: REQUIRED TISSUE NOT EXAMINED MICROSCOPICALLY
X: TUMOR INCIDENCE
N: NECROPSY, NO AUTOLYSIS, NO MICROSCOPIC EXAMINATION
: NO TISSUE INFORMATION SUBMITTED
C: NECROPSY, NO HISTOLOGY DUE TO PROTOCOL
A: AUTOLYSIS
M: ANIMAL MISSING
B: NO NECROPSY PERFORMED

TABLE E4. FEMALE HAMSTERS: TUMOR PATHOLOGY (CONTINUED) INTERMEDIATE RANGE

ANIMAL NUMBER	103	111	122	133	211	221	313	323	331	341	424	435	511	522	531	611	622	633	711	723	733	811	822	831	919
WEEKS ON STUDY	057	068	057	077	065	066	068	049	062	064	063	063	088	056	053	074	063	045	036	063	074	060	045	079	038
INTEGUMENTARY SYSTEM																									
SKIN MALIGNANT MELANOMA	+	N	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
SUBCUTANEOUS TISSUE SARCOMA, NOS	+	N	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
RESPIRATORY SYSTEM																									
LUNGS AND BRONCHI	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
TRACHEA	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
HEMATOPOIETIC SYSTEM																									
BONE MARROW	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+
SPLEEN HEMANGIOMA	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
LYMPH NODES MALIG.LYMPHOMA, HISTIOCYTIC TYPE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
THYMUS	+	+	+	+	+	-	+	+	-	+	+	+	-	+	+	+	+	+	-	+	-	+	+	+	+
CIRCULATORY SYSTEM																									
HEART	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
DIGESTIVE SYSTEM																									
SALIVARY GLAND	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	-
LIVER	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
BILE DUCT	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
GALLBLADDER & COMMON BILE DUCT	+	N	+	N	+	N	N	N	+	N	N	N	N	N	N	N	N	N	+	N	N	N	+	+	
PANCREAS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-
ESOPHAGUS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+
STOMACH PAPILLARY ADENOMA	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
SMALL INTESTINE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
LARGE INTESTINE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
URINARY SYSTEM																									
KIDNEY	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
URINARY BLADDER	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+
ENDOCRINE SYSTEM																									
PITUITARY ADENOMA, NOS CHROMOPHOBE CARCINOMA	+	+	+	+	+	+	+	+	+	-	+	+	-	+	+	+	+	+	+	+	-	-	+	+	+
ADRENAL CORTICAL ADENOMA CORTICAL CARCINOMA PHEOCHROMOCYTOMA	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
THYROID FOLLICULAR-CELL ADENOMA C-CELL ADENOMA	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
PARATHYROID ADENOMA, NOS	+	+	-	-	+	-	+	+	-	-	+	-	-	+	-	+	-	+	+	+	-	-	+	+	+
PANCREATIC ISLETS ISLET-CELL ADENOMA	+	+	+	+	+ X	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-
REPRODUCTIVE SYSTEM																									
MAMMARY 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
UTERUS PAPILLOMA, NOS ADENOMA, NOS ADENOCARCINOMA, NOS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
PAPILLARY ADENOMA LEIOMYOMA																									
OVARY	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
MUSCULOSKELETAL SYSTEM																									
BONE SARCOMA, 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 X
BODY CAVITIES																									
MESENTERY OSTEOMA	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N X	N	N	N	N	N	N	N	N	N
ALL OTHER SYSTEMS																									
MULTIPLE ORGANS NOS MALIG.LYMPHOMA, HISTIOCYTIC TYPE	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N

+: TISSUE EXAMINED MICROSCOPICALLY
-: REQUIRED TISSUE NOT EXAMINED MICROSCOPICALLY
X: TUMOR INCIDENCE
N: NECROPSY, NO AUTOLYSIS, NO MICROSCOPIC EXAMINATION

: NO TISSUE INFORMATION SUBMITTED
C: NECROPSY; NO HISTOLOGY DUE TO PROTOCOL
A: AUTOLYSIS
M: ANIMAL MISSING
B: NO NECROPSY PERFORMED

TABLE E4. FEMALE HAMSTERS: TUMOR PATHOLOGY (CONTINUED) INTERMEDIATE RANGE

ANIMAL NUMBER	192	193	201	202	203	211	212	213	231	232	233	241	242	243	251	252	253	261	262	263	271	272	273	291	292
WEEKS ON STUDY	053	066	011	023	078	063	067	040	062	061	069	055	057	053	063	055	047	039	074	039	051	088	058	084	047
INTEGUMENTARY SYSTEM																									
SKIN	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	N	+	+
MALIGNANT MELANOMA																									
SUBCUTANEOUS TISSUE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	N	+	+
SARCOMA, NOS																									
RESPIRATORY SYSTEM																									
LUNGS AND BRONCHI	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
TRACHEA	+	+	+	+	+	+	+	+	+	+	+	-	+	-	+	+	+	+	+	+	+	+	+	+	+
HEMATOPOIETIC SYSTEM																									
BONE MARROW	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
SPLEEN	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
HEMANGIOMA																									
LYMPH NODES	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
MALIG.LYMPHOMA, HISTIOCYTIC TYPE																									
THYMUS	+	+	+	+	-	+	+	+	+	+	+	-	+	+	+	-	+	+	+	+	+	+	+	+	+
CIRCULATORY SYSTEM																									
HEART	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
DIGESTIVE SYSTEM																									
SALIVARY GLAND	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+
LIVER	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
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
PANCREAS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
ESOPHAGUS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
STOMACH	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
PAPILLARY ADENOMA																									
SMALL INTESTINE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
LARGE INTESTINE	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
URINARY SYSTEM																									
KIDNEY	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
URINARY BLADDER	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
ENDOCRINE SYSTEM																									
PITUITARY	+	+	-	-	+	+	+	-	+	-	+	-	-	+	+	+	+	-	-	+	+	+	+	+	+
ADENOMA, NOS																					X				
CHROMOPHOBE CARCINOMA																									
ADRENAL	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+
CORTICAL ADENOMA																			X		X				
CORTICAL CARCINOMA																									
PHEOCHROMOCYTOMA																									
THYROID	+	+	+	+	+	+	+	+	-	+	+	-	+	+	+	+	-	+	+	+	+	+	+	+	+
FOLLICULAR-CELL ADENOMA																									
C-CELL ADENOMA																									
PARATHYROID	+	-	+	-	+	+	-	+	-	+	-	-	+	-	-	+	-	+	+	+	+	-	+	+	+
ADENOMA, NOS																									
PANCREATIC ISLETS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
ISLET-CELL ADENOMA													X						X						
REPRODUCTIVE SYSTEM																									
MAMMARY 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
UTERUS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
PAPILLOMA, NOS																									
ADENOMA, NOS																									
ADENOCARCINOMA, NOS																									
PAPILLARY ADENOMA																									
LEIOMYOMA																									
OVARY	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
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
SARCOMA, NOS																									
BODY CAVITIES																									
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
OSTEOMA																									
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
MALIG.LYMPHOMA, HISTIOCYTIC TYPE																X									

+: TISSUE EXAMINED MICROSCOPICALLY
-: REQUIRED TISSUE NOT EXAMINED MICROSCOPICALLY
X: TUMOR INCIDENCE
N: NECROPSY, NO AUTOLYSIS, NO MICROSCOPIC EXAMINATION
: NO TISSUE INFORMATION SUBMITTED
C: NECROPSY; NO HISTOLOGY DUE TO PROTOCOL
A: AUTOLYSIS
M: ANIMAL MISSING
B: NO NECROPSY PERFORMED

TABLE E4. FEMALE HAMSTERS: TUMOR PATHOLOGY (CONTINUED) INTERMEDIATE RANGE

ANIMAL NUMBER	293	301	302	303	311	312	313	331	332	333	341	342	343	351	352	353	371	372	373	381	382	383	391	392	393
WEEKS ON STUDY	065	062	035	061	055	038	054	072	045	060	034	058	068	068	016	035	014	077	077	059	064	038	115	119	072
INTEGUMENTARY SYSTEM																									
SKIN MALIGNANT MELANOMA	N	+	+	+	+	+	+	+	+	N	+	N	+	+	N	+	A	+	+	+	+	+	A	+	+
SUBCUTANEOUS TISSUE SARCOMA, NOS	N	+	+	+	+	+	+	+	+	N	+	N	+	+	N	+	A	+	+	+	+	+	A	+	+
RESPIRATORY SYSTEM																									
LUNGS AND BRONCHI	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	A	+	+
TRACHEA	+	+	+	+	+	+	+	+	+	+	+	+	+	+	−	+	A	+	+	+	+	+	A	+	+
HEMATOPOIETIC SYSTEM																									
BONE MARROW	−	+	+	+	+	+	+	+	+	+	+	+	+	+	−	+	A	+	+	+	+	+	A	+	+
SPLEEN HEMANGIOMA	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	A	−	+
LYMPH NODES MALIG.LYMPHOMA, HISTIOCYTIC TYPE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+ X	+	+	+	+	A	+	+
THYMUS	+	+	−	+	+	+	+	+	+	+	+	+	+	+	−	−	A	+	−	+	+	+	A	+	+
CIRCULATORY SYSTEM																									
HEART	+	+	+	+	+	+	+	+	+	+	+	+	+	+	−	+	A	+	+	+	+	+	A	+	+
DIGESTIVE SYSTEM																									
SALIVARY GLAND	+	+	+	+	−	+	+	+	+	+	+	+	+	+	−	+	A	+	+	+	+	−	A	+	+
LIVER	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	A	+	+
BILE DUCT	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	A	+	+
GALLBLADDER & COMMON BILE DUCT	N	N	N	N	N	+	N	N	N	N	N	N	+	N	N	N	A	N	N	N	N	+	A	N	N
PANCREAS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	−	A	+	+
ESOPHAGUS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	A	+	+
STOMACH PAPILLARY ADENOMA	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	A	+	+
SMALL INTESTINE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	A	+	+
LARGE INTESTINE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	A	+	+
URINARY SYSTEM																									
KIDNEY	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	A	+	+
URINARY BLADDER	+	+	+	+	+	+	+	+	+	+	+	+	+	+	−	+	A	+	+	+	+	+	A	+	+
ENDOCRINE SYSTEM																									
PITUITARY ADENOMA, NOS CHROMOPHOBE CARCINOMA	+	+	+	−	+	+	−	+	−	+	+	−	−	−	−	+	A	+	+	+	−	−	A	−	+
ADRENAL CORTICAL ADENOMA CORTICAL CARCINOMA PHEOCHROMOCYTOMA	+	+	+	+	+	+	+	+	+	+	+	+	+	+	−	+	A	+	−	+	+	+	A	+	+
THYROID FOLLICULAR-CELL ADENOMA C-CELL ADENOMA	+	+	+	+	+	+	+	+	+	+	+	+	+	+	−	+	A	−	−	+	+	+	A	+	+
PARATHYROID ADENOMA, NOS	−	+	+	−	+	+	+	+	−	−	+	+	+	+	−	+	A	−	−	+	−	+	A	+	+
PANCREATIC ISLETS ISLET-CELL ADENOMA	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	−	A	+	+
REPRODUCTIVE SYSTEM																									
MAMMARY GLAND	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	A	N	N	N	N	N	A	N	N
UTERUS PAPILLOMA, NOS ADENOMA, NOS ADENOCARCINOMA, NOS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	−	+	A	+	+	+	+	+	A	+	+
PAPILLARY ADENOMA LEIOMYOMA																									
OVARY	+	+	+	+	+	+	+	+	+	+	+	+	+	+	−	+	A	+	+	+	+	+	A	+	+
MUSCULOSKELETAL SYSTEM																									
BONE SARCOMA, NOS	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	A	N	N	N	N	N	A	N	N
BODY CAVITIES																									
MESENTERY OSTEOMA	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	A	N	N	N	N	N	A	N	N
ALL OTHER SYSTEMS																									
MULTIPLE ORGANS NOS MALIG.LYMPHOMA, HISTIOCYTIC TYPE	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	A	N	N	N	N	N	A	N	N

+: TISSUE EXAMINED MICROSCOPICALLY
−: REQUIRED TISSUE NOT EXAMINED MICROSCOPICALLY
X: TUMOR INCIDENCE
N: NECROPSY, NO AUTOLYSIS, NO MICROSCOPIC EXAMINATION

: NO TISSUE INFORMATION SUBMITTED
C: NECROPSY; NO HISTOLOGY DUE TO PROTOCOL
A: AUTOLYSIS
M: ANIMAL MISSING
B: NO NECROPSY PERFORMED

TABLE E4. FEMALE HAMSTERS: TUMOR PATHOLOGY (CONTINUED) INTERMEDIATE RANGE

ANIMAL NUMBER	41111	41112	41113	42211	42212	42213	43111	43112	43113	44111	44112	44113	45111	45112	45113	46111	46112	46113	47111	47112	47113	48111	48112	48113	49111
WEEKS ON STUDY	038	032	063	063	063	055	063	035	051	063	059	071	067	072	082	081	066	053	061	058	061	083	041	059	078
INTEGUMENTARY SYSTEM																									
SKIN	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
MALIGNANT MELANOMA																									
SUBCUTANEOUS TISSUE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
SARCOMA, NOS																									
RESPIRATORY SYSTEM																									
LUNGS AND BRONCHI	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
TRACHEA	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
HEMATOPOIETIC SYSTEM																									
BONE MARROW	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
SPLEEN	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
HEMANGIOMA																									
LYMPH NODES	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
MALIG.LYMPHOMA, HISTIOCYTIC TYPE																									
THYMUS	+	+	−	+	−	+	+	−	+	+	+	+	+	−	+	−	+	+	+	+	+	−	+	+	+
CIRCULATORY SYSTEM																									
HEART	+	+	+	+	+	+	+	+	−	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
DIGESTIVE SYSTEM																									
SALIVARY GLAND	+	+	+	+	+	+	+	−	+	+	+	+	+	+	+	+	+	+	+	+	+	+	−	+	+
LIVER	+	+	+	+	−	+	+	+	−	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
BILE DUCT	+	+	+	+	+	+	+	+	−	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
GALLBLADDER & COMMON BILE DUCT	+	N	+	N	N	+	N	N	N	+	N	N	N	+	N	+	N	N	N	N	N	N	+	N	N
PANCREAS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	−	+	+	−	+	+
ESOPHAGUS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
STOMACH	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
PAPILLARY ADENOMA																									
SMALL INTESTINE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
LARGE INTESTINE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
URINARY SYSTEM																									
KIDNEY	+	+	+	+	+	+	+	+	−	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
URINARY BLADDER	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
ENDOCRINE SYSTEM																									
PITUITARY	+	+	+	+	+	−	−	+	+	+	−	+	+	+	+	+	−	−	−	+	+	+	+	+	+
ADENOMA, NOS																									
CHROMOPHOBE CARCINOMA																									
ADRENAL	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
CORTICAL ADENOMA											X												X		
CORTICAL CARCINOMA																									
PHEOCHROMOCYTOMA																									
THYROID	+	+	+	+	+	+	+	+	+	+	+	−	+	+	+	+	+	+	+	+	+	+	+	+	+
FOLLICULAR-CELL ADENOMA															X										
C-CELL ADENOMA																									
PARATHYROID	+	−	−	−	+	−	−	−	+	+	−	+	+	+	+	+	−	+	+	−	−	−	+	+	
ADENOMA, NOS																									
PANCREATIC ISLETS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	−	+	+	−	+	+
ISLET-CELL ADENOMA																									
REPRODUCTIVE SYSTEM																									
MAMMARY 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
UTERUS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
PAPILLOMA, NOS																									
ADENOMA, NOS																									
ADENOCARCINOMA, NOS																									
PAPILLARY ADENOMA												X													
LEIOMYOMA																									
OVARY	+	+	+	+	+	+	+	+	+	+	+	+	+	+	−	+	+	+	+	+	+	−	+	+	+
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
SARCOMA, NOS																									
BODY CAVITIES																									
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
OSTEOMA																									
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
MALIG.LYMPHOMA, HISTIOCYTIC TYPE																									

+: TISSUE EXAMINED MICROSCOPICALLY
−: REQUIRED TISSUE NOT EXAMINED MICROSCOPICALLY
X: TUMOR INCIDENCE
N: NECROPSY, NO AUTOLYSIS, NO MICROSCOPIC EXAMINATION
: NO TISSUE INFORMATION SUBMITTED
C: NECROPSY, NO HISTOLOGY DUE TO PROTOCOL
A: AUTOLYSIS
M: ANIMAL MISSING
B: NO NECROPSY PERFORMED

TABLE E4. FEMALE HAMSTERS: TUMOR PATHOLOGY (CONTINUED) INTERMEDIATE RANGE

ANIMAL NUMBER	49 02	49 03	51 12	51 13	51 21	52 12	52 23	53 31	53 32	53 33	54 11	54 42	54 43	55 12	55 23	55 31	56 12	56 23	56 31	58 12	58 25	59 11	59 12
WEEKS ON STUDY	06 09	07 05	07 03	05 07	06 00	06 08	05 04	06 07	05 02	04 09	04 06	06 03	04 00	04 09	04 08	05 03	06 05	05 08	04 03	06 03	09 07	05 04	05 41	07 01	07 03
INTEGUMENTARY SYSTEM																									
SKIN	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	N	+	+	+	+	+
MALIGNANT MELANOMA																									
SUBCUTANEOUS TISSUE	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	N	+	+	+	+	+
SARCOMA, NOS																									
RESPIRATORY SYSTEM																									
LUNGS AND BRONCHI	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
TRACHEA	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
HEMATOPOIETIC SYSTEM																									
BONE MARROW	+	+	+	A	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+
SPLEEN	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
HEMANGIOMA																									
LYMPH NODES	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
MALIG.LYMPHOMA, HISTIOCYTIC TYPE																									
THYMUS	+	-	-	A	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	-	+	+	+	+	-
CIRCULATORY SYSTEM																									
HEART	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
DIGESTIVE SYSTEM																									
SALIVARY GLAND	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
LIVER	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
BILE DUCT	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
GALLBLADDER & COMMON BILE DUCT	+	N	N	A	N	N	N	N	N	N	N	+	N	N	N	N	N	N	N	N	+	N	N	+	N
PANCREAS	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
ESOPHAGUS	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
STOMACH	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
PAPILLARY ADENOMA																									
SMALL INTESTINE	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
LARGE INTESTINE	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
URINARY SYSTEM																									
KIDNEY	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
URINARY BLADDER	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
ENDOCRINE SYSTEM																									
PITUITARY	-	-	+	A	+	+	+	+	+	+	-	+	+	-	+	-	-	+	+	+	+	-	-	+	+
ADENOMA, NOS																									
CHROMOPHOBE CARCINOMA																									
ADRENAL	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
CORTICAL ADENOMA	X	X																					X	X	
CORTICAL CARCINOMA	X																								
PHEOCHROMOCYTOMA																									
THYROID	+	+	-	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+
FOLLICULAR-CELL ADENOMA																									X
C-CELL ADENOMA																									
PARATHYROID	+	+	-	A	-	-	+	+	+	+	+	+	-	+	-	-	-	+	+	-	+	-	-	+	
ADENOMA, NOS																									
PANCREATIC ISLETS	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
ISLET-CELL ADENOMA																									
REPRODUCTIVE SYSTEM																									
MAMMARY GLAND	N	N	N	A	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
UTERUS	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
PAPILLOMA, NOS																					X				
ADENOMA, NOS																									
ADENOCARCINOMA, NOS																									
PAPILLARY ADENOMA																									
LEIOMYOMA																									
OVARY	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
MUSCULOSKELETAL SYSTEM																									
BONE	N	N	N	A	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
SARCOMA, NOS																									
BODY CAVITIES																									
MESENTERY	N	N	N	A	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
OSTEOMA																									
ALL OTHER SYSTEMS																									
MULTIPLE ORGANS NOS	N	N	N	A	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
MALIG.LYMPHOMA, HISTIOCYTIC TYPE																									

+: TISSUE EXAMINED MICROSCOPICALLY
-: REQUIRED TISSUE NOT EXAMINED MICROSCOPICALLY
X: TUMOR INCIDENCE
N: NECROPSY, NO AUTOLYSIS, NO MICROSCOPIC EXAMINATION

: NO TISSUE INFORMATION SUBMITTED
C: NECROPSY; NO HISTOLOGY DUE TO PROTOCOL
A: AUTOLYSIS
M: ANIMAL MISSING
B: NO NECROPSY PERFORMED

TABLE E4. FEMALE HAMSTERS: TUMOR PATHOLOGY (CONTINUED) INTERMEDIATE RANGE

ANIMAL NUMBER	59 3	60 1	60 2	60 3	61 1	61 2	61 3	62 1	62 2	62 3	63 1	63 2	63 3	64 1	64 2	64 3	65 1	65 2	66 1	66 2	66 3	67 1	67 2	67 3	68 1
WEEKS ON STUDY	04 1	04 9	06 0	07 0	05 7	05 4	04 8	07 1	06 1	06 5	08 2	01 5	03 3	05 8	06 7	06 3	06 5	01 5	02 6	06 4	05 4	06 1	05 3	07 2	05 2
INTEGUMENTARY SYSTEM																									
SKIN	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	N	+	+	+	+	+	+	+
MALIGNANT MELANOMA																									
SUBCUTANEOUS TISSUE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	N	+	+	+	+	+	+	+
SARCOMA, NOS																									
RESPIRATORY SYSTEM																									
LUNGS AND BRONCHI	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
TRACHEA	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+
HEMATOPOIETIC SYSTEM																									
BONE MARROW	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+
SPLEEN	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
HEMANGIOMA																									
LYMPH NODES	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
MALIG.LYMPHOMA, HISTIOCYTIC TYPE																									
THYMUS	+	+	+	+	-	+	+	+	-	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+
CIRCULATORY SYSTEM																									
HEART	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+
DIGESTIVE SYSTEM																									
SALIVARY GLAND	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+
LIVER	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
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	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
ESOPHAGUS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
STOMACH	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-
PAPILLARY ADENOMA																									
SMALL INTESTINE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
LARGE INTESTINE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
URINARY SYSTEM																									
KIDNEY	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
URINARY BLADDER	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+
ENDOCRINE SYSTEM																									
PITUITARY	-	-	+	+	-	-	+	+	+	-	+	+	-	+	+	+	+	-	-	+	+	+	+	+	+
ADENOMA, NOS																									
CHROMOPHOBE CARCINOMA																									
ADRENAL	-	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+
CORTICAL ADENOMA																									
CORTICAL CARCINOMA																									
PHEOCHROMOCYTOMA																									
THYROID	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+
FOLLICULAR-CELL ADENOMA																									
C-CELL ADENOMA																									
PARATHYROID	+	+	-	+	-	-	-	+	+	-	+	+	+	-	-	-	+	-	+	-	+	+	+	+	+
ADENOMA, NOS																									
PANCREATIC ISLETS	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
ISLET-CELL ADENOMA																									
REPRODUCTIVE SYSTEM																									
MAMMARY 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
UTERUS	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+
PAPILLOMA, NOS																									
ADENOMA, NOS																									
ADENOCARCINOMA, NOS															X										
PAPILLARY ADENOMA																									
LEIOMYOMA											X														
OVARY	+	+	+	+	-	+	+	+	-	+	+	+	+	+	+	-	+	-	-	+	+	+	+	+	+
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
SARCOMA, NOS																									
BODY CAVITIES																									
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
OSTEOMA																									
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
MALIG.LYMPHOMA, HISTIOCYTIC TYPE																									

+: TISSUE EXAMINED MICROSCOPICALLY
-: REQUIRED TISSUE NOT EXAMINED MICROSCOPICALLY
X: TUMOR INCIDENCE
N: NECROPSY, NO AUTOLYSIS, NO MICROSCOPIC EXAMINATION

: NO TISSUE INFORMATION SUBMITTED
C: NECROPSY, NO HISTOLOGY DUE TO PROTOCOL
A: AUTOLYSIS
M: ANIMAL MISSING
B: NO NECROPSY PERFORMED

TABLE E4. FEMALE HAMSTERS: TUMOR PATHOLOGY (CONTINUED) INTERMEDIATE RANGE

ANIMAL NUMBER	682	683	691	692	693	701	702	703	711	712	713	721	722	723	731	732	733	741	742	743	751	752	753	761	762
WEEKS ON STUDY	066	034	038	067	015	053	061	056	070	031	064	055	068	063	023	023	091	069	058	059	117	083	057	054	055
INTEGUMENTARY SYSTEM																									
SKIN	+	+	+	N	A	A	+	+	+	+	+	+	+	N	+	A	+	+	N	+	N	+	+	+	N
MALIGNANT MEL[illegible]NOS																									
SUBCUTANEOUS TISSUE SARCOMA, NOS	+	+	+	N	A	A	+	+	+	+	+	+	+	N	+	A	+	+	N	+	N	+	+	+	N
RESPIRATORY SYSTEM																									
LUNGS AND BRONCHI	+	+	+	+	A	A	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+
TRACHEA	+	+	+	+	A	A	+	+	+	+	+	+	+	+	+	A	+	+	+	+	-	+	+	+	+
HEMATOPOIETIC SYSTEM																									
BONE MARROW	+	+	+	-	A	A	+	+	+	+	+	+	+	+	+	A	+	+	+	+	-	+	+	+	+
SPLEEN	+	+	+	+	A	A	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+
HEMANGIOMA																									
LYMPH NODES	+	+	+	+	A	A	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+
MALIG.LYMPHOMA, HISTIOCYTIC TYPE																									
THYMUS	+	+	+	+	A	A	+	-	+	+	+	+	+	-	+	A	+	+	+	+	-	-	+	+	-
CIRCULATORY SYSTEM																									
HEART	+	+	+	+	A	A	+	+	+	+	+	+	+	+	+	A	+	+	+	+	-	+	+	+	+
DIGESTIVE SYSTEM																									
SALIVARY GLAND	+	+	+	+	A	A	+	+	+	+	+	+	+	+	+	A	+	+	+	+	-	+	+	+	+
LIVER	+	+	+	+	A	A	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+
BILE DUCT	+	+	+	+	A	A	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+
GALLBLADDER & COMMON BILE DUCT	N	N	N	N	A	A	N	N	N	N	N	N	N	N	N	A	+	+	N	N	N	N	+	N	N
PANCREAS	+	+	+	+	A	A	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+
ESOPHAGUS	+	+	+	+	A	A	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+
STOMACH	+	+	+	+	A	A	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+
PAPILLARY ADENOMA																									
SMALL INTESTINE	+	+	+	+	A	A	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+
LARGE INTESTINE	+	+	+	+	A	A	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+
URINARY SYSTEM																									
KIDNEY	+	+	+	+	A	A	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+
URINARY BLADDER	+	+	+	+	A	A	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+
ENDOCRINE SYSTEM																									
PITUITARY	+	-	+	+	A	A	+	-	+	+	+	+	+	+	-	A	+	+	-	-	-	+	+	-	+
ADENOMA, NOS																									
CHROMOPHOBE CARCINOMA																									
ADRENAL	+	+	+	+	A	A	+	+	+	+	+	+	+	+	+	A	+	+	+	+	-	+	+	+	+
CORTICAL ADENOMA	X																							X	
CORTICAL CARCINOMA																									
PHEOCHROMOCYTOMA																									
THYROID	+	+	+	+	A	A	+	+	+	+	+	+	+	+	+	A	+	+	+	-	-	+	+	+	+
FOLLICULAR-CELL ADENOMA												X													
C-CELL ADENOMA																									
PARATHYROID	-	-	+	-	A	A	-	-	+	+	-	+	+	-	-	A	-	-	-	-	-	+	-	+	+
ADENOMA, NOS																						X			
PANCREATIC ISLETS	+	+	+	+	A	A	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+
ISLET-CELL ADENOMA																									
REPRODUCTIVE SYSTEM																									
MAMMARY GLAND	N	N	N	N	A	A	N	N	N	N	N	N	N	N	N	A	N	N	N	N	N	N	N	N	N
UTERUS	+	+	+	+	A	A	+	+	+	+	+	+	+	+	+	A	+	+	+	+	-	+	+	+	+
PAPILLOMA, NOS																									
ADENOMA, NOS																									
ADENOCARCINOMA, NOS																									
PAPILLARY ADENOMA																									
LEIOMYOMA													X												
OVARY	+	+	+	+	A	A	+	+	-	+	+	+	-	+	+	A	+	+	+	+	-	+	+	+	+
BODY CAVITIES																									
MESENTERY	N	N	N	N	A	A	N	N	N	N	N	N	N	N	N	A	N	N	N	N	N	N	N	N	N
OSTEOMA																									
ALL OTHER SYSTEMS																									
MULTIPLE ORGANS NOS	N	N	N	N	A	A	N	N	N	N	N	N	N	N	N	A	N	N	N	N	N	N	N	N	N
MALIG.LYMPHOMA, HISTIOCYTIC TYPE																									

+: TISSUE EXAMINED MICROSCOPICALLY
-: REQUIRED TISSUE NOT EXAMINED MICROSCOPICALLY
X: TUMOR INCIDENCE
N: NECROPSY, NO AUTOLYSIS, NO MICROSCOPIC EXAMINATION
: NO TISSUE INFORMATION SUBMITTED
C: NECROPSY; NO HISTOLOGY DUE TO PROTOCOL
A: AUTOLYSIS
M: ANIMAL MISSING
B: NO NECROPSY PERFORMED

TABLE E4. FEMALE HAMSTERS: TUMOR PATHOLOGY (CONTINUED) INTERMEDIATE RANGE

ANIMAL NUMBER	763	771	772	773	781	782	783	791	792	793	801	802	803	811	812	813	821	822	823	831	832	833	841	842	843
WEEKS ON STUDY	053	088	056	071	061	080	035	061	078	051	054	074	051	071	053	053	057	056	055	055	071	062	072	040	058
INTEGUMENTARY SYSTEM																									
SKIN	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
MALIGNANT MELANOMA																								X	
SUBCUTANEOUS TISSUE SARCOMA, NOS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
RESPIRATORY SYSTEM																									
LUNGS AND BRONCHI	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
TRACHEA	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
HEMATOPOIETIC SYSTEM																									
BONE MARROW	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
SPLEEN	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
HEMANGIOMA	X																								
LYMPH NODES MALIG.LYMPHOMA, HISTIOCYTIC TYPE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
THYMUS	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
CIRCULATORY SYSTEM																									
HEART	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
DIGESTIVE SYSTEM																									
SALIVARY GLAND	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
LIVER	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
BILE DUCT	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
GALLBLADDER & COMMON BILE DUCT	N	+	+	+	N	N	N	N	N	N	N	N	N	+	N	+	+	+	N	N	N	N	N	N	N
PANCREAS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
ESOPHAGUS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
STOMACH	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+
PAPILLARY ADENOMA																									
SMALL INTESTINE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
LARGE INTESTINE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
URINARY SYSTEM																									
KIDNEY	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	
URINARY BLADDER	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	
ENDOCRINE SYSTEM																									
PITUITARY	-	+	+	-	+	+	-	-	+	+	-	+	+	+	+	+	+	-	-	-	+	+	+	-	+
ADENOMA, NOS																									
CHROMOPHOBE CARCINOMA																									
ADRENAL	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
CORTICAL ADENOMA						X																			
CORTICAL CARCINOMA																									
PHEOCHROMOCYTOMA																									
THYROID	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
FOLLICULAR-CELL ADENOMA																									
C-CELL ADENOMA																									
PARATHYROID	+	+	+	+	+	+	-	+	+	-	-	+	-	+	+	+	-	+	-	+	+	+	+	-	+
ADENOMA, NOS																									
PANCREATIC ISLETS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
ISLET-CELL ADENOMA																									
REPRODUCTIVE SYSTEM																									
MAMMARY 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
UTERUS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
PAPILLOMA, NOS																									
ADENOMA, NOS																									
ADENOCARCINOMA, NOS																									
PAPILLARY ADENOMA																									
LEIOMYOMA																									
OVARY	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
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
SARCOMA, NOS																									
BODY CAVITIES																									
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
OSTEOMA																									
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
MALIG.LYMPHOMA, HISTIOCYTIC TYPE																									

+: TISSUE EXAMINED MICROSCOPICALLY
-: REQUIRED TISSUE NOT EXAMINED MICROSCOPICALLY
X: TUMOR INCIDENCE
N: NECROPSY, NO AUTOLYSIS, NO MICROSCOPIC EXAMINATION

: NO TISSUE INFORMATION SUBMITTED
C: NECROPSY, NO HISTOLOGY DUE TO PROTOCOL
A: AUTOLYSIS
M: ANIMAL MISSING
B: NO NECROPSY PERFORMED

TABLE E4. FEMALE HAMSTERS: TUMOR PATHOLOGY (CONTINUED) INTERMEDIATE RANGE

ANIMAL NUMBER	851	852	853	861	862	863	871	872	873	881	882	883	901	902	903	911	912	913	921	922	923	931	932	933	941	942	943	TOTAL TISSUES TUMORS
WEEKS ON STUDY	084	075	011	048	066	058	074	065	058	043	075	066	058	059	062	061	051	040	075	051	036	072	039	081	058	061	054	
INTEGUMENTARY SYSTEM																												
SKIN	+	+	A	+	+	M	+	+	+	+	+	N	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	244
MALIGNANT MELANOMA																												1
SUBCUTANEOUS TISSUE	+	+	A	+	+	M	+	+	+	+	+	N	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	244
SARCOMA, NOS																												1
RESPIRATORY SYSTEM																												
LUNGS AND BRONCHI	+	+	A	+	+	M	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	243
TRACHEA	+	+	A	+	+	M	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	238
HEMATOPOIETIC SYSTEM																												
BONE MARROW	+	+	A	+	+	M	+	+	+	+	+	–	+	+	+	+	+	+	+	+	+	–	+	+	+	+	+	232
SPLEEN	+	+	A	+	+	M	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	–	+	+	+	+	+	241
HEMANGIOMA																												1
LYMPH NODES	+	+	A	+	+	M	+	+	+	+	+	+	+	+	+	+	+	+	+	+	–	+	+	+	+	+	+	243
MALIG.LYMPHOMA, HISTIOCYTIC TYPE																												1
THYMUS	+	+	A	+	+	M	+	+	–	+	+	+	+	+	+	+	+	+	+	+	–	+	+	+	–	+	+	208
CIRCULATORY SYSTEM																												
HEART	+	+	A	+	+	M	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	239
DIGESTIVE SYSTEM																												
SALIVARY GLAND	+	+	A	+	+	M	+	+	+	+	+	+	–	+	+	+	+	+	+	+	+	–	+	+	+	+	+	227
LIVER	+	+	A	+	+	M	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	243
BILE DUCT	+	+	A	+	+	M	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	243
GALLBLADDER & COMMON BILE DUCT	N	N	A	N	N	M	N	N	N	N	N	N	+	N	+	N	N	N	N	N	N	N	+	N	N	N	N	244
PANCREAS	+	+	A	+	+	M	+	–	+	+	+	+	+	+	+	+	+	+	+	+	+	–	+	+	+	+	–	236
ESOPHAGUS	+	+	A	+	+	M	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	243
STOMACH	+	+	A	+	+	M	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	242
PAPILLARY ADENOMA																									X			1
SMALL INTESTINE	+	+	A	+	+	M	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	244
LARGE INTESTINE	+	+	A	+	+	M	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	243
URINARY SYSTEM																												
KIDNEY	+	+	A	+	+	M	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	243
URINARY BLADDER	+	+	A	+	+	M	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	238
ENDOCRINE SYSTEM																												
PITUITARY	+	+	A	–	–	M	+	+	–	+	+	+	–	+	+	–	+	–	–	+	–	+	–	+	+	+	–	164
ADENOMA, NOS		X																										1
CHROMOPHOBE CARCINOMA																												1
ADRENAL	+	+	A	+	+	M	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	234
CORTICAL ADENOMA		X		X			X									X												18
CORTICAL CARCINOMA																												1
PHEOCHROMOCYTOMA																												1
THYROID	–	+	A	+	+	M	+	+	+	+	+	+	+	+	+	–	+	+	+	+	+	–	+	+	+	+	+	223
FOLLICULAR-CELL ADENOMA																												1
C-CELL ADENOMA																												2
PARATHYROID	–	–	A	+	+	M	+	+	–	+	+	+	+	+	+	–	+	+	+	+	+	–	+	+	+	+	+	148
ADENOMA, NOS																												1
PANCREATIC ISLETS	+	+	A	+	+	M	+	–	+	+	+	+	+	+	+	+	+	+	+	+	+	–	+	+	+	+	–	236
ISLET-CELL ADENOMA							X																					4
REPRODUCTIVE SYSTEM																												
MAMMARY GLAND	N	N	A	N	N	M	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	244
UTERUS	+	+	A	+	+	M	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	240
PAPILLOMA, NOS																												1
ADENOMA, NOS							X																					1
ADENOCARCINOMA, NOS																												1
PAPILLARY ADENOMA																								X				2
LEIOMYOMA																												2
OVARY	–	+	A	+	+	M	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	231
MUSCULOSKELETAL SYSTEM																												
BONE	N	N	A	N	N	M	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	244
SARCOMA, NOS																												1
BODY CAVITIES																												
MESENTERY	N	N	A	N	N	M	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	244
OSTEOMA																												1
ALL OTHER SYSTEMS																												
MULTIPLE ORGANS NOS	N	N	A	N	N	M	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	244
MALIG.LYMPHOMA, HISTIOCYTIC TYPE																												1

+: TISSUE EXAMINED MICROSCOPICALLY
–: REQUIRED TISSUE NOT EXAMINED MICROSCOPICALLY
X: TUMOR INCIDENCE
N: NECROPSY, NO AUTOLYSIS, NO MICROSCOPIC EXAMINATION
: NO TISSUE INFORMATION SUBMITTED
C: NECROPSY, NO HISTOLOGY DUE TO PROTOCOL
A: AUTOLYSIS
M: ANIMAL MISSING
B: NO NECROPSY PERFORMED

TABLE E5.

INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF MALE HAMSTERS ADMINISTERED 1,2-DIMETHYLHYDRAZINE DIHYDROCHLORIDE (DMH) BY GAVAGE WITH AND WITHOUT INTERMEDIATE RANGE CHRYSOTILE ASBESTOS IN THE DIET

CONTROL

ANIMAL NUMBER	011	012	013	021	022	023	031	032	033	042	043	051	052	053	062	063	071	072	073	081	082	083	091	092	093
WEEKS ON STUDY	103	090	091	114	027	029	082	119	046	116	111	043	062	108	041	101	059	058	038	120	058	075	107	080	025
INTEGUMENTARY SYSTEM																									
SKIN	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	N	+
SARCOMA, NOS																									
RESPIRATORY SYSTEM																									
LUNGS AND BRONCHI	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
SARCOMA, NOS, METASTATIC																									
TRACHEA	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
HEMATOPOIETIC SYSTEM																									
BONE MARROW	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	A	+
SPLEEN	+	+	+	+	+	+	+	+	+	+	-	+	-	+	+	+	+	+	+	+	-	+	+	A	+
LYMPH NODES	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
THYMUS	+	+	+	+	+	+	+	-	+	-	+	+	+	-	+	-	-	+	+	-	+	+	+	A	+
CIRCULATORY SYSTEM																									
HEART	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
DIGESTIVE SYSTEM																									
SALIVARY GLAND	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+
LIVER	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
HEMANGIOMA																									
HEMANGIOSARCOMA																									
BILE DUCT	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
GALLBLADDER & COMMON BILE DUCT	N	N	N	N	+	+	N	N	+	N	N	+	N	N	+	N	N	N	N	N	N	+	N	N	+
PANCREAS	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+
MESOTHELIOMA, METASTATIC																						X			
ESOPHAGUS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
STOMACH	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+
SQUAMOUS CELL PAPILLOMA																									
SMALL INTESTINE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
LARGE INTESTINE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
HEMANGIOMA																									
RECTUM	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
ADENOMA, NOS																									
URINARY SYSTEM																									
KIDNEY	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
TUBULAR-CELL ADENOMA																		X							
URINARY BLADDER	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
ENDOCRINE SYSTEM																									
PITUITARY	+	+	+	-	-	-	-	+	+	-	-	+	+	-	+	+	+	-	+	+	+	-	+	+	+
ADRENAL	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
CORTICAL ADENOMA														X											
CORTICAL CARCINOMA																									
PHEOCHROMOCYTOMA				X							X														
NEUROBLASTOMA																							X		
NEURILEMOMA																									
THYROID	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+
ADENOMA, NOS																									
PARATHYROID	+	+	+	-	+	+	-	-	+	-	-	-	-	-	-	-	-	+	-	-	+	+	+	+	+
ADENOMA, NOS																									
PANCREATIC ISLETS	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+
ISLET-CELL ADENOMA			X																						
REPRODUCTIVE SYSTEM																									
MAMMARY 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
TESTIS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
PROSTATE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	-	+	+	+	+
NERVOUS SYSTEM																									
BRAIN	+	-	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
ASTROCYTOMA																									
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
OSTEOMA																							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
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
MALIG.LYMPHOMA, LYMPHOCYTIC TYPE																									
MALIG.LYMPHOMA, HISTIOCYTIC TYPE																									
GRANULOCYTIC LEUKEMIA																									

+: TISSUE EXAMINED MICROSCOPICALLY
-: REQUIRED TISSUE NOT EXAMINED MICROSCOPICALLY
X: TUMOR INCIDENCE
N: NECROPSY, NO AUTOLYSIS, NO MICROSCOPIC EXAMINATION

: NO TISSUE INFORMATION SUBMITTED
C: NECROPSY, NO HISTOLOGY DUE TO PROTOCOL
A: AUTOLYSIS
M: ANIMAL MISSING
B: NO NECROPSY PERFORMED

TABLE E5. MALE HAMSTERS: TUMOR PATHOLOGY (CONTINUED) CONTROL

ANIMAL NUMBER	110	102	103	111	112	113	121	122	123	131	132	133	134	141	142	143	151	152	153	161	162	181	182	183	191	192
WEEKS ON STUDY	108	081	086	066	041	042	025	099	081	035	084	045	100	081	112	057	081	061	136	168	097	013	054	033	054	
INTEGUMENTARY SYSTEM																										
SKIN	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	N	+	+	+	+	+	+	+	+	+	+
SARCOMA, NOS																										X
RESPIRATORY SYSTEM																										
LUNGS AND BRONCHI	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
SARCOMA, NOS, METASTATIC																										
TRACHEA	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
HEMATOPOIETIC SYSTEM																										
BONE MARROW	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
SPLEEN	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
LYMPH NODES	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
THYMUS	-	+	-	+	A	+	-	-	+	+	-	-	-	-	-	+	+	+	-	+	-	+	+	+	+	+
CIRCULATORY SYSTEM																										
HEART	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
DIGESTIVE SYSTEM																										
SALIVARY GLAND	-	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	•	+	+	+	+
LIVER	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
HEMANGIOMA																										
HEMANGIOSARCOMA																										
BILE DUCT	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
GALLBLADDER & COMMON BILE DUCT	N	N	+	+	A	+	N	N	N	N	N	N	N	N	N	N	N	+	N	N	N	N	N	N	N	N
PANCREAS	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+
MESOTHELIOMA, METASTATIC																										
ESOPHAGUS	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
STOMACH	+	-	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
SQUAMOUS CELL PAPILLOMA																										
SMALL INTESTINE	+	-	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
LARGE INTESTINE	+	-	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
HEMANGIOMA																										
RECTUM	+	N	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	N	+
ADENOMA, NOS																							X			
URINARY SYSTEM																										
KIDNEY	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
TUBULAR-CELL ADENOMA																										
URINARY BLADDER	+	-	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
ENDOCRINE SYSTEM																										
PITUITARY	+	+	+	+	A	+	+	+	+	-	+	+	+	-	+	-	+	-	+	-	+	+	+	+	+	+
ADRENAL	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
CORTICAL ADENOMA																X										
CORTICAL CARCINOMA	X								X																	
PHEOCHROMOCYTOMA																										
NEUROBLASTOMA																										
NEURILEMOMA																										
THYROID	+	-	+	+	A	+	+	+	+	+	+	-	+	+	+	+	+	-	+	+	+	+	+	+	+	+
ADENOMA, NOS																										
PARATHYROID	+	-	+	+	A	+	+	+	+	-	+	-	+	+	+	-	+	-	+	+	+	+	-	+	+	
ADENOMA, NOS																										
PANCREATIC ISLETS	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+
ISLET-CELL ADENOMA													X													
REPRODUCTIVE SYSTEM																										
MAMMARY GLAND	N	N	N	N	A	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
TESTIS	+	-	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
PROSTATE	+	-	+	+	A	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+
NERVOUS SYSTEM																										
BRAIN	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+
ASTROCYTOMA																										
MUSCULOSKELETAL SYSTEM																										
BONE	N	N	N	N	A	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
OSTEOMA																										
BODY CAVITIES																										
PERITONEUM	N	N	N	N	A	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	A	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
MALIG.LYMPHOMA, LYMPHOCYTIC TYPE	X													X												
MALIG.LYMPHOMA, HISTIOCYTIC TYPE		X																								
GRANULOCYTIC LEUKEMIA																										

+: TISSUE EXAMINED MICROSCOPICALLY
-: REQUIRED TISSUE NOT EXAMINED MICROSCOPICALLY
X: TUMOR INCIDENCE
N: NECROPSY, NO AUTOLYSIS, NO MICROSCOPIC EXAMINATION

: NO TISSUE INFORMATION SUBMITTED
C: NECROPSY, NO HISTOLOGY DUE TO PROTOCOL
A: AUTOLYSIS
M: ANIMAL MISSING
B: NO NECROPSY PERFORMED

TABLE E5. MALE HAMSTERS: TUMOR PATHOLOGY (CONTINUED) CONTROL

ANIMAL NUMBER	193	201	202	203	211	212	213	221	222	223	231	232	233	241	242	243	251	252	253	261	262	263	271	272	273
WEEKS ON STUDY	103	079	021	092	124	114	105	077	054	083	088	082	047	034	084	086	073	019	065	058	087	029	061	082	090
INTEGUMENTARY SYSTEM																									
SKIN	+	+	+	+	+	N	+	A	+	+	+	+	+	+	+	+	N	+	+	+	+	+	+	+	+
SARCOMA, NOS																									
RESPIRATORY SYSTEM																									
LUNGS AND BRONCHI	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
SARCOMA, NOS, METASTATIC																									
TRACHEA	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
HEMATOPOIETIC SYSTEM																									
BONE MARROW	+	+	+	+	+	-	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
SPLEEN	+	+	A	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	-	+
LYMPH NODES	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
THYMUS	+	-	A	-	-	-	-	A	+	+	+	+	+	+	-	-	-	+	-	+	-	+	+	-	+
CIRCULATORY SYSTEM																									
HEART	+	+	A	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
DIGESTIVE SYSTEM																									
SALIVARY GLAND	+	+	A	+	+	+	+	A	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+
LIVER	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
HEMANGIOMA																									
HEMANGIOSARCOMA															X										
BILE DUCT	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
GALLBLADDER & COMMON BILE DUCT	N	N	+	N	N	N	N	A	N	N	N	N	N	+	N	N	N	N	+	N	N	N	N	N	N
PANCREAS	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	-	+	-	+	
MESOTHELIOMA, METASTATIC																									
ESOPHAGUS	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
STOMACH	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
SQUAMOUS CELL PAPILLOMA																									
SMALL INTESTINE	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
LARGE INTESTINE	+	+	+	+	+	+	+	A	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+
HEMANGIOMA						X																			
RECTUM	+	+	+	+	+	+	+	A	+	+	+	+	+	+	N	+	+	N	N	+	+	+	+	+	+
ADENOMA, NOS																									
URINARY SYSTEM																									
KIDNEY	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
TUBULAR-CELL ADENOMA																									
URINARY BLADDER	+	+	A	+	+	+	+	A	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+
ENDOCRINE SYSTEM																									
PITUITARY	+	+	A	+	+	+	-	A	+	+	-	+	+	-	+	+	-	-	+	-	+	-	-	-	-
ADRENAL	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-
CORTICAL ADENOMA																									
CORTICAL CARCINOMA																									
PHEOCHROMOCYTOMA				X																					
NEUROBLASTOMA																									
NEURILEMOMA																									
THYROID	+	+	+	+	+	+	+	A	+	+	-	-	+	+	+	+	+	+	+	+	+	+	+	-	+
ADENOMA, NOS				X																					
PARATHYROID	+	+	+	+	+	-	+	A	+	-	-	-	+	-	+	-	-	-	-	-	-	+	+	-	-
ADENOMA, NOS																									
PANCREATIC ISLETS	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	-	+
ISLET-CELL ADENOMA	X																								
REPRODUCTIVE SYSTEM																									
MAMMARY GLAND	N	N	N	N	N	N	N	A	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
TESTIS	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
PROSTATE	+	+	+	+	+	+	+	A	+	+	-	+	+	+	+	+	+	+	-	+	+	+	+	+	+
NERVOUS SYSTEM																									
BRAIN	+	+	A	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
ASTROCYTOMA																									
MUSCULOSKELETAL SYSTEM																									
BONE	N	N	N	N	N	N	N	A	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
OSTEOMA																									
BODY CAVITIES																									
PERITONEUM	N	N	N	N	N	N	N	A	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	A	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
MALIG.LYMPHOMA, LYMPHOCYTIC TYPE																									
MALIG.LYMPHOMA, HISTIOCYTIC TYPE																									
GRANULOCYTIC LEUKEMIA																									X

+: TISSUE EXAMINED MICROSCOPICALLY
-: REQUIRED TISSUE NOT EXAMINED MICROSCOPICALLY
X: TUMOR INCIDENCE
N: NECROPSY, NO AUTOLYSIS, NO MICROSCOPIC EXAMINATION

: NO TISSUE INFORMATION SUBMITTED
C: NECROPSY, NO HISTOLOGY DUE TO PROTOCOL
A: AUTOLYSIS
M: ANIMAL MISSING
B: NO NECROPSY PERFORMED

TABLE E5. MALE HAMSTERS: TUMOR PATHOLOGY (CONTINUED) CONTROL

ANIMAL NUMBER	28 1	28 2	28 3	29 1	29 2	29 3	30 1	30 2	30 3	31 1	31 2	31 3	31 3	31 3	31 3	34 1	34 2	34 3	35 1	35 2	35 3	36 1	36 2	36 3	37 1
WEEKS ON STUDY	08 2	06 3	31	22	05	04	11 0	07 9	17	11	08 9	51 1	01 2	15	16	23	57	41	28	60	31	81	44	12	09 7
INTEGUMENTARY SYSTEM																									
SKIN	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	N	+	N	+	+	+
SARCOMA, NOS																									
RESPIRATORY SYSTEM																									
LUNGS AND BRONCHI	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+
SARCOMA, NOS, METASTATIC																								X	
TRACHEA	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+
HEMATOPOIETIC SYSTEM																									
BONE MARROW	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	-	-	+	+	+	+	+	+	+	+
SPLEEN	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+
LYMPH NODES	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+
THYMUS	+	+	-	-	-	+	+	+	-	+	-	+	+	+	A	+	-	+	+	+	-	-	+	-	-
CIRCULATORY SYSTEM																									
HEART	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+
DIGESTIVE SYSTEM																									
SALIVARY GLAND	+	+	+	+	+	+	+	+	+	+	+	-	+	+	A	+	+	+	+	+	+	+	+	+	+
LIVER	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+
HEMANGIOMA		X																							
HEMANGIOSARCOMA																									
BILE DUCT	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+
GALLBLADDER & COMMON BILE DUCT	N	N	N	N	N	N	N	N	N	N	N	+	N	+	A	N	N	+	+	N	N	N	+	+	N
PANCREAS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	-	-	-	+	+	+
MESOTHELIOMA, METASTATIC																									
ESOPHAGUS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+
STOMACH	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+
SQUAMOUS CELL PAPILLOMA				X																					
SMALL INTESTINE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+
LARGE INTESTINE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+
HEMANGIOMA																									
RECTUM	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+
ADENOMA, NOS																									
URINARY SYSTEM																									
KIDNEY	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+
TUBULAR-CELL ADENOMA																									
URINARY BLADDER	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	-	+	+	+	+
ENDOCRINE SYSTEM																									
PITUITARY	+	+	+	+	+	+	+	+	+	+	+	+	+	-	A	-	+	-	-	-	+	-	+	+	-
ADRENAL	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+
CORTICAL ADENOMA																									
CORTICAL CARCINOMA							X																		
PHEOCHROMOCYTOMA																									
NEUROBLASTOMA																									
NEURILEMOMA																									
THYROID	+	-	+	+	+	+	+	+	+	+	+	+	+	+	A	-	+	+	+	+	-	+	+	+	+
ADENOMA, NOS																									
PARATHYROID	-	-	+	+	-	-	+	-	+	+	+	+	+	-	A	-	-	-	-	+	-	-	-	+	-
ADENOMA, NOS																									
PANCREATIC ISLETS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	-	-	+	+	+	
ISLET-CELL ADENOMA				X													X								
REPRODUCTIVE SYSTEM																									
MAMMARY GLAND	N	N	N	N	N	N	N	N	N	N	N	+	N	N	A	N	N	N	N	N	N	N	N	N	N
TESTIS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+
PROSTATE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	-	+	+	+	+	+
NERVOUS SYSTEM																									
BRAIN	+	+	+	+	+	+	+	+	+	-	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+
ASTROCYTOMA		X																							
MUSCULOSKELETAL SYSTEM																									
BONE	N	N	N	N	N	N	N	N	N	N	N	N	N	N	A	N	N	N	N	N	N	N	N	N	N
OSTEOMA																									
BODY CAVITIES																									
PERITONEUM	N	N	N	N	N	N	N	N	N	N	N	N	N	N	A	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	A	N	N	N	N	N	N	N	N	N	N
MALIG.LYMPHOMA, LYMPHOCYTIC TYPE																									
MALIG.LYMPHOMA, HISTIOCYTIC TYPE																									
GRANULOCYTIC LEUKEMIA																									

+: TISSUE EXAMINED MICROSCOPICALLY
-: REQUIRED TISSUE NOT EXAMINED MICROSCOPICALLY
X: TUMOR INCIDENCE
N: NECROPSY, NO AUTOLYSIS, NO MICROSCOPIC EXAMINATION

: NO TISSUE INFORMATION SUBMITTED
C: NECROPSY, NO HISTOLOGY DUE TO PROTOCOL
A: AUTOLYSIS
M: ANIMAL MISSING
B: NO NECROPSY PERFORMED

TABLE E5. MALE HAMSTERS: TUMOR PATHOLOGY (CONTINUED) CONTROL

ANIMAL NUMBER	372	373	381	382	383	391	392	393	401	402	403	411	412	413	421	422	423	432	433	441	442	443	451	452	453	TOTAL TISSUES TUMORS
WEEKS ON STUDY	067	100	110	099	069	013	017	094	109	022	104	027	085	082	105	099	037	052	136	078	017	090	072	098	120	
INTEGUMENTARY SYSTEM																										
SKIN	+	+	+	+	+	+	+	+	+	A	+	A	A	+	+	+	+	+	+	+	+	N	+	+	+	119*
SARCOMA, NOS																										1
RESPIRATORY SYSTEM																										
LUNGS AND BRONCHI	+	+	+	+	+	+	+	+	+	A	+	A	A	+	+	+	+	+	+	+	+	+	+	+	+	119
SARCOMA, NOS, METASTATIC																										1
TRACHEA	+	+	+	+	+	+	+	+	+	A	+	A	A	+	+	-	+	+	+	+	+	+	+	+	+	118
HEMATOPOIETIC SYSTEM																										
BONE MARROW	+	+	+	+	+	+	-	+	+	A	+	A	A	+	+	+	+	+	+	+	+	+	+	+	+	113
SPLEEN	+	+	+	+	+	-	-	+	+	A	+	A	A	+	+	+	+	+	+	+	+	+	+	+	+	110
LYMPH NODES	+	+	+	+	+	+	+	+	+	A	+	A	A	+	+	+	+	+	-	+	+	+	+	+	+	118
THYMUS	+	-	-	-	+	+	+	+	-	A	-	A	A	+	+	+	+	+	+	-	+	-	+	-	+	71
CIRCULATORY SYSTEM																										
HEART	+	+	+	+	+	+	+	+	+	A	+	A	A	+	+	+	+	+	+	+	+	+	+	+	+	118
DIGESTIVE SYSTEM																										
SALIVARY GLAND	+	+	+	+	+	+	+	+	+	A	+	A	A	+	+	+	+	+	+	+	+	+	+	+	-	113
LIVER	+	+	+	+	+	+	+	+	+	A	+	A	A	+	+	+	+	+	+	+	+	+	+	+	+	119
HEMANGIOMA																										1
HEMANGIOSARCOMA																										1
BILE DUCT	+	+	+	+	+	+	+	+	+	A	+	A	A	+	+	+	+	+	+	+	+	+	+	+	+	119
GALLBLADDER & COMMON BILE DUCT	N	N	N	N	N	N	N	N	N	A	N	A	A	N	N	N	+	N	N	N	+	N	N	N	N	119*
PANCREAS	+	+	+	+	-	+	+	+	+	A	+	A	A	+	+	+	+	+	+	+	+	+	+	+	+	110
MESOTHELIOMA, METASTATIC																										1
ESOPHAGUS	+	+	+	+	+	+	+	+	+	A	+	A	A	+	+	+	+	+	+	+	+	+	+	+	+	119
STOMACH	+	+	+	+	+	-	+	+	+	A	+	A	A	+	+	+	+	+	+	+	+	+	+	+	+	116
SQUAMOUS CELL PAPILLOMA																										1
SMALL INTESTINE	+	+	+	+	+	-	+	+	+	A	+	A	A	+	+	+	+	+	+	+	+	+	+	+	+	117
LARGE INTESTINE	+	+	+	+	+	-	+	+	+	A	+	A	A	+	+	+	+	+	+	+	+	+	+	+	+	116
HEMANGIOMA																										1
RECTUM	+	+	+	+	+	N	N	+	+	A	+	A	A	+	+	+	+	+	+	+	+	+	+	+	+	119*
ADENOMA, NOS																										1
URINARY SYSTEM																										
KIDNEY	+	+	+	+	+	+	+	+	+	A	+	A	A	+	+	+	+	+	+	+	+	+	+	+	+	119
TUBULAR-CELL ADENOMA																										1
URINARY BLADDER	+	+	+	+	+	-	+	+	+	A	+	A	A	+	+	+	+	+	+	+	+	+	+	+	+	114
ENDOCRINE SYSTEM																										
PITUITARY	+	-	+	+	+	+	-	-	+	A	+	A	A	+	+	+	+	-	+	-	-	+	+	-	+	80
ADRENAL	+	+	+	+	+	-	+	+	+	A	+	A	A	+	+	+	+	+	+	+	+	+	+	+	+	117
CORTICAL ADENOMA															X											3
CORTICAL CARCINOMA																			X							4
PHEOCHROMOCYTOMA																										3
NEUROBLASTOMA																										1
NEURILEMOMA																			X							1
THYROID	+	+	+	-	+	+	+	+	+	A	+	A	A	+	+	+	+	+	+	+	+	+	+	+	+	107
ADENOMA, NOS																										1
PARATHYROID	+	-	+	-	+	+	+	-	+	A	+	A	A	+	+	+	-	-	+	-	-	+	-	+	-	64
ADENOMA, NOS															X											1
PANCREATIC ISLETS	+	+	+	+	-	+	+	+	+	A	+	A	A	+	+	+	+	+	+	+	+	+	+	+	+	110
ISLET-CELL ADENOMA			X													X			X							8
REPRODUCTIVE SYSTEM																										
MAMMARY GLAND	N	N	N	N	N	N	N	N	N	A	N	A	A	N	N	N	N	N	N	N	N	N	N	N	N	119*
TESTIS	+	+	+	+	+	-	+	+	+	A	+	A	A	+	+	+	+	+	+	+	+	+	+	+	+	117
PROSTATE	+	+	+	-	+	-	+	+	+	A	+	A	A	+	+	+	+	+	+	+	+	+	+	+	+	110
NERVOUS SYSTEM																										
BRAIN	+	+	+	+	+	+	+	+	+	A	+	A	A	+	+	+	+	+	+	+	-	+	+	+	+	113
ASTROCYTOMA																										1
MUSCULOSKELETAL SYSTEM																										
BONE	N	N	N	N	N	N	N	N	N	A	N	A	A	N	N	N	N	N	N	N	N	N	N	N	N	119*
OSTEOMA																										1
BODY CAVITIES																										
PERITONEUM	N	N	N	N	N	N	N	N	N	A	N	A	A	N	N	N	N	N	N	N	N	N	N	N	N	119*
MESOTHELIOMA, MALIGNANT																										1
ALL OTHER SYSTEMS																										
MULTIPLE ORGANS NOS	N	N	N	N	N	N	N	N	N	A	N	A	A	N	N	N	N	N	N	N	N	N	N	N	N	119*
MALIG.LYMPHOMA, LYMPHOCYTIC TYPE																										2
MALIG.LYMPHOMA, HISTIOCYTIC TYPE																										1
GRANULOCYTIC LEUKEMIA																										1

* ANIMALS NECROPSIED

+: TISSUE EXAMINED MICROSCOPICALLY
-: *REQUIRED TISSUE* NOT EXAMINED MICROSCOPICALLY
X: TUMOR INCIDENCE
N: NECROPSY, NO AUTOLYSIS, NO MICROSCOPIC EXAMINATION

: NO TISSUE INFORMATION SUBMITTED
C: NECROPSY, NO HISTOLOGY DUE TO PROTOCOL
A: *AUTOLYSIS*
M: ANIMAL MISSING

TABLE E5.

INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF MALE HAMSTERS ADMINISTERED 1,2-DIMETHYLHYDRAZINE DIHYDROCHLORIDE (DMH) BY GAVAGE WITH AND WITHOUT INTERMEDIATE RANGE CHRYSOTILE ASBESTOS IN THE DIET

DMH

ANIMAL NUMBER	011	012	013	021	022	023	031	032	033	041	042	043	051	052	053	061	062	063	071	072	073	081	082	083	091
WEEKS ON STUDY	088	102	042	061	041	087	089	097	084	052	126	020	090	116	043	103	031	040	091	072	101	063	090	072	089
RESPIRATORY SYSTEM																									
LUNGS AND BRONCHI UNDIFFERENTIATED CARCINOMA METAST	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
TRACHEA	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
HEMATOPOIETIC SYSTEM																									
BONE MARROW	+	+	+	+	+	-	+	+	-	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+
SPLEEN	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
LYMPH NODES	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
THYMUS	-	+	+	+	+	-	+	-	-	+	+	+	-	-	+	-	+	+	-	+	-	+	-	+	-
CIRCULATORY SYSTEM																									
HEART	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
DIGESTIVE SYSTEM																									
SALIVARY GLAND	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
LIVER	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
HEPATOCELLULAR ADENOMA																									
HEMANGIOMA																			X						
BILE DUCT	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
GALLBLADDER & COMMON BILE DUCT	N	+	+	N	N	+	N	N	N	N	N	N	+	+	+	N	N	+	+	N	+	+	+	N	N
PANCREAS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	-	+	+	+	+	+
ESOPHAGUS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
STOMACH	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
SMALL INTESTINE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
LARGE INTESTINE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
ADENOMA, NOS																									
PAPILLARY ADENOMA														X											
RECTUM	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
FIBROSARCOMA																									
URINARY SYSTEM																									
KIDNEY	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
URINARY BLADDER	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
ENDOCRINE SYSTEM																									
PITUITARY	+	+	-	+	+	+	+	+	+	-	-	-	+	-	-	+	+	+	-	+	+	-	+	-	+
CARCINOMA,NOS																									
ADRENAL	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
CORTICAL ADENOMA													X												
CORTICAL CARCINOMA																									
PHEOCHROMOCYTOMA																									
THYROID	+	+	-	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
C-CELL ADENOMA	X																				X				
PARATHYROID	+	+	-	-	-	+	+	+	+	-	+	-	-	+	-	-	+	-	+	+	-	+	-	-	+
PANCREATIC ISLETS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	-	+	+	+	+	+
ISLET-CELL ADENOMA								X			X														
REPRODUCTIVE SYSTEM																									
MAMMARY 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
TESTIS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+
PROSTATE	+	+	-	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
NERVOUS SYSTEM																									
BRAIN	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
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
FIBROSARCOMA																									
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
MALIG.LYMPHOMA, LYMPHOCYTIC TYPE																				X					
MALIG.LYMPHOMA, HISTIOCYTIC TYPE																									

+: TISSUE EXAMINED MICROSCOPICALLY
-: REQUIRED TISSUE NOT EXAMINED MICROSCOPICALLY
X: TUMOR INCIDENCE
N: NECROPSY, NO AUTOLYSIS, NO MICROSCOPIC EXAMINATION

: NO TISSUE INFORMATION SUBMITTED
C: NECROPSY, NO HISTOLOGY DUE TO PROTOCOL
A: AUTOLYSIS
M: ANIMAL MISSING
B: NO NECROPSY PERFORMED

TABLE E5. MALE HAMSTERS: TUMOR PATHOLOGY (CONTINUED) DMH

ANIMAL NUMBER	092	093	101	102	103	111	113	121	122	123	131	132	133	141	142	143	152	153	171	172	173	181	182	183	191
WEEKS ON STUDY	057	099	065	100	061	071	036	067	059	084	106	067	106	062	091	093	077	067	084	045	087	095	059	037	043
RESPIRATORY SYSTEM																									
LUNGS AND BRONCHI UNDIFFERENTIATED CARCINOMA METAST	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
TRACHEA	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
HEMATOPOIETIC SYSTEM																									
BONE MARROW	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+
SPLEEN	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
LYMPH NODES	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
THYMUS	+	-	+	-	+	+	+	+	+	+	-	+	+	+	+	+	-	-	+	-	-	+	+	+	+
CIRCULATORY SYSTEM																									
HEART	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
DIGESTIVE SYSTEM																									
SALIVARY GLAND	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
LIVER HEPATOCELLULAR ADENOMA HEMANGIOMA		X																							
BILE DUCT	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
GALLBLADDER & COMMON BILE DUCT	N	+	+	+	+	N	N	N	N	N	N	N	N	+	+	+	N	N	N	N	+	N	+	N
PANCREAS	+	+	+	+	+	+	+	-	+	-	+	+	+	+	-	+	+	-	+	+	+	+	+	+	+
ESOPHAGUS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
STOMACH	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
SMALL INTESTINE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
LARGE INTESTINE ADENOMA, NOS PAPILLARY ADENOMA				+																					
	+	+	+	X	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
RECTUM FIBROSARCOMA																						+			
	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	X	+	+	+
URINARY SYSTEM																									
KIDNEY	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
URINARY BLADDER	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
ENDOCRINE SYSTEM																									
PITUITARY CARCINOMA,NOS	+	+	-	-	+	-	+	-	+	+	+	+	+	+	+	+	+	-	+	-	+	-	-	+	-
ADRENAL CORTICAL ADENOMA CORTICAL CARCINOMA PHEOCHROMOCYTOMA																									
	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
							X															X			
THYROID C-CELL ADENOMA	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+
PARATHYROID	-	-	-	+	+	+	-	+	+	-	+	+	-	+	-	-	+	-	+	+	-	+	+	+	-
PANCREATIC ISLETS ISLET-CELL ADENOMA	+	+	+	+	+	+	+	-	+	-	+	+	+	+	-	+	+	-	+	+	+	+	+	+	+
																					X				
REPRODUCTIVE SYSTEM																									
MAMMARY 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
TESTIS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
PROSTATE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
NERVOUS SYSTEM																									
BRAIN	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
BODY CAVITIES																									
PERITONEUM FIBROSARCOMA	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
ALL OTHER SYSTEMS																									
MULTIPLE ORGANS NOS MALIG.LYMPHOMA, LYMPHOCYTIC TYPE MALIG.LYMPHOMA, HISTIOCYTIC TYPE	N	N	N	N	N	N	N	N	N	N X	N	N	N	N	N	N	N	N	N	N	N	N	N X	N	N

+: TISSUE EXAMINED MICROSCOPICALLY
-: REQUIRED TISSUE NOT EXAMINED MICROSCOPICALLY
X: TUMOR INCIDENCE
N: NECROPSY, NO AUTOLYSIS, NO MICROSCOPIC EXAMINATION

: NO TISSUE INFORMATION SUBMITTED
C: NECROPSY, NO HISTOLOGY DUE TO PROTOCOL
A: AUTOLYSIS
M: ANIMAL MISSING
B: NO NECROPSY PERFORMED

TABLE E5. MALE HAMSTERS: TUMOR PATHOLOGY (CONTINUED) DMH

ANIMAL NUMBER	119	193	201	202	211	212	213	221	222	223	231	232	233	241	242	243	251	252	253	261	262	263	271	272	273
WEEKS ON STUDY	090	098	038	038	099	107	095	025	085	026	054	034	034	042	098	098	036	098	097	111	091	071	082	115	095
RESPIRATORY SYSTEM																									
LUNGS AND BRONCHI	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
UNDIFFERENTIATED CARCINOMA METAST																					X				
TRACHEA	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
HEMATOPOIETIC SYSTEM																									
BONE MARROW	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+
SPLEEN	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
LYMPH NODES	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
THYMUS	-	-	+	+	+	-	-	+	-	+	+	+	+	+	-	+	+	-	-	-	+	+	+	-	+
CIRCULATORY SYSTEM																									
HEART	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
DIGESTIVE SYSTEM																									
SALIVARY GLAND	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
LIVER	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
HEPATOCELLULAR ADENOMA	X																								
HEMANGIOMA																									
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	+	+
PANCREAS	+	+	-	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
ESOPHAGUS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
STOMACH	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
SMALL INTESTINE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
LARGE INTESTINE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
ADENOMA, NOS																									
PAPILLARY ADENOMA																									
RECTUM	+	+	+	+	+	+	+	+	+	+	+	N	+	+	+	+	+	+	+	+	N	+	+	+	
FIBROSARCOMA																									
URINARY SYSTEM																									
KIDNEY	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
URINARY BLADDER	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	-	+	+	+	
ENDOCRINE SYSTEM																									
PITUITARY	+	-	+	+	+	+	+	+	-	+	-	-	+	+	+	+	+	+	+	-	+	-	+	+	+
CARCINOMA,NOS																									
ADRENAL	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
CORTICAL ADENOMA	X						X																		
CORTICAL CARCINOMA									X																
PHEOCHROMOCYTOMA																									
THYROID	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+
C-CELL ADENOMA																									
PARATHYROID	+	-	+	+	+	+	+	+	+	+	-	+	-	+	+	-	+	-	-	+	-	+	-	+	+
PANCREATIC ISLETS	+	+	-	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
ISLET-CELL ADENOMA																							X		
REPRODUCTIVE SYSTEM																									
MAMMARY 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
TESTIS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+
PROSTATE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	-	+	+	+	
NERVOUS SYSTEM																									
BRAIN	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
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
FIBROSARCOMA																									
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
MALIG.LYMPHOMA, LYMPHOCYTIC TYPE																									
MALIG.LYMPHOMA, HISTIOCYTIC TYPE																									

+: TISSUE EXAMINED MICROSCOPICALLY
-: REQUIRED TISSUE NOT EXAMINED MICROSCOPICALLY
X: TUMOR INCIDENCE
N: NECROPSY, NO AUTOLYSIS, NO MICROSCOPIC EXAMINATION

: NO TISSUE INFORMATION SUBMITTED
C: NECROPSY, NO HISTOLOGY DUE TO PROTOCOL
A: AUTOLYSIS
M: ANIMAL MISSING
B: NO NECROPSY PERFORMED

TABLE E5. MALE HAMSTERS: TUMOR PATHOLOGY (CONTINUED) DMH

ANIMAL NUMBER	281	282	291	292	293	301	302	303	311	312	313	321	322	323	331	332	333	341	342	343	351	353	361	362	363
WEEKS ON STUDY	077	045	107	062	104	076	116	087	103	079	119	101	044	099	050	076	070	046	064	039	098	014	104	077	097
RESPIRATORY SYSTEM																									
LUNGS AND BRONCHI	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
UNDIFFERENTIATED CARCINOMA METAST			X													X									
TRACHEA	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
HEMATOPOIETIC SYSTEM																									
BONE MARROW	+	-	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+
SPLEEN	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
LYMPH NODES	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
THYMUS	-	+	-	+	+	-	+	-	+	+	-	+	+	-	+	-	+	+	+	+	-	+	-	+	-
CIRCULATORY SYSTEM																									
HEART	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
DIGESTIVE SYSTEM																									
SALIVARY GLAND	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	-
LIVER	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
HEPATOCELLULAR ADENOMA																									
HEMANGIOMA																									
BILE DUCT	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
GALLBLADDER & COMMON BILE DUCT	+	N	+	+	N	N	N	N	N	N	N	N	N	N	+	N	+	+	N	N	+	N	N	N	N
PANCREAS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	-	+	+	+	+
ESOPHAGUS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
STOMACH	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
SMALL INTESTINE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
LARGE INTESTINE	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
ADENOMA, NOS																									
PAPILLARY ADENOMA																									
RECTUM	+	+	+	+	+	+	N	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
FIBROSARCOMA																									
URINARY SYSTEM																									
KIDNEY	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
URINARY BLADDER	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
ENDOCRINE SYSTEM																									
PITUITARY	+	+	+	+	+	-	-	+	+	+	+	+	-	+	-	+	+	-	-	+	+	+	+	+	-
CARCINOMA,NOS																X									
ADRENAL	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
CORTICAL ADENOMA											X														
CORTICAL CARCINOMA																									
PHEOCHROMOCYTOMA																									
THYROID	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	-	+	+	+	+	+
C-CELL ADENOMA																									
PARATHYROID	+	+	+	A	+	-	+	+	+	+	+	-	+	+	+	+	+	-	+	-	-	+	-	+	+
PANCREATIC ISLETS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	-	+	+	+	+
ISLET-CELL ADENOMA																									
REPRODUCTIVE SYSTEM																									
MAMMARY 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
TESTIS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
PROSTATE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
NERVOUS SYSTEM																									
BRAIN	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
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
FIBROSARCOMA											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
MALIG.LYMPHOMA, LYMPHOCYTIC TYPE								X	X			X													
MALIG.LYMPHOMA, HISTIOCYTIC TYPE																									

+: TISSUE EXAMINED MICROSCOPICALLY
-: REQUIRED TISSUE NOT EXAMINED MICROSCOPICALLY
X: TUMOR INCIDENCE
N: NECROPSY, NO AUTOLYSIS, NO MICROSCOPIC EXAMINATION

: NO TISSUE INFORMATION SUBMITTED
C: NECROPSY, NO HISTOLOGY DUE TO PROTOCOL
A: AUTOLYSIS
M: ANIMAL MISSING
B: NO NECROPSY PERFORMED

TABLE E5. MALE HAMSTERS: TUMOR PATHOLOGY (CONTINUED) DMH

ANIMAL NUMBER	371	372	373	381	382	383	391	392	393	401	402	403	411	412	413	421	422	423	431	432	433	441	442	443	451	452	453	TOTAL TISSUES TUMORS
WEEKS ON STUDY	105	037	241	093	082	059	011	073	095	026	026	020	045	098	068	038	089	056	099	074	081	118	116	074	085	099	086	
RESPIRATORY SYSTEM																												
LUNGS AND BRONCHI	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	126
UNDIFFERENTIATED CARCINOMA METAST																												3
TRACHEA	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	126
HEMATOPOIETIC SYSTEM																												
BONE MARROW	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	-	+	+	+	+	115
SPLEEN	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	125
LYMPH NODES	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	127
THYMUS	+	+	+	-	-	+	-	-	+	+	+	+	+	-	-	+	-	+	-	-	+	-	-	+	+	-	-	76
CIRCULATORY SYSTEM																												
HEART	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	126
DIGESTIVE SYSTEM																												
SALIVARY GLAND	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	123
LIVER	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	127
HEPATOCELLULAR ADENOMA														X														2
HEMANGIOMA																												2
BILE DUCT	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	127
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	+	+		127*
PANCREAS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	-	+	+	+	+	+	+	-	+	+	+	114
ESOPHAGUS	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	126
STOMACH	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	127
SMALL INTESTINE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	127
LARGE INTESTINE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	126
ADENOMA, NOS																												1
PAPILLARY ADENOMA																												1
RECTUM	+	N	+	+	+	+	+	+	+	+	+	N	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	127*
FIBROSARCOMA																												1
URINARY SYSTEM																												
KIDNEY	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	127
URINARY BLADDER	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	124
ENDOCRINE SYSTEM																												
PITUITARY	+	+	+	+	+	+	+	+	+	-	+	-	-	+	+	+	-	-	+	-	+	+	+	-	-	-	+	87
CARCINOMA,NOS																												1
ADRENAL	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	127
CORTICAL ADENOMA			X																									3
CORTICAL CARCINOMA																												2
PHEOCHROMOCYTOMA																											X	4
THYROID	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	118
C-CELL ADENOMA																												2
PARATHYROID	+	-	+	+	-	+	+	-	+	+	+	+	-	+	+	+	-	-	+	+	-	-	+	+	+	+	+	81
PANCREATIC ISLETS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	-	+	+	+	+	+	+	-	+	+	+	114
ISLET-CELL ADENOMA			X												X													6
REPRODUCTIVE SYSTEM																												
MAMMARY 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	N	N	127*
TESTIS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	124
PROSTATE	+	+	-	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	120
NERVOUS SYSTEM																												
BRAIN	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	124
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	N	N	127*
FIBROSARCOMA																												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	N	N	127*
MALIG.LYMPHOMA, LYMPHOCYTIC TYPE							X																					2
MALIG.LYMPHOMA, HISTIOCYTIC TYPE																												5

+: TISSUE EXAMINED MICROSCOPICALLY
-: REQUIRED TISSUE NOT EXAMINED MICROSCOPICALLY
X: TUMOR INCIDENCE
N: NECROPSY, NO AUTOLYSIS, NO MICROSCOPIC EXAMINATION

: NO TISSUE INFORMATION SUBMITTED
C: NECROPSY, NO HISTOLOGY DUE TO PROTOCOL
A: AUTOLYSIS
M: ANIMAL MISSING
B: NO NECROPSY PERFORMED

TABLE E5.

INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF MALE HAMSTERS ADMINISTERED 1,2-DIMETHYLHYDRAZINE DIHYDROCHLORIDE (DMH) BY GAVAGE WITH AND WITHOUT INTERMEDIATE RANGE CHRYSOTILE ASBESTOS IN THE DIET

IR CHRYSOTILE PLUS DMH

ANIMAL NUMBER	011	012	013	021	022	023	031	032	033	041	042	043	051	052	053	062	063	071	072	073	081	082	083	091	092
WEEKS ON STUDY	078	026	107	056	116	097	107	151	131	071	037	040	083	099	057	117	031	032	031	113	028	108	041	128	024
INTEGUMENTARY SYSTEM																									
SUBCUTANEOUS TISSUE FIBROSARCOMA	+	+	+	+	+	N X	N	+	+	+	+	+	+	+	+	N	+	+	+	+	+	+	+	+	+
RESPIRATORY SYSTEM																									
LUNGS AND BRONCHI UNDIFFERENTIATED CARCINOMA METAST	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
TRACHEA	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
HEMATOPOIETIC SYSTEM																									
BONE MARROW	+	+	+	+	+	-	-	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+
SPLEEN	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
LYMPH NODES C-CELL CARCINOMA, METASTATIC FIBROSARCOMA, METASTATIC	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+ X	+
THYMUS	-	+	-	+	-	+	+	-	-	+	+	+	-	+	+	-	+	+	+	+	+	-	+	+	-
CIRCULATORY SYSTEM																									
HEART	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
DIGESTIVE SYSTEM																									
SALIVARY GLAND	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
LIVER SARCOMA, NOS HEMANGIOMA HEMANGIOSARCOMA	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
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	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
ESOPHAGUS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+
STOMACH SQUAMOUS CELL PAPILLOMA	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
SMALL INTESTINE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
LARGE INTESTINE PAPILLOMA, NOS FIBROSARCOMA, METASTATIC	+	+	+	+	+	+	+ X	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
RECTUM PAPILLARY ADENOMA	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	N	+	+	+	+	+	+	+
URINARY SYSTEM																									
KIDNEY	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
URINARY BLADDER	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
ENDOCRINE SYSTEM																									
PITUITARY CARCINOMA,NOS ADENOMA, NOS	+	-	+	+	-	+	+	+	+	+	+	+	+	+	-	+	-	+	-	+	-	+	+	+	+
ADRENAL CORTICAL ADENOMA CORTICAL CARCINOMA PHEOCHROMOCYTOMA PHEOCHROMOCYTOMA, MALIGNANT NEUROBLASTOMA	+	-	+	+	+	+	+ X	+ X	+	+	+	+	+ X	+	+	+ X	+	+	+	+	+	+ X	+	+	+
THYROID C-CELL ADENOMA C-CELL CARCINOMA	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+ X	+
PARATHYROID ADENOMA, NOS	+	+	+	+	-	+	+	+	+	-	+	-	+	+	-	-	+	+	+	-	+	+	-	-	+
PANCREATIC ISLETS ISLET-CELL ADENOMA ISLET-CELL CARCINOMA	+	+	+	+	+ X	+	+	+	+	+	+	+	+	+ X	+	+	+	+	+	+	+	+	+	+	+
REPRODUCTIVE SYSTEM																									
MAMMARY 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
TESTIS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
PROSTATE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+
EPIDIDYMIS ADENOMA, 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

+: TISSUE EXAMINED MICROSCOPICALLY
-: REQUIRED TISSUE NOT EXAMINED MICROSCOPICALLY
X: TUMOR INCIDENCE
N: NECROPSY, NO AUTOLYSIS, NO MICROSCOPIC EXAMINATION

: NO TISSUE INFORMATION SUBMITTED
C: NECROPSY, NO HISTOLOGY DUE TO PROTOCOL
A: AUTOLYSIS
M: ANIMAL MISSING
B: NO NECROPSY PERFORMED

TABLE E5. MALE HAMSTERS: TUMOR PATHOLOGY (CONTINUED) IR CHRYSOTILE PLUS DMH

ANIMAL NUMBER	011	012	013	021	022	023	031	032	033	041	042	043	051	052	053	062	063	071	072	073	081	082	083	091	092
WEEKS ON STUDY	078	026	107	056	116	097	107	105	103	070	037	040	083	099	057	117	031	032	031	113	028	108	041	118	024
NERVOUS SYSTEM																									
BRAIN SARCOMA, NOS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
MUSCULOSKELETAL SYSTEM																									
MUSCLE RHABDOMYOSARCOMA	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
BODY CAVITIES																									
PERITONEUM FIBROSARCOMA	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
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
MALIG.LYMPHOMA, LYMPHOCYTIC TYPE																									
MALIG.LYMPHOMA, HISTIOCYTIC TYPE								X																	

+: TISSUE EXAMINED MICROSCOPICALLY
-: REQUIRED TISSUE NOT EXAMINED MICROSCOPICALLY
X: TUMOR INCIDENCE
N: NECROPSY, NO AUTOLYSIS, NO MICROSCOPIC EXAMINATION
: NO TISSUE INFORMATION SUBMITTED
C: NECROPSY, NO HISTOLOGY DUE TO PROTOCOL
A: AUTOLYSIS
M: ANIMAL MISSING
B: NO NECROPSY PERFORMED

TABLE E5. MALE HAMSTERS: TUMOR PATHOLOGY (CONTINUED) IR CHRYSOTILE PLUS DMH

ANIMAL NUMBER	093	101	102	103	111	112	113	121	122	123	131	132	141	142	143	151	152	153	161	162	163	171	172	173	181
WEEKS ON STUDY	091	110	124	027	091	064	073	059	066	081	083	095	090	099	106	095	108	029	019	097	077	049	075	080	022
INTEGUMENTARY SYSTEM																									
SUBCUTANEOUS TISSUE FIBROSARCOMA	+	+	+	A	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
RESPIRATORY SYSTEM																									
LUNGS AND BRONCHI UNDIFFERENTIATED CARCINOMA METAST	+	+	+	A	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
TRACHEA	+	+	+	A	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
HEMATOPOIETIC SYSTEM																									
BONE MARROW	+	+	+	A	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
SPLEEN	+	+	+	A	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
LYMPH NODES C-CELL CARCINOMA, METASTATIC FIBROSARCOMA, METASTATIC	+	+	+	A	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
THYMUS	+	-	-	A	+	+	+	A	+	-	-	+	+	-	-	+	-	+	-	-	+	+	+	+	+
CIRCULATORY SYSTEM																									
HEART	+	+	+	A	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
DIGESTIVE SYSTEM																									
SALIVARY GLAND	+	+	+	A	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
LIVER SARCOMA, NOS HEMANGIOMA HEMANGIOSARCOMA	+	+	+	A	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
BILE DUCT	+	+	+	A	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
GALLBLADDER & COMMON BILE DUCT	N	N	N	A	N	N	N	A	N	N	N	N	N	+	N	N	+	N	N	N	N	N	+	N	N
PANCREAS	-	+	+	A	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
ESOPHAGUS	+	+	+	A	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
STOMACH SQUAMOUS CELL PAPILLOMA	+	+	+	A	+	+	+	A	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+
SMALL INTESTINE	+	+	+	A	+	+	+	A	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+
LARGE INTESTINE PAPILLOMA, NOS FIBROSARCOMA, METASTATIC	+	+	+	A	+	+	+	A	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+
RECTUM PAPILLARY ADENOMA	+	+	+	A	+	N	+	A	+	+	+	+	+	+	+	+	+	+	N	+	+	+	+	+	N
URINARY SYSTEM																									
KIDNEY	+	+	+	A	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
URINARY BLADDER	+	+	+	A	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
ENDOCRINE SYSTEM																									
PITUITARY CARCINOMA,NOS ADENOMA, NOS	+	+	+	A	-	+	-	A	+	+	-	+	+	+	+	+	+	+	-	-	+	+	+	+	-
ADRENAL CORTICAL ADENOMA CORTICAL CARCINOMA PHEOCHROMOCYTOMA PHEOCHROMOCYTOMA, MALIGNANT NEUROBLASTOMA	+	+	+ X	A	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+ X	+	+	+ X	+	+
THYROID C-CELL ADENOMA C-CELL CARCINOMA	+	+	+	A	+	+	+	A	+	+	+	+	+	+	+ X	-	+	+	+	+	+	+	+	+	-
PARATHYROID ADENOMA, NOS	+	+	+	A	-	+	+	A	+	+	+	+	+	+	+	-	+	+	-	+	+	+	-	-	-
PANCREATIC ISLETS ISLET-CELL ADENOMA ISLET-CELL CARCINOMA	-	+	+	A	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+ X	+	+	+	+	+
REPRODUCTIVE SYSTEM																									
MAMMARY GLAND	N	N	N	A	N	N	N	A	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
TESTIS	+	+	+	A	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
PROSTATE	+	+	+	A	+	+	+	A	-	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+
EPIDIDYMIS ADENOMA, NOS	N	N	N	A	N	N	N	A	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N

+: TISSUE EXAMINED MICROSCOPICALLY
-: REQUIRED TISSUE NOT EXAMINED MICROSCOPICALLY
X: TUMOR INCIDENCE
N: NECROPSY, NO AUTOLYSIS, NO MICROSCOPIC EXAMINATION

: NO TISSUE INFORMATION SUBMITTED
C: NECROPSY, NO HISTOLOGY DUE TO PROTOCOL
A: AUTOLYSIS
M: ANIMAL MISSING
B: NO NECROPSY PERFORMED

TABLE E5. MALE HAMSTERS: TUMOR PATHOLOGY (CONTINUED) IR CHRYSOTILE PLUS DMH

ANIMAL NUMBER	09	10	12	03	11	23	13	21	22	23	31	32	41	42	43	51	52	53	61	62	63	71	72	73	81
WEEKS ON STUDY	091	110	124	027	091	064	073	059	066	081	083	095	090	099	061	095	108	029	019	097	071	049	075	080	022
NERVOUS SYSTEM																									
BRAIN SARCOMA, NOS	+	+	+	A	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
MUSCULOSKELETAL SYSTEM																									
MUSCLE RHABDOMYOSARCOMA	N	N	N	A	N	N	N	A	N	N	N	N	N	N	N	N	N	N	N	N	N	N	+	N	
BODY CAVITIES																									
PERITONEUM FIBROSARCOMA	N	N	N	A	N	N	N	A	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
ALL OTHER SYSTEMS																									
MULTIPLE ORGANS NOS	N	N	N	A	N	N	N	A	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
MALIG.LYMPHOMA, LYMPHOCYTIC TYPE																									
MALIG.LYMPHOMA, HISTIOCYTIC TYPE																									

+: TISSUE EXAMINED MICROSCOPICALLY
-: REQUIRED TISSUE NOT EXAMINED MICROSCOPICALLY
X: TUMOR INCIDENCE
N: NECROPSY, NO AUTOLYSIS, NO MICROSCOPIC EXAMINATION

: NO TISSUE INFORMATION SUBMITTED
C: NECROPSY, NO HISTOLOGY DUE TO PROTOCOL
A: AUTOLYSIS
M: ANIMAL MISSING
B: NO NECROPSY PERFORMED

TABLE E5. MALE HAMSTERS: TUMOR PATHOLOGY (CONTINUED) IR CHRYSOTILE PLUS DMH

ANIMAL NUMBER	182	183	192	193	201	202	203	211	212	213	221	222	223	231	232	233	241	242	243	251	252	253	261	262	263
WEEKS ON STUDY	102	096	093	087	098	086	113	116	121	082	062	096	099	071	059	030	105	092	113	097	068	027	092	059	102
INTEGUMENTARY SYSTEM																									
SUBCUTANEOUS TISSUE	+	+	+	+	+	+	+	N	+	+	+	+	N	+	+	+	+	+	+	+	+	+	+	+	+
FIBROSARCOMA																									
RESPIRATORY SYSTEM																									
LUNGS AND BRONCHI	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
UNDIFFERENTIATED CARCINOMA METAST										X															
TRACHEA	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+
HEMATOPOIETIC SYSTEM																									
BONE MARROW	+	+	+	+	+	+	+	-	+	+	+	+	-	+	+	+	+	+	+	+	+	+	-	-	+
SPLEEN	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
LYMPH NODES	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
C-CELL CARCINOMA, METASTATIC																									
FIBROSARCOMA, METASTATIC																									
THYMUS	-	-	+	+	-	-	-	-	+	-	+	-	-	+	+	-	-	-	-	-	-	+	-	+	+
CIRCULATORY SYSTEM																									
HEART	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
DIGESTIVE SYSTEM																									
SALIVARY GLAND	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
LIVER	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
SARCOMA, NOS																									
HEMANGIOMA																									
HEMANGIOSARCOMA											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	+
PANCREAS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
ESOPHAGUS	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+
STOMACH	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
SQUAMOUS CELL PAPILLOMA																									
SMALL INTESTINE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
LARGE INTESTINE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
PAPILLOMA, NOS																									
FIBROSARCOMA, METASTATIC																									
RECTUM	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
PAPILLARY ADENOMA																									
URINARY SYSTEM																									
KIDNEY	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
URINARY BLADDER	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
ENDOCRINE SYSTEM																									
PITUITARY	-	+	+	+	+	-	+	+	+	+	+	-	+	+	+	+	+	-	-	-	+	-	-	+	+
CARCINOMA,NOS										X															
ADENOMA, NOS																									
ADRENAL	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
CORTICAL ADENOMA						X																			
CORTICAL CARCINOMA																		X							
PHEOCHROMOCYTOMA																									
PHEOCHROMOCYTOMA, MALIGNANT																		X							
NEUROBLASTOMA																									
THYROID	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+
C-CELL ADENOMA																			X						
C-CELL CARCINOMA																									
PARATHYROID	+	+	-	+	+	+	-	+	+	+	-	+	+	+	+	+	+	-	-	+	-	+	+	-	+
ADENOMA, NOS	X																								
PANCREATIC ISLETS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
ISLET-CELL ADENOMA		X																							X
ISLET-CELL CARCINOMA																									
REPRODUCTIVE SYSTEM																									
MAMMARY 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
TESTIS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
PROSTATE	+	+	+	+	+	+	+	+	+	-	+	+	+	-	-	+	+	+	+	+	-	+	+	+	+
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
ADENOMA, NOS																									

+: TISSUE EXAMINED MICROSCOPICALLY
-: REQUIRED TISSUE NOT EXAMINED MICROSCOPICALLY
X: TUMOR INCIDENCE
N: NECROPSY, NO AUTOLYSIS, NO MICROSCOPIC EXAMINATION
: NO TISSUE INFORMATION SUBMITTED
C: NECROPSY, NO HISTOLOGY DUE TO PROTOCOL
A: AUTOLYSIS
M: ANIMAL MISSING
B: NO NECROPSY PERFORMED

TABLE E5. MALE HAMSTERS: TUMOR PATHOLOGY (CONTINUED) IR CHRYSOTILE PLUS DMH

ANIMAL NUMBER	182	183	192	193	201	202	203	211	212	213	221	222	223	231	232	233	241	242	243	251	252	253	261	262	263
WEEKS ON STUDY	102	096	093	087	098	086	113	116	121	082	061	096	099	071	059	030	105	092	113	097	068	027	092	059	102
NERVOUS SYSTEM																									
BRAIN	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
SARCOMA, NOS										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				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
FIBROSARCOMA																									
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
MALIG.LYMPHOMA, LYMPHOCYTIC TYPE																									
MALIG.LYMPHOMA, HISTIOCYTIC TYPE																								X	

+: TISSUE EXAMINED MICROSCOPICALLY
-: REQUIRED TISSUE NOT EXAMINED MICROSCOPICALLY
X: TUMOR INCIDENCE
H: NECROPSY, NO AUTOLYSIS, NO MICROSCOPIC EXAMINATION
: NO TISSUE INFORMATION SUBMITTED
C: NECROPSY, NO HISTOLOGY DUE TO PROTOCOL
A: AUTOLYSIS
M: ANIMAL MISSING
B: NO NECROPSY PERFORMED

TABLE E5. MALE HAMSTERS: TUMOR PATHOLOGY (CONTINUED) IR CHRYSOTILE PLUS DMH

ANIMAL NUMBER	271	272	273	281	282	283	291	292	293	301	302	303	311	312	313	321	322	323	331	332	333	341	342	343	351
WEEKS ON STUDY	113	014	053	116	104	071	130	101	095	077	103	077	105	104	114	106	105	020	053	075	089	112	101	102	093
INTEGUMENTARY SYSTEM																									
SUBCUTANEOUS TISSUE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
FIBROSARCOMA																									
RESPIRATORY SYSTEM																									
LUNGS AND BRONCHI	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
UNDIFFERENTIATED CARCINOMA METAST																						X			
TRACHEA	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
HEMATOPOIETIC SYSTEM																									
BONE MARROW	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
SPLEEN	+	-	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	-	+
LYMPH NODES	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
C-CELL CARCINOMA, METASTATIC																									
FIBROSARCOMA, METASTATIC																									
THYMUS	+	+	+	-	-	-	-	-	-	+	-	-	-	-	-	+	-	+	+	+	+	+	+	-	-
CIRCULATORY SYSTEM																									
HEART	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
DIGESTIVE SYSTEM																									
SALIVARY GLAND	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+
LIVER	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
SARCOMA, NOS																									
HEMANGIOMA																									
HEMANGIOSARCOMA																									
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	+	-	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+
ESOPHAGUS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
STOMACH	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
SQUAMOUS CELL PAPILLOMA																									
SMALL INTESTINE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
LARGE INTESTINE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
PAPILLOMA, NOS																									
FIBROSARCOMA, METASTATIC																									
RECTUM	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
PAPILLARY ADENOMA																			X						
URINARY SYSTEM																									
KIDNEY	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
URINARY BLADDER	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
ENDOCRINE SYSTEM																									
PITUITARY	+	-	+	+	+	+	+	+	-	+	+	+	-	+	-	-	-	-	+	+	+	+	+	+	+
CARCINOMA,NOS																									
ADENOMA, NOS																									
ADRENAL	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
CORTICAL ADENOMA																							X		
CORTICAL CARCINOMA											X														
PHEOCHROMOCYTOMA																									
PHEOCHROMOCYTOMA, MALIGNANT																									
NEUROBLASTOMA																									
THYROID	+	+	+	+	+	-	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+
C-CELL ADENOMA																	X								
C-CELL CARCINOMA																									
PARATHYROID	+	+	-	+	+	-	+	+	+	-	-	+	-	+	-	+	+	-	-	+	+	+	+	+	-
ADENOMA, NOS																								X	
PANCREATIC ISLETS	+	-	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+
ISLET-CELL ADENOMA								X					X												
ISLET-CELL CARCINOMA																									
REPRODUCTIVE SYSTEM																									
MAMMARY 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
TESTIS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
PROSTATE	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
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
ADENOMA, NOS																									

+: TISSUE EXAMINED MICROSCOPICALLY
-: REQUIRED TISSUE NOT EXAMINED MICROSCOPICALLY
X: TUMOR INCIDENCE
N: NECROPSY, NO AUTOLYSIS, NO MICROSCOPIC EXAMINATION
: NO TISSUE INFORMATION SUBMITTED
C: NECROPSY, NO HISTOLOGY DUE TO PROTOCOL
A: AUTOLYSIS
M: ANIMAL MISSING
B: NO NECROPSY PERFORMED

TABLE E5. MALE HAMSTERS: TUMOR PATHOLOGY (CONTINUED) IR CHRYSOTILE PLUS DMH

ANIMAL NUMBER	271	272	273	281	282	283	291	292	293	301	302	303	311	312	313	321	322	323	331	332	333	341	342	343	351
WEEKS ON STUDY	113	014	053	116	104	071	130	101	095	077	031	077	055	044	044	061	052	020	053	075	089	112	101	102	093
NERVOUS SYSTEM																									
BRAIN	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
SARCOMA, NOS																									
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
FIBROSARCOMA																									
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	M	N	N
MALIG.LYMPHOMA, LYMPHOCYTIC TYPE																					X				
MALIG.LYMPHOMA, HISTIOCYTIC TYPE																									

+: TISSUE EXAMINED MICROSCOPICALLY
-: REQUIRED TISSUE NOT EXAMINED MICROSCOPICALLY
X: TUMOR INCIDENCE
N: NECROPSY, NO AUTOLYSIS, NO MICROSCOPIC EXAMINATION
: NO TISSUE INFORMATION SUBMITTED
C: NECROPSY, NO HISTOLOGY DUE TO PROTOCOL
A: AUTOLYSIS
M: ANIMAL MISSING
B: NO NECROPSY PERFORMED

TABLE E5. MALE HAMSTERS: TUMOR PATHOLOGY (CONTINUED) IR CHRYSOTILE PLUS DMH

ANIMAL NUMBER	351	353	361	362	363	371	372	373	381	382	383	391	392	393	401	402	403	411	412	413	421	422	423	431	432
WEEKS ON STUDY	059	097	041	023	079	106	090	111	042	026	110	108	119	081	100	090	001	172	095	081	117	079	084	145	139
INTEGUMENTARY SYSTEM																									
SUBCUTANEOUS TISSUE	+	+	+	+	N	+	+	+	N	+	+	+	+	+	+	+	+	A	+	+	N	+	+	+	+
FIBROSARCOMA																									
RESPIRATORY SYSTEM																									
LUNGS AND BRONCHI	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+
UNDIFFERENTIATED CARCINOMA METAST																									
TRACHEA	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+
HEMATOPOIETIC SYSTEM																									
BONE MARROW	+	+	+	+	-	+	+	+	-	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+
SPLEEN	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+
LYMPH NODES	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+
C-CELL CARCINOMA, METASTATIC																									
FIBROSARCOMA, METASTATIC														X											
THYMUS	+	-	+	+	+	+	+	+	+	-	+	+	-	+	+	-	+	A	-	-	+	+	+	+	-
CIRCULATORY SYSTEM																									
HEART	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+
DIGESTIVE SYSTEM																									
SALIVARY GLAND	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	A	+	+	+	+	+	+	+
LIVER	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+
SARCOMA, NOS						X																			
HEMANGIOMA																									
HEMANGIOSARCOMA																									
BILE DUCT	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+
GALLBLADDER & COMMON BILE DUCT	N	N	N	+	N	+	N	N	N	N	N	N	N	N	N	N	N	A	N	N	N	N	N	N	N
PANCREAS	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	A	+	+	+	+	+	+	+
ESOPHAGUS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	-
STOMACH	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	-	+	+
SQUAMOUS CELL PAPILLOMA																									X
SMALL INTESTINE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	-	+
LARGE INTESTINE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	-	+
PAPILLOMA, NOS																									
FIBROSARCOMA, METASTATIC														X											
RECTUM	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	N	+
PAPILLARY ADENOMA																									
URINARY SYSTEM																									
KIDNEY	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+
URINARY BLADDER	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+
ENDOCRINE SYSTEM																									
PITUITARY	+	+	-	-	+	+	+	+	-	+	+	+	-	+	+	+	+	A	+	+	+	-	-	-	+
CARCINOMA,NOS																									
ADENOMA, NOS																									
ADRENAL	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+
CORTICAL ADENOMA							X																		
CORTICAL CARCINOMA								X																	
PHEOCHROMOCYTOMA					X			X																	
PHEOCHROMOCYTOMA, MALIGNANT																									
NEUROBLASTOMA																									
THYROID	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	A	-	+	+	+	+	+	+
C-CELL ADENOMA																									
C-CELL CARCINOMA																									
PARATHYROID	+	-	+	-	+	+	+	-	-	+	+	-	+	+	-	+	+	A	-	+	+	-	+	+	-
ADENOMA, NOS																									
PANCREATIC ISLETS	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	A	+	+	+	+	+	+	+
ISLET-CELL ADENOMA		X				X																			
ISLET-CELL CARCINOMA																									
REPRODUCTIVE SYSTEM																									
MAMMARY GLAND	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	A	N	N	N	N	N	N	N
TESTIS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+
PROSTATE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+
EPIDIDYMIS	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	A	N	N	N	N	N	N	N
ADENOMA, NOS																									

+: TISSUE EXAMINED MICROSCOPICALLY
-: REQUIRED TISSUE NOT EXAMINED MICROSCOPICALLY
X: TUMOR INCIDENCE
N: NECROPSY, NO AUTOLYSIS, NO MICROSCOPIC EXAMINATION

: NO TISSUE INFORMATION SUBMITTED
C: NECROPSY, NO HISTOLOGY DUE TO PROTOCOL
A: AUTOLYSIS
M: ANIMAL MISSING
B: NO NECROPSY PERFORMED

TABLE E5. MALE HAMSTERS: TUMOR PATHOLOGY (CONTINUED) IR CHRYSOTILE PLUS DMH

ANIMAL NUMBER	351	353	361	362	363	371	372	373	381	382	383	391	392	393	401	402	403	411	412	413	421	422	423	431	432
WEEKS ON STUDY	059	097	041	023	079	106	090	111	042	026	110	081	119	081	100	090	100	107	082	091	081	079	084	116	139
NERVOUS SYSTEM																									
BRAIN SARCOMA, NOS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	-	+
MUSCULOSKELETAL SYSTEM																									
MUSCLE RHABDOMYOSARCOMA	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	A	N	N	+	N	N	N	N
BODY CAVITIES																									
PERITONEUM FIBROSARCOMA	N	N	N	N	N	N	N	N	N	N	N	N	N	N X	N	N	N	A	N	N	N	N	N	N	N
ALL OTHER SYSTEMS																									
MULTIPLE ORGANS NOS	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	A	N	N	N	N	N	N	N
MALIG.LYMPHOMA, LYMPHOCYTIC TYPE																									
MALIG.LYMPHOMA, HISTIOCYTIC TYPE																									

+: TISSUE EXAMINED MICROSCOPICALLY
-: REQUIRED TISSUE NOT EXAMINED MICROSCOPICALLY
X: TUMOR INCIDENCE
N: NECROPSY, NO AUTOLYSIS, NO MICROSCOPIC EXAMINATION
: NO TISSUE INFORMATION SUBMITTED
C: NECROPSY, NO HISTOLOGY DUE TO PROTOCOL
A: AUTOLYSIS
M: ANIMAL MISSING
B: NO NECROPSY PERFORMED

TABLE E5. MALE HAMSTERS: TUMOR PATHOLOGY (CONTINUED) IR CHRYSOTILE PLUS DMH

ANIMAL NUMBER	433	441	442	443	451	452	453	461	462	463	471	472	473	481	482	483	491	493	501	502	503	511	512	513	521
WEEKS ON STUDY	024	084	055	098	071	061	100	099	119	092	028	043	062	049	118	093	081	079	075	088	032	015	115	107	075
INTEGUMENTARY SYSTEM																									
SUBCUTANEOUS TISSUE	+	+	+	+	+	+	+	+	+	+	N	+	+	+	+	+	+	N	+	+	+	+	N	+	+
FIBROSARCOMA																									
RESPIRATORY SYSTEM																									
LUNGS AND BRONCHI	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
UNDIFFERENTIATED CARCINOMA METAST																									
TRACHEA	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
HEMATOPOIETIC SYSTEM																									
BONE MARROW	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+
SPLEEN	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
LYMPH NODES	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
C-CELL CARCINOMA, METASTATIC																									
FIBROSARCOMA, METASTATIC																									
THYMUS	+	+	+	+	-	-	+	+	-	-	+	+	+	+	-	+	+	+	-	-	+	-	-	-	+
CIRCULATORY SYSTEM																									
HEART	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
DIGESTIVE SYSTEM																									
SALIVARY GLAND	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
LIVER	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
SARCOMA, NOS																						X			
HEMANGIOMA																									
HEMANGIOSARCOMA																									
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	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
ESOPHAGUS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
STOMACH	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
SQUAMOUS CELL PAPILLOMA																							X		
SMALL INTESTINE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
LARGE INTESTINE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
PAPILLOMA, NOS																									
FIBROSARCOMA, METASTATIC																									
RECTUM	+	+	N	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	N	+	+	+	+	+
PAPILLARY ADENOMA																									
URINARY SYSTEM																									
KIDNEY	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
URINARY BLADDER	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
ENDOCRINE SYSTEM																									
PITUITARY	-	-	+	+	-	+	+	+	+	+	+	+	-	-	+	+	+	-	+	-	-	+	-	+	+
CARCINOMA,NOS																						X			
ADENOMA, NOS																									
ADRENAL	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
CORTICAL ADENOMA																									
CORTICAL CARCINOMA														X											
PHEOCHROMOCYTOMA																									
PHEOCHROMOCYTOMA, MALIGNANT																									
NEUROBLASTOMA																									
THYROID	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+
C-CELL ADENOMA																									
C-CELL CARCINOMA																									
PARATHYROID	+	+	+	+	-	-	+	+	-	-	+	+	-	-	+	+	+	+	+	-	+	+	-	+	+
ADENOMA, NOS																									
PANCREATIC ISLETS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
ISLET-CELL ADENOMA				X																					
ISLET-CELL CARCINOMA										X															
REPRODUCTIVE SYSTEM																									
MAMMARY 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
TESTIS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
PROSTATE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
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
ADENOMA, NOS								X																	

+: TISSUE EXAMINED MICROSCOPICALLY
-: REQUIRED TISSUE NOT EXAMINED MICROSCOPICALLY
X: TUMOR INCIDENCE
N: NECROPSY, NO AUTOLYSIS, NO MICROSCOPIC EXAMINATION

: NO TISSUE INFORMATION SUBMITTED
C: NECROPSY, NO HISTOLOGY DUE TO PROTOCOL
A: AUTOLYSIS
M: ANIMAL MISSING
B: NO NECROPSY PERFORMED

TABLE E5. MALE HAMSTERS: TUMOR PATHOLOGY (CONTINUED) IR CHRYSOTILE PLUS DMH

ANIMAL NUMBER	433	441	442	443	451	452	453	461	462	463	471	472	473	481	482	483	491	493	501	502	503	511	512	513	521
WEEKS ON STUDY	024	084	055	098	071	061	010	091	111	092	028	043	062	049	118	093	081	079	075	088	032	105	115	097	075
NERVOUS SYSTEM																									
BRAIN	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
SARCOMA, NOS																									
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
FIBROSARCOMA																									
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
MALIG.LYMPHOMA, LYMPHOCYTIC TYPE																						X	X		
MALIG.LYMPHOMA, HISTIOCYTIC TYPE		X																							

+: TISSUE EXAMINED MICROSCOPICALLY
-: REQUIRED TISSUE NOT EXAMINED MICROSCOPICALLY
X: TUMOR INCIDENCE
N: NECROPSY, NO AUTOLYSIS, NO MICROSCOPIC EXAMINATION
: NO TISSUE INFORMATION SUBMITTED
C: NECROPSY, NO HISTOLOGY DUE TO PROTOCOL
A: AUTOLYSIS
M: ANIMAL MISSING
B: NO NECROPSY PERFORMED

TABLE E5. MALE HAMSTERS: TUMOR PATHOLOGY (CONTINUED) IR CHRYSOTILE PLUS DMH

ANIMAL NUMBER	52	52	53	53	53	54	54	54	55	55	55	56	56	56	57	57	57	58	58	58	59	59	59	60	60	60	TOTAL
WEEKS ON STUDY	060	056	037	010	007	045	211	081	083	045	111	098	099	121	095	011	091	099	099	052	053	047	104	068	093	097	037	TISSUES / TUMORS
INTEGUMENTARY SYSTEM																											
SUBCUTANEOUS TISSUE	+	+	+	N	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	173*
FIBROSARCOMA																											1
RESPIRATORY SYSTEM																											
LUNGS AND BRONCHI	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	173
UNDIFFERENTIATED CARCINOMA METAST																						X					3
TRACHEA	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	-	170
HEMATOPOIETIC SYSTEM																											
BONE MARROW	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	163
SPLEEN	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	170
LYMPH NODES	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	173
C-CELL CARCINOMA, METASTATIC																											1
FIBROSARCOMA, METASTATIC																											1
THYMUS	+	-	+	-	+	+	+	-	+	+	-	+	+	+	-	-	+	-	-	+	+	+	+	+	-	+	98
CIRCULATORY SYSTEM																											
HEART	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	173
DIGESTIVE SYSTEM																											
SALIVARY GLAND	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	-	168
LIVER	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	173
SARCOMA, NOS																											1
HEMANGIOMA																											1
HEMANGIOSARCOMA																											1
BILE DUCT	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	173
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	173*
PANCREAS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	167
ESOPHAGUS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	169
STOMACH	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	170
SQUAMOUS CELL PAPILLOMA																											2
SMALL INTESTINE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	170
LARGE INTESTINE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	170
PAPILLOMA, NOS																											1
FIBROSARCOMA, METASTATIC																											1
RECTUM	+	+	+	+	+	+	+	+	N	+	+	+	+	+	+	+	+	N	+	+	+	+	+	+	+	+	173*
PAPILLARY ADENOMA																											1
URINARY SYSTEM																											
KIDNEY	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	173
URINARY BLADDER	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	173
ENDOCRINE SYSTEM																											
PITUITARY	+	+	-	+	+	+	-	-	+	+	+	-	+	+	+	+	+	+	-	+	+	+	+	-	-	+	123
CARCINOMA,NOS																											1
ADENOMA, NOS																											1
ADRENAL	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	171
CORTICAL ADENOMA																											8
CORTICAL CARCINOMA															X												7
PHEOCHROMOCYTOMA																											3
PHEOCHROMOCYTOMA, MALIGNANT																											3
NEUROBLASTOMA											X																1
THYROID	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	163
C-CELL ADENOMA																											3
C-CELL CARCINOMA																											1
PARATHYROID	+	+	+	+	+	-	+	-	+	-	+	+	+	+	+	-	+	+	+	-	+	-	-	+	+	-	118
ADENOMA, NOS																											2
PANCREATIC ISLETS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	167
ISLET-CELL ADENOMA																											10
ISLET-CELL CARCINOMA																											1
REPRODUCTIVE SYSTEM																											
MAMMARY 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	N	173*
TESTIS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	173
PROSTATE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	165
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	N	173*
ADENOMA, NOS																											1

+: TISSUE EXAMINED MICROSCOPICALLY
-: REQUIRED TISSUE NOT EXAMINED MICROSCOPICALLY
X: TUMOR INCIDENCE
N: NECROPSY, NO AUTOLYSIS, NO MICROSCOPIC EXAMINATION
: NO TISSUE INFORMATION SUBMITTED
C: NECROPSY, NO HISTOLOGY DUE TO PROTOCOL
A: AUTOLYSIS
M: ANIMAL MISSING
B: NO NECROPSY PERFORMED

TABLE E5. MALE HAMSTERS: TUMOR PATHOLOGY (CONTINUED) IR CHRYSOTILE PLUS DMH

ANIMAL NUMBER	522	523	531	532	533	541	542	543	551	552	553	561	562	563	571	572	573	581	582	583	591	592	593	601	602	603	TOTAL
WEEKS ON STUDY	060	056	037	100	107	043	121	081	083	045	111	098	099	121	095	101	099	099	052	053	047	104	068	093	097	037	TISSUES TUMORS
NERVOUS SYSTEM																											
BRAIN	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	-	+	169
SARCOMA, NOS																											1
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	N	173*
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	N	173*
FIBROSARCOMA																											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	N	173*
MALIG.LYMPHOMA, LYMPHOCYTIC TYPE																											3
MALIG.LYMPHOMA, HISTIOCYTIC TYPE										X								X									5

+: TISSUE EXAMINED MICROSCOPICALLY
-: REQUIRED TISSUE NOT EXAMINED MICROSCOPICALLY
X: TUMOR INCIDENCE
N: NECROPSY, NO AUTOLYSIS, NO MICROSCOPIC EXAMINATION
: NO TISSUE INFORMATION SUBMITTED
C: NECROPSY, NO HISTOLOGY DUE TO PROTOCOL
A: AUTOLYSIS
M: ANIMAL MISSING
B: NO NECROPSY PERFORMED

TABLE E6.

INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF FEMALE HAMSTERS ADMINISTERED 1,2-DIMETHYLHYDRAZINE DIHYDROCHLORIDE (DMH) BY GAVAGE WITH AND WITHOUT INTERMEDIATE RANGE CHRYSOTILE ASBESTOS IN THE DIET

CONTROL

ANIMAL NUMBER	011	012	013	021	022	023	031	032	033	041	042	043	061	062	063	071	072	073	081	082	083	111	112	113	121
WEEKS ON STUDY	065	018	043	048	059	043	043	086	018	045	057	061	069	053	057	049	085	068	061	050	058	062	014	043	058
RESPIRATORY SYSTEM																									
LUNGS AND BRONCHI	+	A	+	+	+	+	+	+	+	A	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+
TRACHEA	+	A	+	+	+	+	+	+	+	A	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+
HEMATOPOIETIC SYSTEM																									
BONE MARROW	+	A	+	+	+	+	+	+	+	A	+	+	+	A	+	+	+	-	+	+	+	-	+	+	+
SPLEEN	+	A	+	+	+	+	-	+	+	A	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+
LYMPH NODES	+	A	+	+	+	+	+	+	+	A	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+
THYMUS	+	A	+	+	+	+	+	+	+	A	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+
CIRCULATORY SYSTEM																									
HEART	+	A	+	+	+	+	+	+	+	A	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+
DIGESTIVE SYSTEM																									
SALIVARY GLAND	+	A	+	+	+	+	-	+	+	A	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+
LIVER	+	A	+	+	+	+	+	+	+	A	+	+	+	A	+	+	+	+	+	+	+	+	+	+	-
BILE DUCT PAPILLOMA, NOS	+	A	+	+	+	+	+	+	+	A	+	+	+	A	+	+	+	+	+	+	+	+	+	+	-
GALLBLADDER & COMMON BILE DUCT	N	A	+	N	N	+	+	N	N	A	N	N	N	A	N	N	+	N	N	N	N	+	N	+	N
PANCREAS	+	A	+	+	+	+	+	+	+	A	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+
ESOPHAGUS	+	A	+	+	+	+	+	+	+	A	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+
STOMACH	+	A	+	+	+	+	+	+	+	A	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+
SMALL INTESTINE	+	A	+	+	+	+	+	+	+	A	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+
LARGE INTESTINE LIPOMA	+	A	+	+	+	+	+	+	+	A	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+
URINARY SYSTEM																									
KIDNEY	+	A	+	+	+	+	+	+	+	A	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+
URINARY BLADDER	+	A	+	-	+	+	+	+	+	A	+	+	+	A	+	+	+	+	+	+	-	+	+	+	+
ENDOCRINE SYSTEM																									
PITUITARY	-	A	-	-	+	+	-	+	-	A	+	+	-	A	-	+	+	+	+	-	-	-	-	+	-
ADRENAL CORTICAL ADENOMA	+	A	+	+	+	+	+	+	+	A	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+
THYROID C-CELL CARCINOMA	+	A	+	+	+	+	+	+	+	A	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+
PARATHYROID ADENOMA, NOS	+	A	-	-	-	-	-	+	+	A	+	-	+	A	+	+	+	+	+	-	+	-	+	-	+
PANCREATIC ISLETS ISLET-CELL ADENOMA	+	A	+	+	+	+	+	+ X	+	A	+	+	+ X	A	+	+	+	+	+	+	+	+	+	+	+
REPRODUCTIVE SYSTEM																									
MAMMARY GLAND	N	A	N	N	N	N	N	N	N	A	N	N	N	A	N	N	N	N	N	N	N	N	N	N	N
UTERUS PAPILLARY ADENOMA CYSTADENOMA, NOS	+	A	+	+	+	+	+	+	+	A	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+
OVARY	-	A	+	+	+	+	+	+	+	A-	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+
ALL OTHER SYSTEMS																									
MULTIPLE ORGANS NOS HEMANGIOSARCOMA MALIG.LYMPHOMA, LYMPHOCYTIC TYPE LEUKEMIA,NOS	N	A	N	N	N	N	N	N	N	A	N	N	N	A	N	N	N	N	N	N	N	N	N	N	N

+: TISSUE EXAMINED MICROSCOPICALLY
-: REQUIRED TISSUE NOT EXAMINED MICROSCOPICALLY
X: TUMOR INCIDENCE
N: NECROPSY, NO AUTOLYSIS, NO MICROSCOPIC EXAMINATION
: NO TISSUE INFORMATION SUBMITTED
C: NECROPSY, NO HISTOLOGY DUE TO PROTOCOL
A: AUTOLYSIS
M: ANIMAL MISSING
B: NO NECROPSY PERFORMED

TABLE E6. FEMALE HAMSTERS: TUMOR PATHOLOGY (CONTINUED) CONTROL

ANIMAL NUMBER	122	123	141	142	143	151	152	153	161	162	163	181	182	183	191	192	193	201	202	203	221	222	223	231	232
WEEKS ON STUDY	027	069	046	073	062	060	030	041	036	069	050	051	051	019	066	058	061	065	041	059	037	020	069	050	051
RESPIRATORY SYSTEM																									
LUNGS AND BRONCHI	+	+	+	+	+	+	+	A	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+
TRACHEA	+	+	+	+	+	+	+	A	+	+	+	+	+	A	–	+	+	+	+	+	+	+	+	+	+
HEMATOPOIETIC SYSTEM																									
BONE MARROW	+	+	+	+	–	+	+	A	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+
SPLEEN	+	+	+	+	+	+	+	A	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+
LYMPH NODES	+	+	+	+	+	+	+	A	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+
THYMUS	–	+	+	+	+	–	+	A	+	+	+	+	–	A	–	+	+	+	+	+	+	–	+	+	
CIRCULATORY SYSTEM																									
HEART	+	+	+	+	+	+	+	A	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+
DIGESTIVE SYSTEM																									
SALIVARY GLAND	+	+	+	+	+	+	+	A	+	+	+	+	–	A	+	+	+	+	–	+	+	–	+	+	+
LIVER	+	+	+	+	+	+	+	A	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+
BILE DUCT PAPILLOMA, NOS	+	+	+	+	+	+	+	A	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+
GALLBLADDER & COMMON BILE DUCT	+	N	N	+	N	N	N	A	N	N	N	N	N	A	N	N	+	N	+	+	N	N	+	N	N
PANCREAS	+	+	+	+	+	+	+	A	+	+	+	+	+	A	+	+	+	+	+	+	+	–	+	+	
ESOPHAGUS	+	+	+	+	+	+	+	A	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	
STOMACH	+	+	+	+	+	+	+	A	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	
SMALL INTESTINE	+	+	+	+	+	+	+	A	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	
LARGE INTESTINE LIPOMA	+	+	+	+	+	+	+	A	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+
URINARY SYSTEM																									
KIDNEY	+	+	+	+	+	+	+	A	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+
URINARY BLADDER	+	+	+	+	+	+	+	A	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+
ENDOCRINE SYSTEM																									
PITUITARY	+	–	+	–	–	+	+	A	+	+	+	–	+	A	–	+	+	+	–	+	–	–	–	–	–
ADRENAL CORTICAL ADENOMA	+	+	+	+	+	+	+	A	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+
THYROID C-CELL CARCINOMA	+	+	+	+	+	–	+	A	+	–	+	+	+	A	–	+	–	+	+	+	+	+	+	+	+
PARATHYROID ADENOMA, NOS	–	–	+	+	–	–	+	A	+	–	+	–	+	A	–	+	–	+ X	+	+	+	+	+	+	+
PANCREATIC ISLETS ISLET-CELL ADENOMA	+	+	+	+	+	+	+	A	+	+	+	+	+	A	+	+	+	+	+	+	+	–	+	+	
REPRODUCTIVE SYSTEM																									
MAMMARY GLAND	N	N	N	N	N	N	N	A	N	N	N	N	N	A	N	N	N	N	N	N	N	N	N	N	N
UTERUS PAPILLARY ADENOMA CYSTADENOMA, NOS	+	+	+	+	+	+	+	A	+	+ X	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+
OVARY	+	+	+	+	+	+	+	A	+	+	+	+	+	A	–	+	+	+	+	+	+	+	+	+	+
ALL OTHER SYSTEMS																									
MULTIPLE ORGANS NOS HEMANGIOSARCOMA MALIG.LYMPHOMA, LYMPHOCYTIC TYPE LEUKEMIA,NOS	N	N	N	N	N	N	N	A	N	N	N	N	N	A	N	N	N	N	N	N	N	N	N	N	N

+: TISSUE EXAMINED MICROSCOPICALLY
–: REQUIRED TISSUE NOT EXAMINED MICROSCOPICALLY
X: TUMOR INCIDENCE
N: NECROPSY, NO AUTOLYSIS, NO MICROSCOPIC EXAMINATION

: NO TISSUE INFORMATION SUBMITTED
C: NECROPSY, NO HISTOLOGY DUE TO PROTOCOL
A: AUTOLYSIS
M: ANIMAL MISSING
B: NO NECROPSY PERFORMED

TABLE E6. FEMALE HAMSTERS: TUMOR PATHOLOGY (CONTINUED) CONTROL

ANIMAL NUMBER	233	241	242	243	251	252	253	261	262	263	271	273	281	282	283	291	292	293	301	302	303	311	312	313	321
WEEKS ON STUDY	090	071	054	072	044	070	040	073	090	042	017	066	081	057	034	074	047	060	057	028	090	065	056	067	061
RESPIRATORY SYSTEM																									
LUNGS AND BRONCHI	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+
TRACHEA	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
HEMATOPOIETIC SYSTEM																									
BONE MARROW	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
SPLEEN	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
LYMPH NODES	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
THYMUS	+	-	+	+	+	+	+	+	-	+	-	-	+	-	+	+	+	+	-	+	+	+	+	+	+
CIRCULATORY SYSTEM																									
HEART	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
DIGESTIVE SYSTEM																									
SALIVARY GLAND	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+
LIVER	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
BILE DUCT PAPILLOMA, NOS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
GALLBLADDER & COMMON BILE DUCT	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	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
LARGE INTESTINE LIPOMA	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
URINARY SYSTEM																									
KIDNEY	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
URINARY BLADDER	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
ENDOCRINE SYSTEM																									
PITUITARY	+	-	-	+	+	-	-	+	+	-	+	-	-	-	+	+	-	-	+	+	+	-	+	+	+
ADRENAL CORTICAL ADENOMA	+	+	+	+ X	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
THYROID C-CELL CARCINOMA	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	-	-	+	+	+	+	+	+	+
PARATHYROID ADENOMA, NOS	+	+	+	+	+	-	-	+	+	-	+	-	-	+	-	+	-	-	-	+	+	+	+	+	+
PANCREATIC ISLETS ISLET-CELL ADENOMA	+	+	+	+	+	+	+	+	+	+	+	+	+ X	+	+	+	+	+	+	+	+	-	+	+	-
REPRODUCTIVE SYSTEM																									
MAMMARY 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
UTERUS PAPILLARY ADENOMA CYSTADENOMA, NOS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
OVARY	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
ALL OTHER SYSTEMS																									
MULTIPLE ORGANS NOS HEMANGIOSARCOMA MALIG.LYMPHOMA, LYMPHOCYTIC TYPE LEUKEMIA,NOS	N	N	N	N X	N	N	N	N	N	N	N	N	N	N X	N	N	N	N	N	N	N	N	N	N	N

+: TISSUE EXAMINED MICROSCOPICALLY
-: REQUIRED TISSUE NOT EXAMINED MICROSCOPICALLY
X: TUMOR INCIDENCE
N: NECROPSY, NO AUTOLYSIS, NO MICROSCOPIC EXAMINATION

: NO TISSUE INFORMATION SUBMITTED
C: NECROPSY, NO HISTOLOGY DUE TO PROTOCOL
A: AUTOLYSIS
M: ANIMAL MISSING
B: NO NECROPSY PERFORMED

TABLE E6. FEMALE HAMSTERS: TUMOR PATHOLOGY (CONTINUED) CONTROL

ANIMAL NUMBER	322	323	331	332	333	351	352	353	361	362	363	371	372	373	391	392	393	411	412	413	421	422	423	431	432
WEEKS ON STUDY	042	050	051	117	051	060	029	055	071	071	045	067	053	062	066	075	078	067	055	035	067	049	051	115	024
RESPIRATORY SYSTEM																									
LUNGS AND BRONCHI	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+
TRACHEA	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+
HEMATOPOIETIC SYSTEM																									
BONE MARROW	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	A	+
SPLEEN	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+
LYMPH NODES	A	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+
THYMUS	A	+	-	+	+	+	+	+	+	+	+	+	+	+	-	-	+	+	-	+	+	+	+	A	-
CIRCULATORY SYSTEM																									
HEART	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+
DIGESTIVE SYSTEM																									
SALIVARY GLAND	A	+	-	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	A	+
LIVER	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+
BILE DUCT PAPILLOMA, NOS	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+ X	+	+	A	+
GALLBLADDER & COMMON BILE DUCT	A	N	N	N	N	N	N	N	N	N	+	+	N	N	N	N	N	N	N	N	+	N	N	A	+
PANCREAS	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+
ESOPHAGUS	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+
STOMACH	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+
SMALL INTESTINE	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+
LARGE INTESTINE LIPOMA	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+ X	+	A	+
URINARY SYSTEM																									
KIDNEY	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+
URINARY BLADDER	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+
ENDOCRINE SYSTEM																									
PITUITARY	A	-	-	+	+	-	+	+	-	+	-	+	+	+	+	+	+	-	+	+	-	-	-	A	+
ADRENAL CORTICAL ADENOMA	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+
THYROID C-CELL CARCINOMA	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+ X	+	+	+	+	+	+	A	+
PARATHYROID ADENOMA, NOS	A	-	+	+	-	-	+	-	-	+	-	+	-	+	+	+	+	+	-	+	+	+	+	A	+
PANCREATIC ISLETS ISLET-CELL ADENOMA	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+ X	+	+	+	+	+	+	A	+
REPRODUCTIVE SYSTEM																									
MAMMARY GLAND	A	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	A	N
UTERUS PAPILLARY ADENOMA CYSTADENOMA, NOS	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+ X	+	+	A	+
OVARY	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+
ALL OTHER SYSTEMS																									
MULTIPLE ORGANS NOS HEMANGIOSARCOMA MALIG.LYMPHOMA, LYMPHOCYTIC TYPE LEUKEMIA,NOS	A	N	N	N	N	N	N	N X	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	A	N

+: TISSUE EXAMINED MICROSCOPICALLY
-: REQUIRED TISSUE NOT EXAMINED MICROSCOPICALLY
X: TUMOR INCIDENCE
N: NECROPSY, NO AUTOLYSIS, NO MICROSCOPIC EXAMINATION

: NO TISSUE INFORMATION SUBMITTED
C: NECROPSY, NO HISTOLOGY DUE TO PROTOCOL
A: AUTOLYSIS
M: ANIMAL MISSING
B: NO NECROPSY PERFORMED

TABLE E6. FEMALE HAMSTERS: TUMOR PATHOLOGY (CONTINUED) CONTROL

ANIMAL NUMBER	43 31	45 11	45 23	45 31	47 11	47 23	47 31	48 11	48 23	48 31	49 11	49 23	49 31	50 11	50 23	50 31	51 11	51 23	51 31	51 33	51 43	53 33	54 11	54 42	54 43	55 11	55 23	55 33	TOTAL
WEEKS ON STUDY	02 20	05 28	03 35	02 21	07 15	04 33	03 36	06 15	05 10	06 10	06 18	01 13	05 19	05 10	04 10	06 14	06 15	03 14	03 17	06 28	02 14	03 14	06 13	04 19	06 11	05 18	06 11	06 13	TISSUES TUMORS
RESPIRATORY SYSTEM																													
LUNGS AND BRONCHI	+	+	+	+	+	+	+	+	+	+	+	M	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	119
TRACHEA	+	+	+	+	+	+	+	+	+	+	+	M	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	119
HEMATOPOIETIC SYSTEM																													
BONE MARROW	+	+	+	+	-	+	+	+	+	+	+	M	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	115
SPLEEN	+	+	+	+	+	+	+	+	+	+	+	M	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	119
LYMPH NODES	+	+	+	+	+	+	+	+	+	+	+	M	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	119
THYMUS	-	+	+	-	-	+	+	+	+	-	+	M	-	+	+	-	+	+	+	-	+	+	+	+	+	-	+	+	96
CIRCULATORY SYSTEM																													
HEART	+	+	+	+	+	+	+	+	+	+	+	M	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	120
DIGESTIVE SYSTEM																													
SALIVARY GLAND	-	+	+	+	+	+	+	+	+	+	+	M	+	+	+	+	+	+	-	+	+	-	+	+	+	+	+	+	110
LIVER	+	+	+	+	+	+	+	+	+	+	+	M	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	119
BILE DUCT PAPILLOMA, NOS	+	+	+	+	+	+	+	+	+	+	+	M	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	119 1
GALLBLADDER & COMMON BILE DUCT	+	N	N	+	N	N	N	N	N	N	N	M	N	+	+	N	N	N	N	N	+	N	N	N	N	N	N	N	120*
PANCREAS	+	+	+	+	+	+	+	+	+	+	+	M	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	116
ESOPHAGUS	+	+	+	+	+	+	+	+	+	+	+	M	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	120
STOMACH	+	+	+	+	+	+	+	+	+	+	+	M	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	120
SMALL INTESTINE	+	+	+	+	+	+	+	+	+	+	+	M	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	120
LARGE INTESTINE LIPOMA	+	+	+	+	+	+	+	+	+	+	+	M	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	120 1
URINARY SYSTEM																													
KIDNEY	+	+	+	+	+	+	+	+	+	+	+	M	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	120
URINARY BLADDER	+	+	+	+	+	+	+	+	+	+	+	M	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	117
ENDOCRINE SYSTEM																													
PITUITARY	-	-	-	+	+	-	+	-	-	-	-	M	-	+	+	+	-	+	-	+	+	-	-	-	-	+	+	+	62
ADRENAL CORTICAL ADENOMA	+	+	+	+	+ X	+	+	+	+	+	+	M	+	+	+	+ X	+	+	+	+	+	+	+	+	+	+	+	+	120 3
THYROID C-CELL CARCINOMA	+	+	+	+	+	+	+	+	+	+	+	M	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	112 1
PARATHYROID ADENOMA, NOS	-	+	-	+	-	-	+	+	+	+	-	M	-	+	+	-	+	+	+	+	+	-	-	+	+	-	-	-	74 1
PANCREATIC ISLETS ISLET-CELL ADENOMA	+	+	+	+	+	+	+	+	+	+	+ X	M	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	116 5
REPRODUCTIVE SYSTEM																													
MAMMARY GLAND	N	N	N	N	N	N	N	N	N	N	N	M	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	120*
UTERUS PAPILLARY ADENOMA CYSTADENOMA, NOS	+	+	+	+	+	+	+	+	+	+	+	M	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	120 1 1
OVARY	-	+	+	+	+	+	+	+	+	+	+	M	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	117
ALL OTHER SYSTEMS																													
MULTIPLE ORGANS NOS HEMANGIOSARCOMA MALIG.LYMPHOMA, LYMPHOCYTIC TYPE LEUKEMIA,NOS	N	N	N	N X	N	N	N	N	N	N	N	M	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	120* 1 2 1

+: TISSUE EXAMINED MICROSCOPICALLY
-: *REQUIRED* TISSUE NOT EXAMINED MICROSCOPICALLY
X: TUMOR INCIDENCE
N: NECROPSY, NO AUTOLYSIS, NO MICROSCOPIC EXAMINATION

: NO TISSUE INFORMATION SUBMITTED
C: NECROPSY, NO HISTOLOGY DUE TO PROTOCOL
A: AUTOLYSIS
M: ANIMAL MISSING
B: NO NECROPSY PERFORMED

TABLE E6.

INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF MALE HAMSTERS ADMINISTERED 1,2-DIMETHYLHYDRAZINE DIHYDROCHLORIDE (DMH) BY GAVAGE WITH AND WITHOUT INTERMEDIATE RANGE CHRYSOTILE ASBESTOS IN THE DIET

DMH

ANIMAL NUMBER	011	012	013	031	032	033	041	042	043	061	062	063	071	072	073	081	082	083	091	092	093	101	102	103	121
WEEKS ON STUDY	023	066	039	032	062	056	026	066	050	035	039	063	034	038	071	057	058	064	060	066	067	043	059	063	048
INTEGUMENTARY SYSTEM																									
SUBCUTANEOUS TISSUE FIBROSARCOMA	+	+	+	+	+	+	+	+	+	+	+	+	N	+	+	+	+	+	+	+	+	+	N	+	
RESPIRATORY SYSTEM																									
LUNGS AND BRONCHI SARCOMA, NOS, METASTATIC FIBROSARCOMA, METASTATIC OLIGODENDROGLIOMA,METASTAT.	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
TRACHEA	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
HEMATOPOIETIC SYSTEM																									
BONE MARROW	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	-	+	
SPLEEN FIBRDSARCOMA, METASTATIC	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
LYMPH NODES MALIG.LYMPHOMA, HISTIOCYTIC TYPE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
THYMUS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	-	+	+	+	+	
CIRCULATORY SYSTEM																									
HEART	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
DIGESTIVE SYSTEM																									
SALIVARY GLAND	+	+	+	+	+	+	+	+	-	+	-	+	+	+	+	-	+	+	+	+	+	+	+	+	
LIVER	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
BILE DUCT	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
GALLBLADDER & COMMON BILE DUCT	+	N	N	N	+	N	N	+	+	N	N	N	N	+	N	N	N	N	N	N	N	N	+	N	
PANCREAS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
ESOPHAGUS	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
STOMACH	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
SMALL INTESTINE	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
LARGE INTESTINE ADENOMATOUS POLYP, NOS	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
RECTUM SQUAMOUS CELL CARCINOMA	N	+	+	+	+	N	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
URINARY SYSTEM																									
KIDNEY	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
URINARY BLADDER	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	-	-	+
ENDOCRINE SYSTEM																									
PITUITARY OLIGODENDROGLIOMA,METASTAT.	-	-	-	-	+	-	+	+	-	+	-	-	-	+	-	-	-	+	-	-	-	-	+	+	+
ADRENAL CORTICAL ADENOMA	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
THYROID	+	+	+	+	+	+	+	+	+	+	+	-	-	+	+	-	+	+	+	+	+	+	+	+	
PARATHYROID ADENOMA, NOS	+	-	+	+	+	+	+	-	-	-	-	-	-	+	+	-	+	-	-	+	+	-	+	-	+
PANCREATIC ISLETS ISLET-CELL ADENOMA	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
REPRODUCTIVE SYSTEM																									
MAMMARY 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
UTERUS ADENOCARCINOMA, NOS ENDOMETRIAL STROMAL POLYP	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
OVARY	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	
NERVOUS SYSTEM																									
BRAIN OLIGODENDROGLIOMA	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
SPECIAL SENSE ORGANS																									
EYE APPENDAGES SARCOMA, 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
ALL OTHER SYSTEMS																									
MULTIPLE ORGANS NOS MALIG.LYMPHOMA, LYMPHOCYTIC TYPE	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N

+: TISSUE EXAMINED MICROSCOPICALLY
-: REQUIRED TISSUE NOT EXAMINED MICROSCOPICALLY
X: TUMOR INCIDENCE
N: NECROPSY, NO AUTOLYSIS, NO MICROSCOPIC EXAMINATION
: NO TISSUE INFORMATION SUBMITTED
C: NECROPSY, NO HISTOLOGY DUE TO PROTOCOL
A: AUTOLYSIS
M: ANIMAL MISSING
B: NO NECROPSY PERFORMED

TABLE E6. FEMALE HAMSTERS: TUMOR PATHOLOGY (CONTINUED) DMH

ANIMAL NUMBER	1 2 2	1 2 3	1 3 1	1 3 2	1 3 3	1 4 1	1 4 2	1 4 3	1 5 1	1 5 2	1 5 3	1 6 1	1 6 2	1 6 3	1 7 1	1 7 2	1 7 3	1 8 1	1 8 2	1 8 3	2 0 1	2 0 2	2 0 3	2 1 1	2 1 2
WEEKS ON STUDY	0 4 5	0 3 9	0 4 6	0 5 6	0 6 4	0 5 1	0 5 7	0 7 5	0 5 4	0 5 7	0 2 8	0 3 5	0 7 1	0 4 2	0 7 3	0 3 4	0 5 5	0 5 6	0 4 0	0 4 2	0 1 9	0 1 5	0 6 9	0 6 0	0 6 0
INTEGUMENTARY SYSTEM																									
SUBCUTANEOUS TISSUE FIBROSARCOMA	+	+	+	+	+	N	N	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+
RESPIRATORY SYSTEM																									
LUNGS AND BRONCHI SARCOMA, NOS, METASTATIC FIBROSARCOMA, METASTATIC OLIGODENDROGLIOMA,METASTAT.	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+ X	+	+
TRACHEA	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+
HEMATOPOIETIC SYSTEM																									
BONE MARROW	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+
SPLEEN FIBROSARCOMA, METASTATIC	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+
LYMPH NODES MALIG.LYMPHOMA, HISTIOCYTIC TYPE	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+ X	+	+	+	A	+	+	+
THYMUS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+
CIRCULATORY SYSTEM																									
HEART	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+
DIGESTIVE SYSTEM																									
SALIVARY GLAND	+	-	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	A	-	+	+
LIVER	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+
BILE DUCT	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+
GALLBLADDER & COMMON BILE DUCT	N	N	N	N	N	N	+	N	N	N	N	+	N	N	N	+	N	N	N	+	+	A	N	N	N
PANCREAS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+
ESOPHAGUS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+
STOMACH	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+
SMALL INTESTINE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+
LARGE INTESTINE ADENOMATOUS POLYP, NOS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+
RECTUM SQUAMOUS CELL CARCINOMA	+	+	N	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	N	A	+	+	+
URINARY SYSTEM																									
KIDNEY	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+
URINARY BLADDER	+	+	+	+	-	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+
ENDOCRINE SYSTEM																									
PITUITARY OLIGODENDROGLIOMA,METASTAT.	-	+	-	-	-	-	+	+	-	-	+	+	+	-	-	+	-	+	-	-	-	A	-	-	-
ADRENAL CORTICAL ADENOMA	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+
THYROID	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+
PARATHYROID ADENOMA, NOS	-	-	-	-	-	+	-	-	-	+ X	+	+	+	+	+	-	-	+	+	-	-	A	-	-	-
PANCREATIC ISLETS ISLET-CELL ADENOMA	+	+	+	+	+	+	+ X	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+
REPRODUCTIVE SYSTEM																									
MAMMARY GLAND	N	N	+	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	A	N	N	N
UTERUS ADENOCARCINOMA, NOS ENDOMETRIAL STROMAL POLYP	+	+	+	+	-	+	-	+	+	+	+	+	+	+	+ X	+	+	+	+	+	+	A	+	+	+
OVARY	+	+	+	+	-	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+
NERVOUS SYSTEM																									
BRAIN OLIGODENDROGLIOMA	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+
SPECIAL SENSE ORGANS																									
EYE APPENDAGES SARCOMA, NOS	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	A	N X	N	N
ALL OTHER SYSTEMS																									
MULTIPLE ORGANS NOS MALIG.LYMPHOMA, LYMPHOCYTIC TYPE	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	A	N	N	N

+: TISSUE EXAMINED MICROSCOPICALLY
-: REQUIRED TISSUE NOT EXAMINED MICROSCOPICALLY
X: TUMOR INCIDENCE
N: NECROPSY, NO AUTOLYSIS, NO MICROSCOPIC EXAMINATION
.: NO TISSUE INFORMATION SUBMITTED
C: NECROPSY, NO HISTOLOGY DUE TO PROTOCOL
A: AUTOLYSIS
M: ANIMAL MISSING
B: NO NECROPSY PERFORMED

TABLE E6. FEMALE HAMSTERS: TUMOR PATHOLOGY (CONTINUED) DMH

ANIMAL NUMBER	211	212	213	221	231	232	233	241	242	243	251	252	253	281	282	283	291	292	293	311	312	313	321	322	323
WEEKS ON STUDY	035	047	078	055	066	020	016	042	044	050	031	034	063	066	059	065	048	042	054	041	055	046	050	061	051
INTEGUMENTARY SYSTEM																									
SUBCUTANEOUS TISSUE FIBROSARCOMA	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+
RESPIRATORY SYSTEM																									
LUNGS AND BRONCHI SARCOMA, NOS, METASTATIC FIBROSARCOMA, METASTATIC OLIGODENDROGLIOMA,METASTAT.	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+
TRACHEA	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+
HEMATOPOIETIC SYSTEM																									
BONE MARROW	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+
SPLEEN FIBROSARCOMA, METASTATIC	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	A	+	+	+	+	+
LYMPH NODES MALIG.LYMPHOMA, HISTIOCYTIC TYPE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+
THYMUS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+
CIRCULATORY SYSTEM																									
HEART	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+
DIGESTIVE SYSTEM																									
SALIVARY GLAND	+	-	+	+	+	+	+	+	+	+	+	+	-	+	+	+	-	+	+	A	+	+	+	+	+
LIVER	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+
BILE DUCT	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+
GALLBLADDER & COMMON BILE DUCT	N	N	N	N	N	N	N	N	N	+	N	+	+	+	N	N	N	N	N	A	N	N	+	N	+
PANCREAS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	A	+	+	+	+	+
ESOPHAGUS	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	A	+	+	+	+	+
STOMACH	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+
SMALL INTESTINE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+
LARGE INTESTINE ADENOMATOUS POLYP, NOS	+	+	+	+	+	+	+	+	+	+	+	+	+ X	+	+	+	+	+	+	A	+	+	+	+	+
RECTUM SQUAMOUS CELL CARCINOMA	+	+	+	+	+	N	N	+	+	+	+	+	+	+	+	+	+	+	+	A	+ X	N	+	+	+
URINARY SYSTEM																									
KIDNEY	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+
URINARY BLADDER	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	A	+	+	+	+	-
ENDOCRINE SYSTEM																									
PITUITARY OLIGODENDROGLIOMA,METASTAT.	-	-	-	-	-	-	-	+	-	+	+	-	+	+	+	+	-	+	-	A	-	+	+	+	+
ADRENAL CORTICAL ADENOMA	+	+	+	+	+ X	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+ X
THYROID	+	-	+	+	+	+	-	+	+	+	+	+	-	+	+	+	+	+	+	A	+	+	+	+	+
PARATHYROID ADENOMA, NOS	-	-	+	-	+	-	-	-	-	+	-	+	-	+	-	-	-	+	-	A	+	+	+	+	+
PANCREATIC ISLETS ISLET-CELL ADENOMA	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	A	+	+	+	+	+
REPRODUCTIVE SYSTEM																									
MAMMARY GLAND	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	A	N	N	N	N	N
UTERUS ADENOCARCINOMA, NOS ENDOMETRIAL STROMAL POLYP	+	+	··	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	-
OVARY	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	A	+	+	+	+	-
NERVOUS SYSTEM																									
BRAIN OLIGODENDROGLIOMA	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+
SPECIAL SENSE ORGANS																									
EYE APPENDAGES SARCOMA, NOS	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	A	N	N	N	N	N
ALL OTHER SYSTEMS																									
MULTIPLE ORGANS NOS MALIG.LYMPHOMA, LYMPHOCYTIC TYPE	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	A	N	N	N	N	N

+: TISSUE EXAMINED MICROSCOPICALLY
-: REQUIRED TISSUE NOT EXAMINED MICROSCOPICALLY
X: TUMOR INCIDENCE
N: NECROPSY, NO AUTOLYSIS, NO MICROSCOPIC EXAMINATION
·: NO TISSUE INFORMATION SUBMITTED
C: NECROPSY, NO HISTOLOGY DUE TO PROTOCOL
A: AUTOLYSIS
M: ANIMAL MISSING
B: NO NECROPSY PERFORMED

TABLE E6. FEMALE HAMSTERS: TUMOR PATHOLOGY (CONTINUED) DMH

ANIMAL NUMBER	331	332	333	341	342	343	361	362	363	381	382	383	391	392	393	401	402	403	411	412	413	421	422	423	431
WEEKS ON STUDY	058	042	041	057	063	040	075	053	059	021	091	055	050	067	065	056	033	042	058	068	033	061	057	016	051
INTEGUMENTARY SYSTEM																									
SUBCUTANEOUS TISSUE FIBROSARCOMA	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	N	+	+	+	+	+	+	+	+	+
RESPIRATORY SYSTEM																									
LUNGS AND BRONCHI SARCOMA, NOS, METASTATIC FIBROSARCOMA, METASTATIC OLIGODENDROGLIOMA,METASTAT.	+	+	A	+	+	+	+	+	+	+	+	+ X	+	+	+	+	+	+	+	+	+	+	+	+	+
TRACHEA	+	+	A	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
HEMATOPOIETIC SYSTEM																									
BONE MARROW	+	+	A	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
SPLEEN FIBROSARCOMA, METASTATIC	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
LYMPH NODES MALIG.LYMPHOMA, HISTIOCYTIC TYPE	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
THYMUS	+	+	A	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+
CIRCULATORY SYSTEM																									
HEART	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
DIGESTIVE SYSTEM																									
SALIVARY GLAND	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
LIVER	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
BILE DUCT	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
GALLBLADDER & COMMON BILE DUCT	N	N	A	N	N	N	N	N	N	N	N	+	+	N	N	N	N	N	N	N	N	N	N	N	N
PANCREAS	+	-	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
ESOPHAGUS	+	+	A	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
STOMACH	+	+	A	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	-	+	+	+	+
SMALL INTESTINE	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+
LARGE INTESTINE ADENOMATOUS POLYP, NOS	+	+	A	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	-	+	+	+	+
RECTUM SQUAMOUS CELL CARCINOMA	+	+	A	+	+	+	+	+	+	+	+	+	+	+	N	+	N	+	+	+	N	+	+	N	+
URINARY SYSTEM																									
KIDNEY	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
URINARY BLADDER	+	+	A	+	+	+	+	+	+	+	+	+	+	+	-	-	+	+	+	+	+	+	+	+	+
ENDOCRINE SYSTEM																									
PITUITARY OLIGODENDROGLIOMA,METASTAT.	+	+	A	-	+	-	+	+	+	+	-	+ X	+	+	+	+	+	-	+	+	-	+	+	-	-
ADRENAL CORTICAL ADENOMA	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
THYROID	+	+	A	-	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	-	-	+	+	+	+
PARATHYROID ADENOMA, NOS	+	-	A	-	-	-	-	+	-	+	-	+	-	-	+	+	-	+	+	-	-	+	+	-	-
PANCREATIC ISLETS ISLET-CELL ADENOMA	+	-	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+ X	+	+
REPRODUCTIVE SYSTEM																									
MAMMARY GLAND	N	N	A	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
UTERUS ADENOCARCINOMA, NOS ENDOMETRIAL STROMAL POLYP	+	+	A	+	-	+	+ X	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+
OVARY	+	+	A	+	-	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+
NERVOUS SYSTEM																									
BRAIN OLIGODENDROGLIOMA	+	+	A	+	+	+	+	+	+	+	-	+ X	+	+	+	+	+	+	+	+	+	+	+	+	+
SPECIAL SENSE ORGANS																									
EYE APPENDAGES SARCOMA, NOS	N	N	A	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
ALL OTHER SYSTEMS																									
MULTIPLE ORGANS NOS MALIG.LYMPHOMA, LYMPHOCYTIC TYPE	N	N	A	N	N	N	N	N	N	N	N	N	N	N	N	N X	N	N	N	N	N	N	N	N	N

+: TISSUE EXAMINED MICROSCOPICALLY
-: *REQUIRED TISSUE NOT EXAMINED MICROSCOPICALLY*
X: TUMOR INCIDENCE
N: NECROPSY, NO AUTOLYSIS, NO MICROSCOPIC EXAMINATION

: NO TISSUE INFORMATION SUBMITTED
C: *NECROPSY, NO HISTOLOGY DUE TO PROTOCOL*
A: AUTOLYSIS
M: ANIMAL MISSING
B: NO NECROPSY PERFORMED

TABLE E6. FEMALE HAMSTERS: TUMOR PATHOLOGY (CONTINUED) DMH

ANIMAL NUMBER	432	433	451	452	453	471	472	473	491	492	493	501	502	503	511	512	513	521	522	523	531	532	533	541	542	543	TOTAL
WEEKS ON STUDY	064	056	057	039	058	023	045	065	040	078	064	065	054	060	068	032	037	068	060	023	054	059	059	050	049	039	TISSUES TUMORS
INTEGUMENTARY SYSTEM																											
SUBCUTANEOUS TISSUE	+	+	+	+	+	+	+	+	+	+	+	N	+	+	+	+	+	+	A	+	+	+	+	+	+	+	122*
FIBROSARCOMA							X																				1
RESPIRATORY SYSTEM																											
LUNGS AND BRONCHI	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	122
SARCOMA, NOS, METASTATIC																											1
FIBROSARCOMA, METASTATIC							X																				1
OLIGODENDROGLIOMA,METASTAT.																											1
TRACHEA	+	+	+	+	+	+	+	-	+	+	+	+	-	+	+	+	+	+	A	+	+	+	+	+	+	+	119
HEMATOPOIETIC SYSTEM																											
BONE MARROW	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	118
SPLEEN	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	121
FIBROSARCOMA, METASTATIC							X																				1
LYMPH NODES	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	121
MALIG.LYMPHOMA, HISTIOCYTIC TYPE																											1
THYMUS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	A	+	+	+	+	+	+	+	117
CIRCULATORY SYSTEM																											
HEART	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	122
DIGESTIVE SYSTEM																											
SALIVARY GLAND	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	A	+	+	+	+	+	-	+	110
LIVER	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	A	+	+	+	+	+	+	+	121
BILE DUCT	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	A	+	+	+	+	+	+	+	121
GALLBLADDER & COMMON BILE DUCT	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	A	N	N	+	+	+	N	N	122*
PANCREAS	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	119
ESOPHAGUS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	119
STOMACH	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	-	+	+	+	+	118
SMALL INTESTINE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	120
LARGE INTESTINE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	-	+	+	+	+	118
ADENOMATOUS POLYP, NOS																											1
RECTUM	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	N	+	N	+	+	122*
SQUAMOUS CELL CARCINOMA																											1
URINARY SYSTEM																											
KIDNEY	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	122
URINARY BLADDER	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	111
ENDOCRINE SYSTEM																											
PITUITARY	+	-	+	+	+	-	-	-	-	+	+	+	-	-	-	-	+	+	A	-	-	+	+	+	+	-	59
OLIGODENDROGLIOMA,METASTAT.																											1
ADRENAL	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	-	+	+	+	+	+	120
CORTICAL ADENOMA																											2
THYROID	+	+	+	+	+	+	+	-	+	+	+	+	-	+	+	+	+	+	A	-	+	-	+	+	+	+	108
PARATHYROID	+	-	-	+	+	+	+	-	+	+	+	+	-	+	+	+	-	+	A	-	-	-	-	-	+	-	57
ADENOMA, NOS	X																										2
PANCREATIC ISLETS	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	119
ISLET-CELL ADENOMA																											2
REPRODUCTIVE SYSTEM																											
MAMMARY GLAND	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	A	N	N	N	N	N	N	N	122*
UTERUS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	116
ADENOCARCINOMA, NOS																											1
ENDOMETRIAL STROMAL POLYP																											1
OVARY	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	+	+	+	114
NERVOUS SYSTEM																											
BRAIN	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	-	+	+	A	+	+	+	+	+	+	+	119
OLIGODENDROGLIOMA																											1
SPECIAL SENSE ORGANS																											
EYE APPENDAGES	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	A	N	N	N	N	N	N	N	122*
SARCOMA, NOS																											1
ALL OTHER SYSTEMS																											
MULTIPLE ORGANS NOS																						N	N	N	N	N	122*
MALIG.LYMPHOMA, LYMPHOCYTIC TYPE																											1

* ANIMALS NECROPSIED

+: TISSUE EXAMINED MICROSCOPICALLY
-: REQUIRED TISSUE NOT EXAMINED MICROSCOPICALLY
X: TUMOR INCIDENCE
N: NECROPSY, NO AUTOLYSIS, NO MICROSCOPIC EXAMINATION
: NO TISSUE INFORMATION SUBMITTED
C: NECROPSY, NO HISTOLOGY DUE TO PROTOCOL
A: AUTOLYSIS
M: ANIMAL MISSING
B: NO NECROPSY PERFORMED

TABLE E6.

INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF FEMALE HAMSTERS ADMINISTERED 1,2-DIMETHYLHYDRAZINE DIHYDROCHLORIDE (DMH) BY GAVAGE WITH AND WITHOUT INTERMEDIATE RANGE CHRYSOTILE ASBESTOS IN THE DIET

IR CHRYSOTILE PLUS DMH

ANIMAL NUMBER	011	012	013	021	022	023	031	032	033	041	042	043	051	052	053	061	062	063	071	072	073	081	082	083	091
WEEKS ON STUDY	060	088	048	078	069	069	084	063	066	067	029	052	022	022	067	039	074	053	054	028	066	069	069	054	052	060
RESPIRATORY SYSTEM																										
LUNGS AND BRONCHI	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	A	+	+	+	+	+	+	+	+
UNDIFFERENTIATED CARCINOMA METAST		X																								
ALVEOLAR/BRONCHIOLAR CARCINOMA																										
SARCOMA, NOS, METASTATIC																										
TRACHEA	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	A	+	+	+	+	+	+	+	+
HEMATOPOIETIC SYSTEM																										
BONE MARROW	+	+	+	+	-	+	-	+	+	+	+	-	A	+	+	-	-	A	+	+	+	+	+	+	+	+
SPLEEN	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	A	+	+	+	+	+	+	+	+
HEMANGIOMA																										
LYMPH NODES	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	A	+	+	+	+	+	+	+	+
UNDIFFERENTIATED CARCINOMA METAST																										
SARCOMA, NOS																										
THYMUS	+	+	+	-	+	+	-	+	+	-	+	+	A	+	+	-	+	A	-	+	+	-	+	+	+	
CIRCULATORY SYSTEM																										
HEART	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	A	+	+	+	+	+	+	+	+
DIGESTIVE SYSTEM																										
SALIVARY GLAND	-	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	A	+	+	+	+	+	+	+	-
LIVER	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	A	+	+	+	+	+	+	+	+
BILE DUCT	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	A	+	+	+	+	+	+	+	+
GALLBLADDER & COMMON BILE DUCT	N	N	N	N	N	N	N	N	+	N	N	+	A	N	+	N	N	A	N	N	N	N	N	N	N	N
PANCREAS	-	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	A	+	+	+	+	+	+	+	+
ESOPHAGUS	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	A	+	+	+	+	+	+	+	+
STOMACH	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	A	+	+	+	+	+	+	+	+
SMALL INTESTINE	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	A	+	+	+	+	+	+	+	+
LARGE INTESTINE	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	A	+	+	+	+	+	+	+	+
URINARY SYSTEM																										
KIDNEY	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	A	+	+	+	+	+	+	+	+
UNDIFFERENTIATED CARCINOMA METAST																										
URINARY BLADDER	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	A	+	+	+	+	+	+	+	+
ENDOCRINE SYSTEM																										
PITUITARY	+	+	+	-	+	+	-	+	+	+	+	+	A	-	+	+	+	A	+	-	+	+	-	+	+	
ADRENAL	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	A	+	+	+	+	-	+	+	
CORTICAL ADENOMA				X																						
CORTICAL CARCINOMA																										
THYROID	-	+	+	+	+	+	+	+	+	+	+	+	A	+	+	-	+	A	+	-	-	+	+	+	-	
PARATHYROID	-	+	+	+	+	+	+	+	+	+	-	+	A	+	-	-	+	A	+	-	-	+	+	+	-	
PANCREATIC ISLETS	-	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	A	+	+	+	+	+	+	+	+
ISLET-CELL ADENOMA																										
REPRODUCTIVE SYSTEM																										
MAMMARY GLAND	N	N	N	N	N	N	N	N	N	N	N	N	A	N	N	N	N	A	N	N	N	N	N	N	N	N
VAGINA	N	N	N	N	N	N	N	N	N	N	N	N	A	N	N	N	N	A	N	N	N	N	N	N	N	N
PAPILLOMA, NOS																										
UTERUS	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	A	+	+	+	+	+	+	+	+
FIBROMA																										
LEIOMYOMA																										
OVARY	+	+	+	+	+	+	-	+	+	+	+	+	A	+	+	+	+	A	+	+	+	+	+	+	+	+
ALL OTHER SYSTEMS																										
MULTIPLE ORGANS NOS	N	N	N	N	N	N	N	N	N	N	N	N	A	N	N	N	N	A	N	N	N	N	N	N	N	N
MALIG.LYMPHOMA, LYMPHOCYTIC TYPE						X					X															

+: TISSUE EXAMINED MICROSCOPICALLY
-: REQUIRED TISSUE NOT EXAMINED MICROSCOPICALLY
X: TUMOR INCIDENCE
N: NECROPSY, NO AUTOLYSIS, NO MICROSCOPIC EXAMINATION

: NO TISSUE INFORMATION SUBMITTED
C: NECROPSY, NO HISTOLOGY DUE TO PROTOCOL
A: AUTOLYSIS
M: ANIMAL MISSING
B: NO NECROPSY PERFORMED

TABLE E6. FEMALE HAMSTERS: TUMOR PATHOLOGY (CONTINUED) IR CHRYSOTILE PLUS DMH

ANIMAL NUMBER	092	093	101	102	103	111	112	113	121	122	123	131	132	133	141	142	143	151	152	153	161	162	163	171	172
WEEKS ON STUDY	072	058	081	056	063	072	067	075	084	067	071	067	067	063	069	053	072	053	087	043	068	041	044	081	029
RESPIRATORY SYSTEM																									
LUNGS AND BRONCHI	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+
UNDIFFERENTIATED CARCINOMA METAST																									
ALVEOLAR/BRONCHIOLAR CARCINOMA																									
SARCOMA, NOS, METASTATIC			X																					X	
TRACHEA	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+
HEMATOPOIETIC SYSTEM																									
BONE MARROW	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+
SPLEEN	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	A	+	+
HEMANGIOMA																									
LYMPH NODES	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+
UNDIFFERENTIATED CARCINOMA METAST																									
SARCOMA, NOS																									
THYMUS	-	+	+	+	+	-	+	-	-	-	+	+	-	+	+	-	-	+	-	+	-	+	A	-	-
CIRCULATORY SYSTEM																									
HEART	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+
DIGESTIVE SYSTEM																									
SALIVARY GLAND	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+
LIVER	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+
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	A	N	N
PANCREAS	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	-	+	+	+	-	+	A	+	+
ESOPHAGUS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+
STOMACH	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+
SMALL INTESTINE	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+
LARGE INTESTINE	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+
URINARY SYSTEM																									
KIDNEY	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+
UNDIFFERENTIATED CARCINOMA METAST																									
URINARY BLADDER	+	-	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	A	+	+
ENDOCRINE SYSTEM																									
PITUITARY	-	-	+	-	-	+	+	+	-	-	+	-	+	+	-	-	+	+	+	+	+	+	A	-	-
ADRENAL	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+
CORTICAL ADENOMA																									
CORTICAL CARCINOMA																									
THYROID	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	A	+	+
PARATHYROID	+	+	+	+	+	-	-	-	+	+	+	+	+	+	-	+	+	+	-	-	+	-	A	-	+
PANCREATIC ISLETS	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	-	+	+	+	-	+	A	+	+
ISLET-CELL ADENOMA																									
REPRODUCTIVE SYSTEM																									
MAMMARY GLAND	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	A	N	N
VAGINA	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	A	N	N
PAPILLOMA, NOS																									
UTERUS	+	-	+	+	+	+	+	+	+	+	+	+	:	+	+	+	+	+	+	+	+	+	A	+	+
FIBROMA																	X								
LEIOMYOMA																									
OVARY	+	-	+	+	-	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	A	+	+
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	A	N	N
MALIG.LYMPHOMA, LYMPHOCYTIC TYPE																	X								

+: TISSUE EXAMINED MICROSCOPICALLY
-: REQUIRED TISSUE NOT EXAMINED MICROSCOPICALLY
X: TUMOR INCIDENCE
N: NECROPSY, NO AUTOLYSIS, NO MICROSCOPIC EXAMINATION

: NO TISSUE INFORMATION SUBMITTED
C: NECROPSY, NO HISTOLOGY DUE TO PROTOCOL
A: AUTOLYSIS
M: ANIMAL MISSING
B: NO NECROPSY PERFORMED

TABLE E6. FEMALE HAMSTERS: TUMOR PATHOLOGY (CONTINUED) IR CHRYSOTILE PLUS DMH

ANIMAL NUMBER	173	181	182	183	191	192	193	201	202	203	211	212	213	221	222	223	231	232	233	241	242	243	251	252	253
WEEKS ON STUDY	039	031	050	059	048	065	052	073	082	073	029	030	074	024	064	063	047	070	035	041	063	069	038	072	062
RESPIRATORY SYSTEM																									
LUNGS AND BRONCHI UNDIFFERENTIATED CARCINOMA METAST ALVEOLAR/BRONCHIOLAR CARCINOMA SARCOMA, NOS, METASTATIC	+	+	+	+	+	+	+	+	+	+	+	A	+	A	+	+	+	+	A	A	+	+	+	+	+
TRACHEA	+	+	+	+	+	+	+	+	+	+	+	A	+	A	+	+	+	+	A	A	+	+	+	+	+
HEMATOPOIETIC SYSTEM																									
BONE MARROW	+	+	+	+	+	+	+	+	+	+	+	A	+	A	+	+	+	+	A	A	-	+	+	+	+
SPLEEN HEMANGIOMA	+	+	+	+	+	+	+	+	+	+	+	A	+	A	+	+	+	+	A	A	+	+	+	+	+
LYMPH NODES UNDIFFERENTIATED CARCINOMA METAST SARCOMA, NOS	+	+	+	+	+	+	+	+	+	+	+	A	+	A	+	+	+	+	A	A	+	+	+	+	+
THYMUS	+	+	+	+	+	+	+	+	-	+	-	A	+	A	-	+	+	+	A	A	+	+	+	+	+
CIRCULATORY SYSTEM																									
HEART	+	+	+	+	+	+	+	+	+	+	+	A	+	A	+	+	+	+	A	A	+	+	+	+	+
DIGESTIVE SYSTEM																									
SALIVARY GLAND	+	+	+	+	+	+	+	+	+	+	+	A	+	A	+	+	+	+	A	A	+	+	+	+	+
LIVER	+	+	+	+	+	+	+	+	+	+	+	A	+	A	+	+	+	+	A	A	+	+	+	+	+
BILE DUCT	+	+	+	+	+	+	+	+	+	+	+	A	+	A	+	+	+	+	A	A	+	+	+	+	+
GALLBLADDER & COMMON BILE DUCT	N	N	N	+	+	N	+	+	N	N	N	A	N	A	N	N	N	N	A	A	N	+	N	N	N
PANCREAS	+	+	+	+	+	+	+	+	+	+	+	A	+	A	+	-	+	+	A	A	+	+	+	+	-
ESOPHAGUS	+	+	+	+	+	+	+	+	+	+	+	A	+	A	+	+	+	+	A	A	+	+	+	+	+
STOMACH	+	+	+	+	+	+	+	+	+	+	+	A	+	A	+	+	+	+	A	A	+	+	+	+	+
SMALL INTESTINE	+	+	+	+	+	+	+	+	+	+	+	A	+	A	+	+	+	+	A	A	+	+	+	+	+
LARGE INTESTINE	+	+	+	+	+	+	+	+	+	+	+	A	+	A	+	+	+	+	A	A	+	+	+	+	+
URINARY SYSTEM																									
KIDNEY UNDIFFERENTIATED CARCINOMA METAST	+	+	+	+	+	+	+	+	+	+	+	A	+	A	+	+	+	+	A	A	+	+	+	+	+
URINARY BLADDER	+	+	+	+	+	+	-	-	+	+	+	A	+	A	+	+	+	+	A	A	+	+	+	+	+
ENDOCRINE SYSTEM																									
PITUITARY	+	-	+	+	+	+	-	-	+	-	+	A	-	A	+	+	+	+	A	A	-	+	+	+	-
ADRENAL CORTICAL ADENOMA CORTICAL CARCINOMA	+	+	+	+	+	+	+	+	+	+	+	A	+	A	+	+	+	+ X	A	A	+	+	+	+	+
THYROID	+	+	+	+	+	+	+	+	+	+	+	A	+	A	+	+	+	+	A	A	+	+	+	+	+
PARATHYROID	-	-	+	-	+	+	-	+	+	+	-	A	-	A	-	+	+	+	A	A	-	+	+	+	-
PANCREATIC ISLETS ISLET-CELL ADENOMA	+	+	+	+	+	+ X	+	+	+	+	+	A	+	A	+	-	+	+	A	A	+	+	+	+	-
REPRODUCTIVE SYSTEM																									
MAMMARY GLAND	N	N	N	N	N	N	N	N	N	N	N	A	N	A	N	N	N	N	A	A	N	N	N	N	N
VAGINA PAPILLOMA, NOS	N	N	N	N	N	N	N	N	N	N	N	A	N	A	N	N	N	N	A	A	N	N	N	N	N
UTERUS FIBROMA LEIOMYOMA	+	+	+	+	+	+	-	+	+	+	+	A	+	A	+	+	+	+	A	A	+	+	+	+	+
OVARY	+	+	+	+	+	+	-	+	+	+	+	A	+	A	+	+	+	+	A	A	+	+	+	+	+
ALL OTHER SYSTEMS																									
MULTIPLE ORGANS NOS MALIG.LYMPHOMA, LYMPHOCYTIC TYPE	N	N	N	N	N	N	N	N	N	N	N	A	N	A	N	N	M	N	A	A	N	N	N	N	N

+: TISSUE EXAMINED MICROSCOPICALLY
-: REQUIRED TISSUE NOT EXAMINED MICROSCOPICALLY
X: TUMOR INCIDENCE
N: NECROPSY, NO AUTOLYSIS, NO MICROSCOPIC EXAMINATION
: NO TISSUE INFORMATION SUBMITTED
C: NECROPSY, NO HISTOLOGY DUE TO PROTOCOL
A: AUTOLYSIS
M: ANIMAL MISSING
B: NO NECROPSY PERFORMED

TABLE E6. FEMALE HAMSTERS: TUMOR PATHOLOGY (CONTINUED) IR CHRYSOTILE PLUS DMH

ANIMAL NUMBER	261	262	263	271	272	273	281	283	291	292	293	301	302	303	311	312	313	321	322	323	331	332	333	341	342
WEEKS ON STUDY	058	083	053	083	047	048	066	053	062	067	067	089	039	067	064	071	059	071	062	056	032	043	072	067	047
RESPIRATORY SYSTEM																									
LUNGS AND BRONCHI UNDIFFERENTIATED CARCINOMA METAST ALVEOLAR/BRONCHIOLAR CARCINOMA SARCOMA, NOS, METASTATIC	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	M	A	+	+	+ X	+	+
TRACHEA	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	M	A	+	+	+	+	+
HEMATOPOIETIC SYSTEM																									
BONE MARROW	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	M	A	+	-	+	+	+
SPLEEN HEMANGIOMA	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	M	A	+	+	+	+	+
LYMPH NODES UNDIFFERENTIATED CARCINOMA METAST SARCOMA, NOS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	M	A	+	+	+ X	+	+
THYMUS	+	-	+	-	+	+	+	+	-	-	+	-	+	+	+	+	+	-	M	A	+	-	-	-	+
CIRCULATORY SYSTEM																									
HEART	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	M	A	+	+	+	+	+
DIGESTIVE SYSTEM																									
SALIVARY GLAND	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	M	A	+	+	+	+	+
LIVER	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	M	A	+	+	+	+	+
BILE DUCT	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	M	A	+	+	+	+	+
GALLBLADDER & COMMON BILE DUCT	N	N	N	N	N	N	+	N	N	N	N	N	+	+	+	+	N	N	M	A	N	+	N	N	N
PANCREAS	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	M	A	+	+	+	+	+
ESOPHAGUS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	M	A	+	+	+	+	+
STOMACH	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	M	A	+	+	+	+	+
SMALL INTESTINE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	M	A	+	+	+	+	+
LARGE INTESTINE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	M	A	+	+	+	+	+
URINARY SYSTEM																									
KIDNEY UNDIFFERENTIATED CARCINOMA METAST	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	M	A	+	+	+ X	+	+
URINARY BLADDER	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	M	A	+	+	+	+	+
ENDOCRINE SYSTEM																									
PITUITARY	+	+	+	+	-	+	-	+	-	+	+	+	+	+	-	+	+	-	M	A	+	-	+	+	+
ADRENAL CORTICAL ADENOMA CORTICAL CARCINOMA	+	+	+	+	+	+ X	+	+	+	+	+	+	+	+	+	+	+	+	M	A	+	+	+	+	+ X
THYROID	+	+	+	-	+	+	+	+	+	-	+	-	+	+	+	+	+	+	M	A	+	+	+	+	+
PARATHYROID	-	+	-	-	+	+	+	+	-	-	-	-	+	-	-	-	+	-	M	A	+	-	-	+	+
PANCREATIC ISLETS ISLET-CELL ADENOMA	+	+	+	+	+	+	+	+ X	+	-	+	+	+	+	+	+	+	+	M	A	+	+	+ X	+	+
REPRODUCTIVE SYSTEM																									
MAMMARY GLAND	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	A	N	N	N	N	N
VAGINA PAPILLOMA, NOS	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	A	N	N	N	N	N
UTERUS FIBROMA LEIOMYOMA	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	M	A	+	+	+	+	+
OVARY	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	M	A	+	+	+	+	+
ALL OTHER SYSTEMS																									
MULTIPLE ORGANS NOS MALIG.LYMPHOMA, LYMPHOCYTIC TYPE	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	M	A	N	N	N	N	N

+: TISSUE EXAMINED MICROSCOPICALLY
-: REQUIRED TISSUE NOT EXAMINED MICROSCOPICALLY
X: TUMOR INCIDENCE
N: NECROPSY, NO AUTOLYSIS, NO MICROSCOPIC EXAMINATION

: NO TISSUE INFORMATION SUBMITTED
C: NECROPSY, NO HISTOLOGY DUE TO PROTOCOL
A: AUTOLYSIS
M: ANIMAL MISSING
B: NO NECROPSY PERFORMED

TABLE E6. FEMALE HAMSTERS: TUMOR PATHOLOGY (CONTINUED) IR CHRYSOTILE PLUS DMH

ANIMAL NUMBER	341	361	362	363	371	372	373	381	382	383	391	392	393	401	402	403	411	412	413	421	422	423	431	432	433
WEEKS ON STUDY	056	053	065	074	039	037	065	086	063	056	057	079	038	053	049	070	085	061	057	071	073	093	066	040	058
RESPIRATORY SYSTEM																									
LUNGS AND BRONCHI	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
UNDIFFERENTIATED CARCINOMA METAST																									
ALVEOLAR/BRONCHIOLAR CARCINOMA																									
SARCOMA, NOS, METASTATIC																									
TRACHEA	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
HEMATOPOIETIC SYSTEM																									
BONE MARROW	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	
SPLEEN	+	A	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	
HEMANGIOMA																									
LYMPH NODES	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
UNDIFFERENTIATED CARCINOMA METAST																									
SARCOMA, NOS																						X			
THYMUS	+	A	+	+	+	+	+	-	-	+	+	-	+	+	+	+	-	+	+	+	+	+	-	+	
CIRCULATORY SYSTEM																									
HEART	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
DIGESTIVE SYSTEM																									
SALIVARY GLAND	+	A	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	
LIVER	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
BILE DUCT	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
GALLBLADDER & COMMON BILE DUCT	N	A	N	N	N	N	+	+	N	N	+	N	N	N	+	N	N	+	+	N	N	+	N	N	N
PANCREAS	+	A	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	
ESOPHAGUS	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
STOMACH	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
SMALL INTESTINE	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
LARGE INTESTINE	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
URINARY SYSTEM																									
KIDNEY	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
UNDIFFERENTIATED CARCINOMA METAST																									
URINARY BLADDER	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
ENDOCRINE SYSTEM																									
PITUITARY	+	A	+	+	+	+	+	+	+	-	-	-	+	+	-	-	-	+	+	+	+	-	+	+	-
ADRENAL	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
CORTICAL ADENOMA																	X								
CORTICAL CARCINOMA																									
THYROID	+	A	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	-	+	+	-	-	+	
PARATHYROID	-	A	+	-	+	-	-	-	-	-	+	+	+	+	-	+	+	+	-	+	+	-	-	+	-
PANCREATIC ISLETS	+	A	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	
ISLET-CELL ADENOMA																						X			
REPRODUCTIVE SYSTEM																									
MAMMARY GLAND	N	A	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
VAGINA	N	A	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
PAPILLOMA, NOS																									
UTERUS	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
FIBROMA				X																					
LEIOMYOMA																									
OVARY	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
ALL OTHER SYSTEMS																									
MULTIPLE ORGANS NOS	N	A	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
MALIG.LYMPHOMA, LYMPHOCYTIC TYPE																									

+: TISSUE EXAMINED MICROSCOPICALLY
-: REQUIRED TISSUE NOT EXAMINED MICROSCOPICALLY
X: TUMOR INCIDENCE
N: NECROPSY, NO AUTOLYSIS, NO MICROSCOPIC EXAMINATION
: NO TISSUE INFORMATION SUBMITTED
C: NECROPSY, NO HISTOLOGY DUE TO PROTOCOL
A: AUTOLYSIS
M: ANIMAL MISSING
B: NO NECROPSY PERFORMED

TABLE E6. FEMALE HAMSTERS: TUMOR PATHOLOGY (CONTINUED) IR CHRYSOTILE PLUS DMH

ANIMAL NUMBER	44 11	44 12	44 13	45 11	45 12	45 13	46 11	46 12	46 13	47 11	47 12	47 13	48 11	48 12	48 13	49 11	49 12	49 13	50 11	50 12	50 13	51 11	51 12	51 13	52 11
WEEKS ON STUDY	051	059	079	052	063	049	076	071	080	051	027	060	050	052	074	040	057	061	049	064	074	066	062	052	014
RESPIRATORY SYSTEM																									
LUNGS AND BRONCHI UNDIFFERENTIATED CARCINOMA METAST ALVEOLAR/BRONCHIOLAR CARCINOMA SARCOMA, NOS, METASTATIC	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	-
TRACHEA	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	-
HEMATOPOIETIC SYSTEM																									
BONE MARROW	+	+	+	+	+	-	+	+	+	-	+	+	+	+	+	+	+	+	-	+	+	+	A	+
SPLEEN HEMANGIOMA	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+
LYMPH NODES UNDIFFERENTIATED CARCINOMA METAST SARCOMA, NOS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+
THYMUS	-	+	+	-	+	+	+	-	+	+	+	+	+	+	+	+	-	-	+	+	+	-	+	A	-
CIRCULATORY SYSTEM																									
HEART	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	-
DIGESTIVE SYSTEM																									
SALIVARY GLAND	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	-
LIVER	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+
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	+	A	N
PANCREAS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	-
ESOPHAGUS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+
STOMACH	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+
SMALL INTESTINE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+
LARGE INTESTINE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+
URINARY SYSTEM																									
KIDNEY UNDIFFERENTIATED CARCINOMA METAST	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+
URINARY BLADDER	+	+	+	-	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	A	-
ENDOCRINE SYSTEM																									
PITUITARY	-	+	+	-	+	+	+	+	+	+	+	+	+	-	+	+	-	+	+	+	+	+	A	-
ADRENAL CORTICAL ADENOMA CORTICAL CARCINOMA	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	-
THYROID	+	+	+	+	+	+	+	+	-	+	+	-	+	+	+	+	+	-	+	+	+	-	+	A	-
PARATHYROID	-	+	+	+	+	-	-	+	-	+	+	-	+	+	+	+	-	-	-	-	+	-	+	A	-
PANCREATIC ISLETS ISLET-CELL ADENOMA	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	-
REPRODUCTIVE SYSTEM																									
MAMMARY GLAND	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	A	N	
VAGINA PAPILLOMA, NOS	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	A	N	
UTERUS FIBROMA LEIOMYOMA	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	A	-	
OVARY	+	+	+	+	+	+	+	-	-	+	+	+	+	-	+	+	+	-	+	+	+	+	A	-	
ALL OTHER SYSTEMS																									
MULTIPLE ORGANS NOS MALIG.LYMPHOMA, LYMPHOCYTIC TYPE	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	A	N	

+: TISSUE EXAMINED MICROSCOPICALLY
-: REQUIRED TISSUE NOT EXAMINED MICROSCOPICALLY
X: TUMOR INCIDENCE
N: NECROPSY, NO AUTOLYSIS, NO MICROSCOPIC EXAMINATION

: NO TISSUE INFORMATION SUBMITTED
C: NECROPSY, NO HISTOLOGY DUE TO PROTOCOL
A: AUTOLYSIS
M: ANIMAL MISSING
B: NO NECROPSY PERFORMED

TABLE E6. FEMALE HAMSTERS: TUMOR PATHOLOGY (CONTINUED) IR CHRYSOTILE PLUS DMH

ANIMAL NUMBER	52 23	52 31	53 12	53 33	54 11	54 23	54 31	55 12	55 53	56 11	56 23	56 31	57 11	57 23	57 31	58 11	58 23	58 31	59 11	59 23	59 31	TOTAL TISSUES TUMORS
WEEKS ON STUDY	055	015	040	056	058	043	082	068	077	048	045	053	071	067	056	064	052	071	089	085	075	030	069	
RESPIRATORY SYSTEM																								
LUNGS AND BRONCHI	+	+	+	M	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	160
UNDIFFERENTIATED CARCINOMA METAST																								1
ALVEOLAR/BRONCHIOLAR CARCINOMA																		X						1
SARCOMA, NOS, METASTATIC																								3
TRACHEA	+	+	+	M	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	160
HEMATOPOIETIC SYSTEM																								
BONE MARROW	+	+	+	M	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	147
SPLEEN	+	+	+	M	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	159
HEMANGIOMA																							X	1
LYMPH NODES	+	+	+	M	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	161
UNDIFFERENTIATED CARCINOMA METAST																								1
SARCOMA, NOS																								1
THYMUS	+	+	+	M	+	+	+	–	–	+	+	+	+	+	+	+	+	+	–	–	–	–	+	113
CIRCULATORY SYSTEM																								
HEART	+	+	+	M	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	160
DIGESTIVE SYSTEM																								
SALIVARY GLAND	+	+	+	M	+	+	+	+	+	–	+	+	+	+	+	+	+	+	+	+	+	+	+	156
LIVER	+	+	+	M	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	161
BILE DUCT	+	+	+	M	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	161
GALLBLADDER & COMMON BILE DUCT	N	N	N	M	N	+	N	N	N	N	N	N	N	+	N	N	N	+	N	N	N	N	N	161M
PANCREAS	+	+	+	M	–	+	+	–	+	+	+	+	+	+	–	+	+	+	+	+	+	+	+	149
ESOPHAGUS	+	+	+	M	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	160
STOMACH	+	+	+	M	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	160
SMALL INTESTINE	+	+	+	M	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	159
LARGE INTESTINE	+	+	+	M	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	159
URINARY SYSTEM																								
KIDNEY	+	+	+	M	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	161
UNDIFFERENTIATED CARCINOMA METAST																								1
URINARY BLADDER	+	+	+	M	–	+	+	+	+	+	+	+	–	+	+	+	+	–	+	+	+	+	+	151
ENDOCRINE SYSTEM																								
PITUITARY	+	–	+	M	–	+	+	+	+	–	–	–	–	+	–	+	–	+	–	+	+	+	–	109
ADRENAL	+	+	+	M	–	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	158
CORTICAL ADENOMA																			X					6
CORTICAL CARCINOMA																								2
THYROID	+	+	+	M	+	+	+	+	+	+	+	–	–	+	+	+	+	+	+	+	+	+	+	141
PARATHYROID	–	–	–	M	+	+	–	+	–	+	+	–	–	+	–	+	–	–	+	+	+	+	+	91
PANCREATIC ISLETS	+	+	+	M	–	+	+	–	+	+	+	+	+	+	–	+	+	+	+	+	+	+	+	149
ISLET-CELL ADENOMA																								4
REPRODUCTIVE SYSTEM																								
MAMMARY GLAND	N	N	N	M	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	161M
VAGINA	N	N	N	M	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	161M
PAPILLOMA, NOS									X															1
UTERUS	+	+	+	M	–	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	156
FIBROMA																								1
LEIOMYOMA																								1
OVARY	+	+	+	M	–	+	+	+	+	+	+	+	–	+	+	+	+	+	+	+	+	+	+	149
ALL OTHER SYSTEMS																								
MULTIPLE ORGANS NOS	N	N	N	M	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	161M
MALIG.LYMPHOMA, LYMPHOCYTIC TYPE																								3

M ANIMALS NECROPSIED

+: TISSUE EXAMINED MICROSCOPICALLY
–: REQUIRED TISSUE NOT EXAMINED MICROSCOPICALLY
X: TUMOR INCIDENCE
N: NECROPSY, NO AUTOLYSIS, NO MICROSCOPIC EXAMINATION

: NO TISSUE INFORMATION SUBMITTED
C: NECROPSY, NO HISTOLOGY DUE TO PROTOCOL
A: AUTOLYSIS
M: ANIMAL MISSING
B: NO NECROPSY PERFORMED