NATIONAL TOXICOLOGY PROGRAM
Technical Report Series
No. 231

CARCINOGENESIS BIOASSAY OF STANNOUS CHLORIDE

(CAS NO. 7772-99-8)

IN F344/N RATS AND B6C3F$_1$/N MICE

(FEED STUDY)

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.

NTP TECHNICAL REPORT
ON THE

CARCINOGENESIS BIOASSAY OF STANNOUS CHLORIDE

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IN F344/N RATS AND B6C3F$_1$/N MICE (FEED STUDY)

NATIONAL TOXICOLOGY PROGRAM
Box 12233
Research Triangle Park
North Carolina 27709
and
Bethesda, Maryland 20205

June 1982

NTP-81-33
NIH Publication No. 82-1787

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
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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 bioassay 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 is a potential 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 initiated by the National Cancer Institute's Carcinogenesis Testing Program, now part of the National Institute of Environmental Health Sciences, National Toxicology Program.

Comments and questions about the National Toxicology Program Technical Reports on Carcinogenesis Bioassays should be directed to the National Toxicology Program, located at Room A-306, Landow Building, Bethesda, MD 20205 (301-496-1152) or at Research Triangle Park, NC 27709 (919-541-3991).

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 bioassay technical report are available without charge (and while supplies last) from the NTP Public Information Office, National Toxicology Program, P.O. Box 12233, Research Triangle Park, NC 27709.

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$SnCl_2$

STANNOUS CHLORIDE

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ABSTRACT

The chronic phase of a carcinogenesis bioassay for stannous chloride was conducted by feeding diets containing 1,000 or 2,000 ppm stannous chloride to groups of 50 F344/N rats and 50 B6C3F1/N mice of each sex for 105 weeks. Similar groups of untreated rats and mice served as controls.

In this study, the concentrations of tin in bone, kidney, and liver were no higher than those attained in other lifetime studies utilizing 1/100 of the dose, suggesting that organ accumulation of tin was not dose dependent, but probably limited by absorption.

Mean body weight gain and feed consumption of dosed and control rats and mice were comparable. Survival of high-dose male rats was somewhat lower than that of the control and low-dose groups (37/50, control; 39/50, low-dose; 30/50, high-dose). Survival of control male mice was less ($P < 0.05$) than that of either dosed group (32/50, 42/50, 45/50); survival of the female mice appeared to be dose related (38/50, 33/50, 28/50).

C-cell adenomas of the thyroid (2/50, 9/49, 5/50), C-cell adenomas or carcinomas combined (2/50, 13/49, 8/50), and adenomas of the lung (0/50, 0/50, 3/50) in male rats; and hepatocellular carcinomas or adenomas combined (3/49, 4/49, 8/49) and histiocytic malignant lymphomas (0/50, 0/49, 4/49) in female mice occurred with significant ($P < 0.05$) positive trends and/or with significantly ($P < 0.05$) increased incidences in the dosed groups when compared with the paired controls. However, when the lung adenomas in male rats are combined with lung carcinomas and when all lymphomas in female mice are considered, no statistical significance remains. For the thyroid C-cell tumors in male rats and for the liver tumors in female mice, the incidences in the high-dose groups were not significantly different from the historical control rates at that laboratory (C-cell tumors: 32/288, 11.1%; liver tumors: 24/297, 8%). When the historical control rate is used as a basis for comparison, the low-dose incidence of thyroid C-cell tumors remains significant ($P < 0.01$).

Under the conditions of this bioassay, stannous chloride was judged not to be carcinogenic for male or female F344/N rats or B6C3F1/N mice, although C-cell tumors of the thyroid gland in male rats may have been associated with the administration of the test chemical.

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The bioassay of stannous chloride was conducted at Southern Research Institute under a subcontract to Tracor Jitco, Inc., the prime contractor for the Carcinogenesis Testing Program.

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The pathology report and selected slides were evaluated in January 1981 by the NTP Pathology Working Group, composed of Drs. J. Ward, R. Kovatch (Tracor Jitco), and G. Reznik.

The chemicals used in this bioassay of stannous chloride were analyzed by the Midwest Research Institute, 425 Volker Blvd., Kansas City, Missouri 64110; bulk reanalysis and analysis of formulated diets was done by Southern Research Institute.

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SUMMARY OF PEER REVIEW COMMENTS ON THE BIOASSAY OF STANNOUS CHLORIDE

On June 23, 1981, this carcinogenesis bioassay report on stannous chloride 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. Harper, as a principal reviewer for the report on the bioassay of stannous chloride, said the conclusion of the report was that, under the conditions of the bioassay, stannous chloride was not toxic or carcinogenic for male or female rats or for male or female B6C3F1/N mice. However, Dr. Harper said several tumors appeared in the dosed animals at significantly higher incidences than in the controls. The incidence of C-cell adenomas and carcinomas of the thyroid combined in male rats were: control, 4%; low-dose, 27%; and high-dose, 16%. Rates in both dosed groups were highly significant and greater than those of historical controls, which were 11%. He said it seemed that the historical control range data overrode those from the concurrent controls to result in the negative conclusion.

As the second principal reviewer, Dr. Shore agreed with Dr. Harper that there is suggestive (if not strong) evidence that stannous chloride may be carcinogenic. He said the study was basically well conducted with no obvious flaws. The interpretation of the results was somewhat questionable in view of four results with significantly greater tumor yields in dosed animals, namely, lung adenomas in male rats, C-cell adenomas or carcinomas in male rats, liver adenomas or carcinomas in female mice, and histiocytic lymphomas in female mice. Dr. Shore reported on a partial reanalysis of the data he had performed using the Fisher exact test to compare dosed animals with total controls (historical and concurrent). Results were highly significant for combined C-cell adenomas/carcinomas. Further, among both sexes and both species, there were seven histiocytic lymphomas in dosed animals versus none in controls. He said each line of evidence taken by itself may not argue persuasively for a carcinogenic effect, but taken together they raise enough doubt, such that the categorically negative conclusion does not seem warranted. He also noted that increased retinal degeneration effects in certain dosed groups were dismissed as due to proximity to fluorescent light. If so, then there was apparently not a random or well-balanced allocation of cage positions, which is a moderately serious defect in the study.

In response to Drs. Harper and Shore, Dr. J. Haseman, NTP, said he had done the same analyses as Dr. Shore. He commented that indeed the low-dose incidence of thyroid tumors in male rats was significant compared with historical controls by a Fisher's exact test. However, he expressed concern about basing an analysis on pooled historical controls without taking into account the extra-binomial variability observed among these groups. He felt that without confirming this effect at the high dose and with the variability seen in the control rates at the bioassay laboratory, there was insufficient evidence to make a more positive statement. Dr. Swenberg said he thought NTP was not going to combine adenomas and carcinomas in arriving at a judgment. Dr. Moore, NTP, said that total organ site tumor rates are evaluated when it is biologically appropriate to combine adenomas and carcinomas (lung tumors, for instance). Other organ-site tumors (liver, for example) are combined because these data do provide useful information and because a sizeable segment of the scientific and regulatory communities considers this appropriate and want these data displayed. The NTP is pursuing actively which tumor sets should or should not be combined for the purpose of evaluating the carcinogenicity of chemicals.

Dr. Breslow expressed his concern about the issue of extra-binomial variation which seems to be so evident in a number of the studies. Dr. Haseman said NTP was giving high priority to an investigation of the sources of extra-binomial variability and to the development of statistical procedures that take into account this variation. This will enable NTP to use historical control data in a formal testing framework. There was further discussion about the use of historical control rates in interpretation of bioassay results. The panel agreed that the conclusion should be qualified to reflect the evidence for thyroid tumors and lung adenomas in male rats and hepatocellular adenomas and carcinomas and histiocytic lymphomas in female mice.

Dr. Harper moved that the report on the bioassay of stannous chloride be accepted with the qualifications noted. Dr. Shore seconded the motion and the report was approved unanimously by the Peer Review Panel.

I. INTRODUCTION

$SnCl_2$

STANNOUS CHLORIDE

CAS NO. 7772-99-8

Stannous chloride is an inorganic tin compound used as a food preservative, a stabilizer for colors, perfumes, and soaps, and a reducing agent in tin plating. It is also used as a mordant in printing, a silvering agent for glass and plastics, a catalyst for curing phenolic resins, an additive to drilling muds, and an antisludge agent for oils (Kirk-Othmer, 1968, 1979; M&T Chemicals, 1970; Merck, 1976).

Stannous chloride is on the U.S. Food and Drug Administration's list of substances "generally recognized as safe" (USCFR, 1974) and is approved for use as a preservative in processed foods (e.g., asparagus, wax beans, and sauerkraut) and nonalcoholic beverages at concentrations up to 15 ppm, calculated as tin. During the period from 1960 to 1970, the use of stannous chloride in food increased sevenfold, the daily human consumption being estimated at 0.065 to 0.136 mg/kg body weight (LSRO, 1974). Approximately 30,700 kilograms of stannous chloride were used in processed fruits and vegetables during 1970 (LSRO, 1974). Additional stannous chloride appears in canned foods as a result of the reaction between acidic foods and the tin plating (Kirk-Othmer, 1968).

Most of the stannous chloride used in the United States is produced domestically (LSRO, 1974), approximately 70% being used in tin plating (Kirk-Othmer, 1978). Current U.S. production figures are not available.

There are no reported cases of human health problems or specific diseases associated with stannous chloride, nor is there any report of human epidemiological studies having been conducted. Background levels of tin in the femur, kidney, and liver of adult males were reported (in 1940) to be 0.8, 0.2, and 0.6 μg/g of tissue, respectively (Table 1). Estimates of the amount of tin in the adult human body vary from 17 to 350 mg; approximately 25% of it is found in fat and skin (Venugopal and Luckey, 1978; World Health Organization, 1972).

Table 1. CONCENTRATION OF TIN IN THE BONE (FEMUR), KIDNEY, AND LIVER OF HUMANS, RATS, AND MICE

Site	Species/ Strain	Sex	Dose of $SnCl_2$	Duration	Tin Concentration (μg/g)	Reference
Bone (Femur)	Human	M	(Background) *(a)*	30-40 years	0.8 (Long bone)	Kehoe *et al.*, 1940
	Rat/ not specified	M	10.0 mg/kg (Oral)	1 year	48	Flinn and Inouye, 1928
	Rat/Wistar	M	0.3 mg/kg (Oral)	180 times over 90 days	4.3 (Control = 2.05)	Yamaguchi *et al.*, 1980
	Rat/Wistar	M	3 mg/kg (Oral)	180 times over 90 days	21.6 (Control = 2.05)	Yamaguchi *et al.*, 1980

Table 1. CONCENTRATION OF TIN IN THE BONE (FEMUR), KIDNEY, AND LIVER OF HUMANS, RATS, AND MICE (Continued)

Site	Species/ Strain	Sex	Dose of $SnCl_2$	Duration	Tin Concentration ($\mu g/g$)	Reference
Kidney	Human	M	(Background) *(a)*	30-40 years	0.2	Kehoe *et al.*, 1940
	Rat/Long Evans	M & F	5 ppm in Water	2 years	0.17 (Control = 0.31)	Schroeder *et al.*, 1968
	Rat/Wistar	M	0.3 mg/kg (Oral)	180 times over 90 days	0.24 ±0.05	Yamaguchi *et al.*, 1980
	Rat/Wistar	M	3 mg/kg (Oral)	180 times over 90 days	0.27 ±0.05 (Control = 0.22 ±0.03)	Yamaguchi *et al.*, 1980
	Rat/Wistar	M	30 mg/kg (IP)	3 days	80	Yamaguchi *et al.*, 1977
	Rat/ not specified	M	10 $\mu g/g$ (Oral)	1 year	40.0 *(b)*	Flinn and Inouye, 1928
	Mouse/CD	M	5 ppm in Water & 0.28 ppm in Feed	2 years	1.70 (Control <0.05)	Schroeder and Balassa, 1967
	Mouse/CD	F	5 ppm in Water & 0.28 ppm in Feed	2 years	3.32 (Control <0.05)	Schroeder and Balassa, 1967
Liver	Human	M	(Background)	30-40 years	0.6	Kehoe *et al.*, 1940
	Rat/Long Evans	M & F	5 ppm in Water	2 years	0.35 (Control = 0.11)	Schroeder *et al.*, 1968
	Rat/Wistar	M	0.3 mg/kg (Oral)	180 times over 90 days	0.25 ±0.02	Yamaguchi *et al.*, 1980
	Rat/Wistar	M	3 mg/kg (Oral)	180 times over 90 days	0.38 ±0.07 (Control = 0.24 ±0.01)	Yamaguchi *et al.*, 1980
	Rat	M	10 mg/kg (Oral)	1 year	63.0 *(c)*	Flinn and Inouye, 1928
	Mouse/CD	M	5 ppm in Water & 0.28 ppm in Feed	2 years	1.24	Schroeder and Balassa, 1967
	Mouse/CD	F	5 ppm in Water & 0.28 ppm in Feed	2 years	2.26	Schroeder and Balassa, 1967

(a) Estimated intake per day, 0.065 to 0.136 mg/kg.

(b) Micrograms per total kidneys.

(c) Micrograms per total liver.

I. INTRODUCTION

When stannous chloride was administered orally to rats and mice, trace concentrations of tin accumulated in the lung, heart, and spleen (Schroeder and Balassa, 1967; Schroeder *et al.*, 1968). Long-term oral administration in rats resulted in a tenfold higher accumulation of tin in the bone and kidney than in the liver and, in mice, produced a tenfold higher accumulation of tin in the bone than in either the kidney or liver (Table 2).

The toxic effects of stannous chloride, administered orally or in feed to rats and mice, include necrosis of the liver and spleen, severe pancreatic atrophy, moderate testicular degeneration, reduced hemoglobin concentration, irritation of the gastrointestinal tract, and retarded growth (Table 3). The reported LD_{50} values of orally administered stannous chloride in rats and mice are 700 mg/kg and 215-1,200 mg/kg, respectively.

No tumorigenic effects were reported in lifetime studies of Charles River Swiss mice fed diets containing 0.28 ppm tin (given as stannous chloride stabilized with ascorbic acid) or in lifetime studies of Long-Evans rats given 5 ppm tin (as stannous chloride) in drinking water (Kanisawa and Schroeder, 1967; Schroeder *et al.*, 1968).

Stannous chloride was found not to be mutagenic in a rec-assay in *Bacillus subtilis* (Nishioka, 1975).

The NCI Bioassay Program tested stannous chloride because of widespread human exposure to the compound and because previous tests (Schroeder and Balassa, 1967; Schroeder *et al.*, 1968) were considered inadequate due to the limited number of tissues examined and the low doses used.

Table 2. TIN CONCENTRATION IN BONE, KIDNEY, AND LIVER OF RATS AND MICE FED DIETS CONTAINING STANNOUS CHLORIDE IN THE CHRONIC STUDY

		Concentration of Tin *(a)*		
Species	Dose (ppm)	Bone (μg/g)	Kidney (μg/g)	Liver (μg/g)
RATS *(b)*				
Male	1,000	9	17	0.2
	2,000	38	30	0.4
Female	1,000	20	47	0.3
	2,000	48	52	0.5
MICE *(c)*				
Male	1,000	18	0.6 *(d)*	0.3 *(e)*
	2,000	30	0.9	0.7
Female	1,000	23	0.7	0.4 *(f)*
	2,000	41	0.9	0.5

(a) Value is the tin concentration expressed as μg/g of tissue and represents the mean of ten samples unless otherwise noted.

(b) Untreated rats had tin concentrations which were not above the detectable limits. The detectable limits for bone, kidney, and liver tissues were 0.1, 0.04, and 0.01 μg/ml of digested tissues, respectively.

(c) Untreated mice had tin concentrations which were not above the detectable limits, except for one male animal which had a tin concentration of 0.8 μg/g of bone tissue. The detectable limits for bone, kidney, and liver tissues were 0.05, 0.04, and 0.01 μg/ml of digested tissue, respectively.

(d) Value represents the mean of five samples.

(e) Value represents the mean of three samples.

(f) Value represents the mean of six samples.

Table 3. EFFECTS OF ADMINISTRATION OF STANNOUS CHLORIDE IN RATS AND MICE

Species (Strain)	Route	Dose, Duration	Effects	Reference
Rat (Not Specified)	Oral	1 dose	LD_{50} = 700 mg/kg	Calvery, 1942
Rat (Wistar-derived)	Dosed feed	10,000 ppm per d for 90d	Retarded growth, reduced hemoglobin concentration, moderate testicular degeneration, severe pancreatic atrophy, irritation of gastrointestinal tract	DeGroot *et al.*, 1973; Dreef-van der Meulen *et al.*, 1974
Rat (Wistar)	Intraperitoneal	30 mg/kg 1 dose	Thirtyfold increase in calcium binding in renal cortex	Yamaguchi *et al.*, 1977
Rat (Sprague-Dawley)	Subcutaneous	47 mg/kg 1 dose	Enhanced heme breakdown in kidney	Kappas and Maines, 1976
Mouse (H)	Oral	1 dose	LD_{50} = 215 mg/kg	Halacka, 1970
Mouse (White)	Oral	1 dose	LD_{50} = 250 mg/kg	Pelikan *et al.*, 1968
Mouse (Not Specified)	Oral	1,000 mg/kg 1 dose	Necrosis of liver and spleen	Halacka, 1970; Pelikan *et al.*, 1968
Mouse (Not Specified)	Oral	1 dose	LD_{50} = 1,200 mg/kg	Calvery, 1942

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CHEMICAL ANALYSIS

Food-grade anhydrous stannous chloride (CAS No. 7772-99-8) containing approximately 98.5% stannous chloride was obtained from M&T Chemicals, Inc. (Rahway, NJ) in one batch (Lot No. MT 8-27-75). Purity and identity analyses were conducted at Midwest Research Institute. Results of elemental analysis were slightly high for tin and slightly low for chlorine (Appendix E), suggesting that a small amount of elemental tin was present. The presence of elemental tin was also indicated by the results of dichromate titration. The results of spark source mass spectrometry indicated that all elemental impurities except iron (160 ppm) were present at concentrations of less than 100 ppm (Appendix E, Table E1). Southern Research Institute reanalyzed the chemical periodically, using elemental analyses for tin and chlorine and the dichromate titration described in Appendix E. The results were comparable with those obtained by Midwest Research Institute and indicated no decomposition over the lifetime of the study.

PRECHRONIC STUDIES

Single-Dose Study

Male and female F344/N rats and B6C3F1/N mice were obtained from Frederick Cancer Research Center (Frederick, MD) and held for approximately 10 days before the test began. Animals were approximately 6 weeks old when placed on study.

Groups of five males and five females of each species were administered a single dose of the test substance by gavage in distilled water that had been acidified to pH 1 with hydrochloric acid. Rats were administered doses of 93.75, 187.5, 375, 750, or 1,500 mg/kg body weight, and mice received doses of 150, 300, 600, 1,200, or 2,400 mg/kg.

Animals were housed five per cage and received water and feed *ad libitum* during the observation period. Details of animal maintenance are presented in Table 4.

Animals were observed for mortality twice daily. All surviving animals were killed on day 16. Necropsies were not performed.

Fourteen-Day Study

Male and female F344/N rats and B6C3F1/N mice were obtained from Frederick Cancer Research Center and held for approximately 10 days before the study began. Animals were approximately 6 weeks old when placed on study.

Groups of five males and five females of each species were fed diets containing 1,900, 3,800, 7,500, 15,000, and 30,000 ppm stannous chloride for 2 weeks. No controls were used. Test diets were prepared by mixing the required amount of test chemical and Wayne Lab Blox® meal in a Patterson-Kelly® twin-shell V-blender.

Animals were housed five per cage and received water and feed *ad libitum*. Details of animal maintenance are presented in Table 4. The rats and mice were observed twice daily for mortality and were weighed weekly. Necropsies were performed on all animals at the end of the 14-day study.

Thirteen-Week Study

Thirteen-week studies were conducted to evaluate the cumulative toxicity of stannous chloride and to determine the concentrations of stannous chloride to be used in the chronic studies.

Four-week-old male and female F344/N rats and 5-week-old male and female B6C3F1/N mice were obtained from Frederick Cancer Research Center, observed for 10 days, and then assigned to cages according to a table of random numbers. The cages were then assigned to test groups according to a second table of random numbers.

Rats and mice were housed five per cage in polycarbonate cages covered with disposable filters (Table 4). Racks were cleaned and filters replaced every 2 weeks. Cages and bedding were replaced twice per week.

Test diets consisted of Wayne Lab Blox® meal and the required amount of stannous chloride. Control diets consisted of Wayne Lab Blox® meal. Dosed feed, control diets, and water (via an automatic watering system) were available *ad libitum*.

Table 4. SOURCES AND DESCRIPTIONS OF MATERIALS USED FOR ANIMAL MAINTENANCE IN THE PRECHRONIC AND CHRONIC STUDIES

Item	Description	Source
Animal Feed	Wayne Lab Blox® meal	Allied Mills (Chicago, IL)
Bedding	Beta® Chips	Northeastern Products Co. (Warrensburg, NY)
Cages	Polycarbonate	Lab Products, Inc. (Garfield, NJ)
Filter	Spun-bonded Polyester (Dupont #2024)	Snow Filtration (Cincinnati, OH)
Watering System	Edstrom Automatic	Edstrom Industries (Waterford, WI)

Diets containing 0, 500, 1,000, 1,900, 3,800, or 7,500 ppm stannous chloride were fed for 13 weeks to groups of 10 rats of each sex. Groups of 10 mice of each sex were given diets containing 0, 1,900, 3,800, 7,500, 15,000, or 30,000 ppm.

Animals were checked for mortality and signs of morbidity twice daily. Those animals that were judged moribund were killed and necropsied. Each animal was given a clinical examination weekly, including palpation for tissue masses or swelling. Body weight and feed consumption data were recorded weekly.

At the end of the 13-week study, survivors were killed with carbon dioxide, and necropsies were performed on animals that survived to the end of the study and on all animals found dead, unless precluded in whole or in part by autolysis or cannibalism. 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. The following specimens were examined for control and high-dose groups: gross lesions, tissue masses, abnormal lymph nodes, skin, mandibular lymph nodes, mammary gland, salivary gland, thigh muscle, bone marrow, thymus, trachea, lungs and bronchi, heart, thyroid, parathyroid, esophagus, stomach, duodenum, jejunum, ileum, colon, mesenteric lymph nodes, liver, gallbladder (mice), pancreas, spleen, kidneys, adrenals, bladder, seminal vesicles/prostate/testes or ovaries/uterus, brain, and pituitary. Tissues were preserved in 10% neutral buffered formalin, embedded in paraffin, sectioned, and stained with hematoxylin and eosin.

CHRONIC STUDY

Study Design

Diets containing 1,000 or 2,000 ppm stannous chloride were fed to groups of 50 rats and 50 mice of each sex for 105 weeks. Controls consisted of 50 untreated rats and 50 untreated mice of each sex (Table 5).

Sources and Specifications of Test Animals

Four-week-old male and female F344/N rats and 5-week-old male and female B6C3F1/N mice were obtained from Charles River Breeding Laboratories (Wilmington, MA), observed for 10 days, and assigned to cages according to a table of random numbers. The cages were then assigned to control and dosed groups according to another table of random numbers. Rats and mice were approximately 6 weeks old when placed on study.

Animal Maintenance

Rats and mice were housed five per cage in polycarbonate cages covered with disposable polyester sheets (Table 4). Racks were cleaned and filters changed once every 2 weeks. Cages and bedding were replaced twice per week. Dosed feed, control diets, and water (from an automatic watering system) were available *ad libitum*. Feed hoppers were changed once per week.

The temperature in the animal rooms was 19°-24°C and the humidity was 30%-70%. Room air was changed 15 times per hour. Fluorescent lighting provided illumination 12 hours per day.

All animals were housed in the same room. No other chemicals were on test in this room.

Preparation of Test Diets

Test diets were prepared by mixing pulverized stannous chloride with an aliquot of powdered Wayne Lab Blox® meal, adding the rest of the feed, and mixing for 15 minutes in a Patterson-Kelly® twin-shell V-blender equipped with an intensifier bar. Test diets, sealed in labeled plastic bags, were stored at 5°C for the first week and at 21°-23°C for the second week. Total storage time did not exceed 14 days.

Test diets containing 99,000 ppm stannous chloride were analyzed at Midwest Research Institute. Stannous chloride in feed was found to be stable for 2 weeks at temperatures up to 25°C (Appendix F). The concentrations of stannous chloride in feed had to be analyzed by more sensitive procedures. The methods and results are presented in Appendix G.

Clinical Examinations and Pathology

All animals were observed twice daily for morbidity and mortality. Clinical signs were recorded monthly. Body weights and feed consumption by cage were recorded every 4-5 weeks. The mean body weight of each group was calculated by dividing the total weight of all animals in the group by the number of surviving animals in the group. The average feed consumption per animal was calculated by dividing the total feed consumption measured for all cages in a dose group by the number of surviving animals in the group. Moribund animals and animals that survived to the end of the bioassay were killed with carbon dioxide and necropsied.

Examinations for grossly visible lesions were performed on major tissues or organs. Tissues were preserved in 10% neutral buffered formalin, embedded in paraffin, sectioned, and stained with hematoxylin and eosin. The following were examined microscopically: all tissue masses, abnormal lymph nodes, skin, mandibular lymph nodes, mammary gland, salivary gland, thigh muscle, sciatic nerve, bone marrow, costochondral junction (rib), thymus, larynx, trachea, lungs and bronchi, heart, thyroid, parathyroid, esophagus, stomach, duodenum, jejunum, ileum, colon, mesenteric lymph nodes, liver, gallbladder (mice), pancreas, spleen, kidneys, adrenals, urinary bladder, seminal vesicles/ prostate/testes or ovaries/uterus, nasal cavity, brain, pituitary, and spinal cord.

Necropsies were performed on all animals found dead and on those killed at the end of the study, unless precluded in whole or in part by autolysis or cannibalism. Thus, the number of animals from which particular organs or tissues were examined microscopically varies and is not necessarily equal to the number of animals that were placed on study in each group.

The pathology report and selected slides were evaluated by the NTP Pathology Working

Table 5. EXPERIMENTAL DESIGN OF CHRONIC FEEDING STUDIES WITH STANNOUS CHLORIDE IN RATS AND MICE

Test Group *(a)*	Initial No. of Animals	Stannous Chloride (ppm)	Weeks on Study	
			Dosed *(a)*	Not Dosed
MALE RATS				
Control	50	0	0	105
Low-Dose	50	1,000	104-105	0
High-Dose	50	2,000	104-105	0
FEMALE RATS				
Control	50	0	0	105
Low-Dose	50	1,000	105	0
High-Dose	50	2,000	105	0
MALE MICE				
Control	50	0	0	105-106
Low-Dose	50	1,000	105	0
High-Dose	50	2,000	105	0
FEMALE MICE				
Control	50	0	0	105-106
Low-Dose	50	1,000	105-106	0
High-Dose	50	2,000	105	1

(a) Control and dosed groups were of the same strain, sex, and age range and from the same source and shipment. All animals of the same species shared the same room, and all aspects of animal care and maintenance were similar. Animals were randomized to dosed and control groups as described in Sources and Specifications of Test Animals.

Group as described by Ward *et al.* (1978). The diagnoses represent a consensus of contracting pathologists and the NTP Pathology Working Group.

Data Recording and Statistical Methods

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

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. Statistical analyses for a possible dose-related effect on survival used the method of Cox (1972) for testing two groups for equality and Tarone's (1975) extensions of Cox's methods for testing for a dose-related trend.

The incidence of neoplastic or nonneoplastic lesions has been given as the ratio of the number of animals bearing such lesions at a specific anatomic site to the number of animals in which that site was examined. In most instances, the denominators 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) before 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). Tests of significance included pairwise comparisons of high- and low-dosed groups with controls and tests for overall dose-response trends.

The first method of analysis assumed that all tumors of a given type observed in animals dying before the end of the study were "fatal" i.e., they either directly or indirectly caused the death of the animal. According to this approach, the proportions of tumor-bearing animals in the dosed and control groups were compared at each point in time at which an animal died with a tumor of interest. The denominators of these proportions were the total number of animals at risk in each group. These results, including the data from animals killed at the end of the study, were then combined by the Mantel-Haenszel methods to obtain an overall P value. This method of adjusting for intercurrent mortality is the life table method of Cox (1972) and of Tarone (1975).

The second method of analysis assumed that all tumors of a given type observed in animals dying before the end of the study 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 dosed and control groups were compared in each of five time intervals: 0-52 weeks, 53-78 weeks, 79-92 weeks, week 93 until the week prior to the terminal kill, and the terminal kill period. 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 for the computational details of both methods.)

In addition to these tests, one other set of statistical analyses was carried out and reported in the tables analyzing primary tumors: the Fisher exact test for pairwise comparisons and the Cochran-Armitage linear trend test for dose-response trends (Armitage, 1971; Gart *et al.*, 1979). These tests were based on the overall proportion of tumor-bearing animals. All reported P values are one-sided.

For studies in which there is little effect of compound administration on survival, the results of the three alternative analyses will generally be similar. When differing results are obtained by the three methods, the final interpretation of the data will depend on the extent to which the tumor under consideration is regarded as being the cause of death.

Special Study

The extent of chemical absorption was estimated by determining the accumulation of tin in the bone, kidneys, and liver of the rats and mice fed diets containing 1,000 or 2,000 ppm stannous chloride for 105 weeks.

Groups of 10 males and 10 females of each species were selected, according to a table of random numbers, from the animals that survived to the end of the chronic study.

The following tissues were removed at necropsy:

1) The right lateral lobe of the liver was removed and placed in a scintillation vial.
2) The right kidney was removed and cut in half (transverse cut), and one half was placed in a scintillation vial.
3) The right femur was removed and placed in a scintillation vial.

Each tissue sample was weighed. Liver and kidney tissues were digested in five volumes of Soluene-350® (Packard Instruments Co., Inc.) at 50°C overnight. Toluene was then added to give a final tissue dilution of 1:10. Additional Soluene-350® was needed to cover approximately 60% of the mouse liver samples; the final dilution in these samples was 1:20.

Bone tissues were digested overnight in five volumes of concentrated nitric acid at 50°C. Water was added to digested samples to give a final tissue dilution of 1:20.

Tissue samples were analyzed for tin on a Perkin-Elmer Model 603 atomic absorption spectrophotometer with a HGA-2100 graphite furnace attachment as described by Trachman *et al.* (1977).

Results of the analysis are reported in Table 2. Results from other studies appear in Table 1.

III. RESULTS

RATS

PRECHRONIC STUDIES

Single-Dose Study

Fourteen-Day Study

Thirteen-Week Study

CHRONIC STUDY

Body Weights and Clinical Signs

Survival

Pathology and Statistical Analyses of Results

MICE

PRECHRONIC STUDIES

Single-Dose Study

Fourteen-Day Study

Thirteen-Week Study

CHRONIC STUDY

Body Weights and Clinical Signs

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PRECHRONIC STUDIES

Single-Dose Study

Rats were observed for 16 days and, at the end of this period, survival was 100% in all males. Deaths occurred in 1/5 females receiving 750 mg/kg and in 1/5 females receiving 1,500 mg/kg (Table 6).

Table 6. DOSAGE AND SURVIVAL OF RATS ADMINISTERED A SINGLE DOSE OF STANNOUS CHLORIDE BY GAVAGE

Dose (mg/kg)	Survival *(a)*	
	Male	Female
93.75	5/5	5/5
187.5	5/5	5/5
375	5/5	5/5
750	5/5	4/5 *(b)*
1,500	5/5	4/5 *(c)*

(a) Number surviving/number per group.

(b) Died on day 3.

(c) Death was caused by a gavage accident.

Fourteen-Day Study

All animals survived to the end of the dosing period. Rats receiving 30,000 ppm had roughened coats and distended abdomens. All five female rats and 3/5 male rats receiving 30,000 ppm lost weight. At all other dose levels, rats of each sex gained weight. Weight gains decreased as dose levels increased (Table 7).

Thirteen-Week Study

No rats died. Mean body weight gain was depressed by more than 10% in the rats receiving the highest dose (7,500 ppm) when compared with that of controls (Table 8), although average daily feed consumption at 7,500 ppm was higher than that of controls. Gross distention of the cecum and reddened gastric mucosa were observed in 70%-100% of all rats receiving 3,800 or 7,500 ppm (Table 9), but no compound-related histopathologic effects were detected in the cecum or stomach or in any other tissues examined.

Doses of 1,000 and 2,000 ppm stannous chloride in feed were selected for rats in the chronic study because of the gross effects observed in the cecum and stomach of rats administered 3,800 or 7,500 ppm for 13 weeks (Table 9).

Table 7. DOSAGE, SURVIVAL, AND MEAN BODY WEIGHTS OF RATS FED DIETS CONTAINING STANNOUS CHLORIDE FOR 14 DAYS

Dose (ppm)	Survival *(a)*	Mean Body Weight (grams) *(b)*		
		Initial	Final	Change
MALE				
1,900	5/5	109.2 ±8.42	182.6 ± 5.22	+73.4 ±4.89
3,800	5/5	95.6 ±4.86	157.8 ± 7.91	+62.2 ±5.39
7,500	5/5	114.2 ±8.70	161.6 ±11.80	+47.4 ±3.72
15,000	5/5	106.4 ±7.28	139.4 ± 7.81	+33.0 ±1.90
30,000	5/5	104.6 ±9.45	105.0 ±11.21	+ 0.4 ±2.16
FEMALE				
1,900	5/5	95.4 ±2.36	132.6 ±2.52	+37.2 ±1.83
3,800	5/5	89.2 ±1.59	120.2 ±2.33	+31.0 ±1.41
7,500	5/5	101.6 ±1.57	130.8 ±3.25	+29.2 ±2.22
15,000	5/5	92.6 ±0.93	109.0 ±2.37	+16.4 ±1.57
30,000	5/5	94.8 ±2.63	87.4 ±3.40	− 7.4 ±2.75

(a) Number surviving/number initially in the group.

(b) Mean weight change of the survivors of the group ± standard error of the mean.

Table 8. DOSAGE, SURVIVAL, MEAN BODY WEIGHTS, AND FEED CONSUMPTION OF RATS FED DIETS CONTAINING STANNOUS CHLORIDE FOR 13 WEEKS

Dose (ppm)	Survival *(a)*	Mean Body Weight (grams)			Weight Change Relative to Controls *(c)* (Percent)	Average Daily Feed Consumption (grams)
		Initial	Final	Change *(b)*		
MALE						
0	10/10	88.8 ±3.84	314.0 ±7.73	+225.2 ±5.10		19.5
500	10/10	85.7 ±2.68	311.1 ±5.57	+225.4 ±4.52	+ 0.1	19.0
1,000	10/10	86.4 ±2.91	322.5 ±7.30	+236.1 ±5.83	+ 4.8	19.2
1,900	10/10	90.4 ±2.91	309.1 ±6.80	+218.7 ±5.70	− 2.9	19.7
3,800	10/10	84.3 ±3.50	306.2 ±5.50	+221.9 ±3.27	− 1.5	18.5
7,500	10/10	89.3 ±3.16	286.3 ±9.39	+197.0 ±8.05	−12.5	22.2
FEMALE						
0	10/10	78.0 ±2.18	193.4 ±3.67	+115.4 ±3.08		13.2
500	10/10	80.3 ±2.14	194.7 ±2.00	+114.4 ±2.66	− 0.9	12.7
1,000	10/10	80.7 ±1.63	197.2 ±3.00	+116.5 ±2.65	+ 1.0	13.6
1,900	10/10	81.2 ±0.95	195.7 ±2.98	+114.5 ±3.33	− 0.8	13.6
3,800	10/10	77.3 ±1.95	189.5 ±3.08	+112.2 ±3.66	− 2.8	13.2
7,500	10/10	85.4 ±2.58	180.8 ±3.13	+ 95.4 ±2.26	−17.3	15.3

(a) Number surviving/number initially in the group. All calculations are based on those animals surviving to the end of the study.

(b) Mean weight change of the survivors of the group ± standard error of the mean.

(c) Weight change of the dosed survivors relative to the survivors of the controls =

$$\frac{\text{Weight Change (Dosed Group)} - \text{Weight Change (Control Group)}}{\text{Weight Change (Control Group)}} \times 100$$

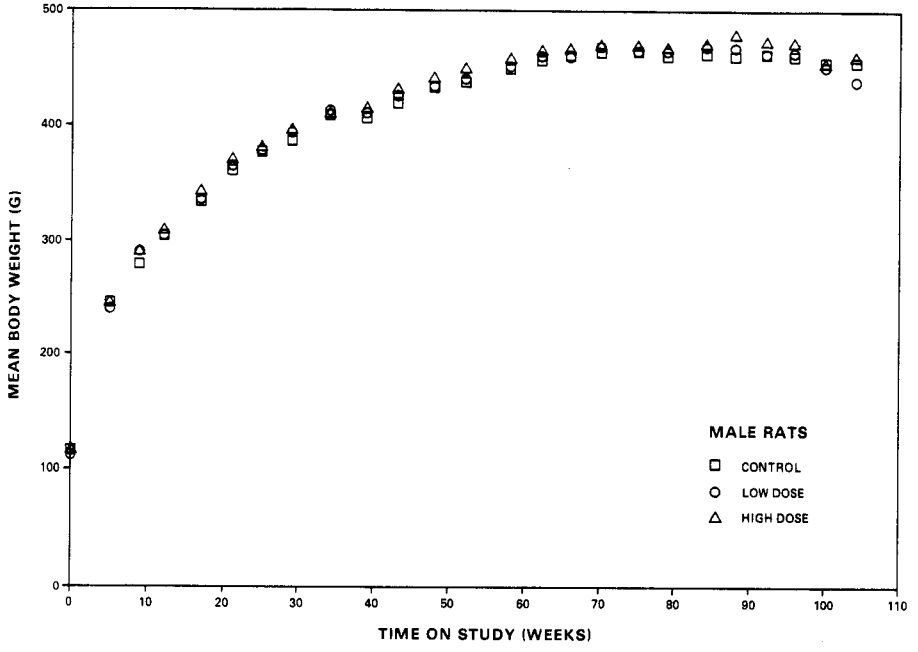
Table 9. NUMBERS OF RATS WITH COMPOUND-RELATED EFFECTS OBSERVED AT NECROPSY IN THE 13-WEEK STUDY OF STANNOUS CHLORIDE

Dose (ppm)	Gross Observations	
	Distended Cecum	Mucosal Surface of Stomach Reddened
MALE		
0	0/10	0/10
500	0/10	0/10
1,000	1/10	0/10
1,900	0/10	0/10
3,800	9/10	7/10
7,500	10/10	9/10
FEMALE		
0	0/10	0/10
500	0/10	0/10
1,000	0/10	0/10
1,900	0/10	1/10
3,800	8/10	7/10
7,500	10/10	8/10

CHRONIC STUDY

Body Weights and Clinical Signs

Throughout the study, mean body weights of rats fed diets containing stannous chloride were comparable with those of the controls. (Figure 1 and Appendix H, Table H1). The average daily feed consumption per rat by low- and high-dose rats was 102% and 105% that of controls for males and 98% and 95% for females (Appendix I). No compound-related clinical signs were observed.



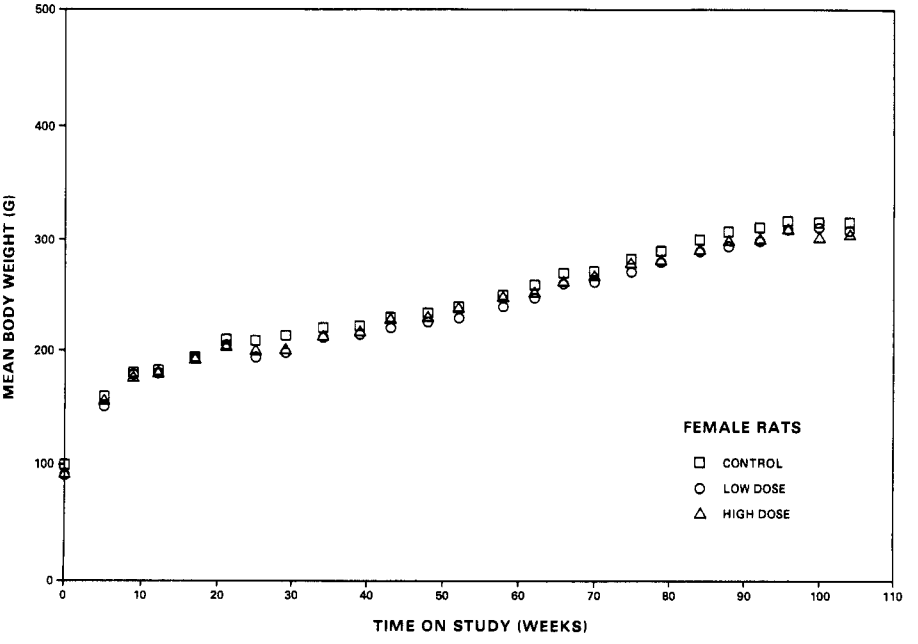


Figure 1. Growth Curves for Rats Fed Diets Containing Stannous Chloride

Survival

Estimates of the probabilities of survival of male and female rats fed diets containing stannous chloride at the concentrations of this bioassay, together with those of the control group, are shown by the Kaplan and Meier curves in Figure 2. No statistically significant differences in survival were observed between any group of either sex of rats, although Figure 2 indicates some degree of decreased survival after week 75 in the high-dose male rats when compared with the other two male rat groups.

In male rats, 37/50 (74%) of the controls, 39/50 (78%) of the low-dose, and 30/50 (60%) of the high-dose group lived to the end of the study at 104-105 weeks. In female rats, 42/50 (84%) of the controls, 39/50 (78%) of the low-dose, and 36/50 (72%) of the high-dose group lived to the end of the study at 104-105 weeks.

One male control, one high-dose male, one low-dose female, and two high-dose females died natural deaths during weeks 104-105; in the statistical analyses reported in tables 10 and 11, no distinctions were made between these animals and the animals killed during the terminal kill period.

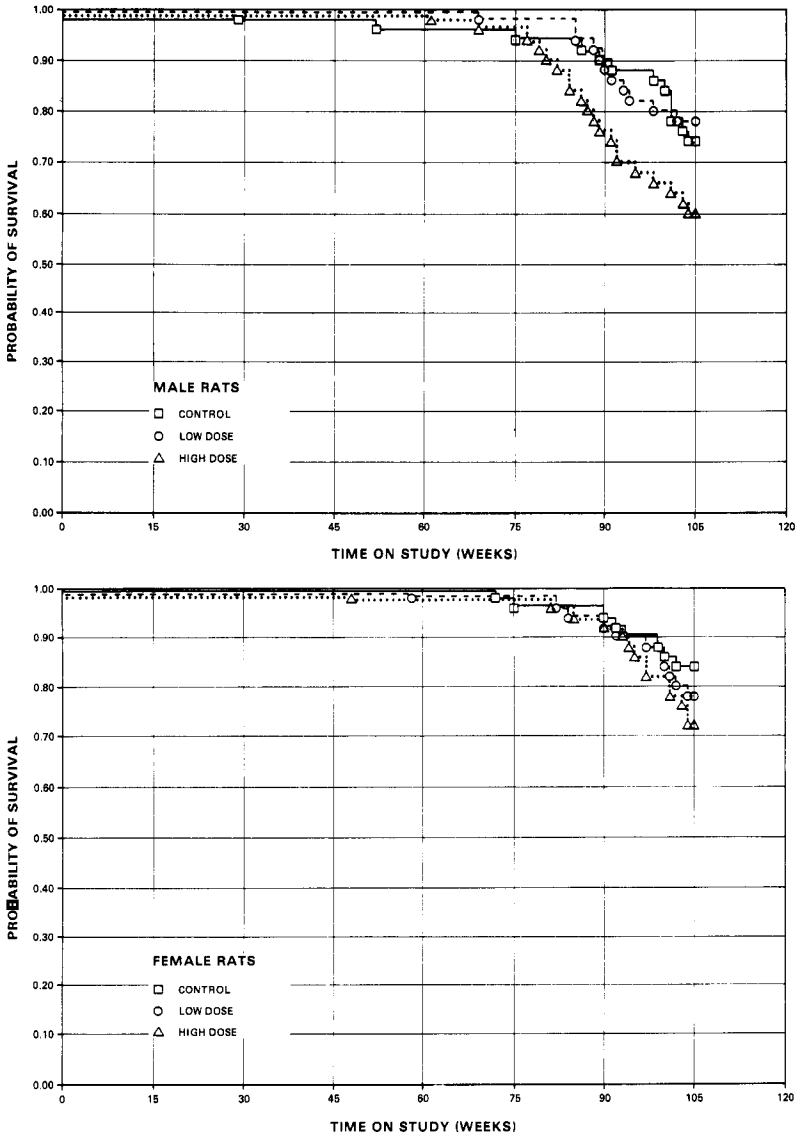


Figure 2. Survival Curves for Rats Fed Diets Containing Stannous Chloride

Pathology and Statistical Analyses of Results

Histopathologic findings on neoplasms in rats are summarized in Appendix A, Table A1 and A2. Appendix A, Tables A3 and A4 give the survival and tumor status for each individual animal in the male and female rat studies. Findings on nonneoplastic lesions are summarized in Appendix C, Tables C1 and C2.

Tables 10 and 11 contain the statistical analyses of those primary tumors that occurred with an incidence of at least 5% in one of the three groups.

Lung: Adenomas in the lungs of male rats occurred with a statistically significant positive trend ($P < 0.05$; overall incidence: control, 0/50, 0%; low-dose, 0/50, 0%; high-dose, 3/50, 6%). The individual comparisions between high- or low-dose groups and the controls were not significant. The statistical results of tests of the incidences of animals with either adenomas or carcinomas of the lung were not significant. No significant results were observed in female rats.

Thyroid: The incidence of male rats with C-cell adenoma or carcinoma indicates a positive trend and a significantly higher proportion in each dosed group when compared with the controls (control, 2/50, 4%; low-dose, 13/49, 27%; high-dose, 8/50, 16%). Both adenomas and carcinomas were increased to some degree, but the only statistically significant increase ($P < 0.05$) was for adenomas in the low-dose group. The increased incidence of C-cell tumors in the dosed groups was not accompanied by an increased incidence of hyperplasia in the C-cells. The females had decreased proportions of C-cell adenomas or carcinomas in the high-dose group compared with controls.

Eyes: Retinal degeneration was increased considerably in high-dose male rats and in low-dose female rats (males: control, 8/50, 16%; low-dose 4/50, 8%; high-dose, 30/50, 60%; females: control, 2/50, 4%; low-dose, 37/50, 74%; high-dose, 3/50, 6%).

Table 10. ANALYSIS OF PRIMARY TUMORS IN MALE RATS *(a)*

	Control	Low Dose	High Dose
Lung: Adenoma			
Tumor Rates			
Overall *(b)*	0/50(0)	0/50(0)	3/50(6)
Adjusted *(c)*	0.0%	0.0%	9.0%
Terminal *(d)*	0/38(0)	0/39(0)	2/31(6)
Statistical Tests *(e)*			
Life Table	P=0.026	P=1.000	P=0.091
Incidental Tumor Test	P=0.050	P=1.000	P=0.160
Cochran-Armitage Trend, Fisher Exact Test	P=0.037	P=1.000	P=0.121
Lung: Carcinoma			
Tumor Rates			
Overall *(b)*	3/50(6)	1/50(2)	0/50(0)
Adjusted *(c)*	7.9%	2.6%	0.0%
Terminal *(d)*	3/38(8)	1/39(3)	0/31(0)
Statistical Tests *(e)*			
Life Table	P=0.077N	P=0.296N	P=0.159N
Incidental Tumor Test	P=0.077N	P=0.296N	P=0.159N
Cochran-Armitage Trend, Fisher Exact Test	P=0.060N	P=0.309N	P=0.121N
Lung: Adenoma or Carcinoma			
Tumor Rates			
Overall *(b)*	3/50(6)	1/50(2)	3/50(6)
Adjusted *(c)*	7.9%	2.6%	9.0%
Terminal *(d)*	3/38(8)	1/39(3)	2/31(6)
Statistical Tests *(e)*			
Life Table	P=0.511	P=0.296N	P=0.568
Incidental Tumor Test	P=0.589N	P=0.296N	P=0.653N
Cochran-Armitage Trend, Fisher Exact Test	P=0.594	P=0.309N	P=0.661
Hematopoietic System: Undifferentiated Leukemia			
Tumor Rates			
Overall *(b)*	6/50(12)	9/50(18)	7/50(14)
Adjusted *(c)*	14.4%	20.4%	19.8%
Terminal *(d)*	3/38(8)	5/39(13)	4/31(13)
Statistical Tests *(e)*			
Life Table	P=0.298	P=0.299	P=0.351
Incidental Tumor Test	P=0.450	P=0.255	P=0.461
Cochran-Armitage Trend, Fisher Exact Test	P=0.444	P=0.288	P=0.500

Table 10. ANALYSIS OF PRIMARY TUMORS IN MALE RATS *(a)* (Continued)

	Control	Low Dose	High Dose
Hematopoietic System: Leukemia			
Tumor Rates			
Overall *(b)*	6/50(12)	10/50(20)	7/50(14)
Adjusted *(c)*	14.4%	22.0%	19.8%
Terminal *(d)*	3/38(8)	5/39(13)	4/31(13)
Statistical Tests *(e)*			
Life Table	P=0.303	P=0.224	P=0.351
Incidental Tumor Test	P=0.498	P=0.181	P=0.461
Cochran-Armitage Trend, Fisher Exact Test	P=0.445	P=0.207	P=0.500
Hematopoietic System: Lymphoma or Leukemia			
Tumor Rates			
Overall *(b)*	6/50(12)	11/50(22)	9/50(18)
Adjusted *(c)*	14.4%	24.3%	23.0%
Terminal *(d)*	3/38(8)	6/39(15)	4/31(13)
Statistical Tests *(e)*			
Life Table	P=0.158	P=0.162	P=0.190
Incidental Tumor Test	P=0.359	P=0.124	P=0.347
Cochran-Armitage Trend, Fisher Exact Test	P=0.255	P=0.143	P=0.288
Pituitary: Adenoma			
Tumor Rates			
Overall *(b)*	11/50(22)	10/49(20)	12/49(24)
Adjusted *(c)*	26.4%	23.3%	31.2%
Terminal *(d)*	8/38(21)	7/39(18)	6/30(20)
Statistical Tests *(e)*			
Life Table	P=0.262	P=0.491N	P=0.297
Incidental Tumor Test	P=0.526N	P=0.481N	P=0.564N
Cochran-Armitage Trend, Fisher Exact Test	P=0.431	P=0.521N	P=0.478
Pituitary: Adenoma or Carcinoma			
Tumor Rates			
Overall *(b)*	12/50(24)	11/49(22)	13/49(27)
Adjusted *(c)*	27.9%	25.7%	33.4%
Terminal *(d)*	8/38(21)	8/39(21)	6/30(20)
Statistical Tests *(e)*			
Life Table	P=0.257	P=0.491N	P=0.292
Incidental Tumor Test	P=0.506N	P=0.448N	P=0.524N
Cochran-Armitage Trend, Fisher Exact Test	P=0.431	P=0.522N	P=0.477

Table 10. ANALYSIS OF PRIMARY TUMORS IN MALE RATS *(a)* (Continued)

	Control	Low Dose	High Dose
Adrenal: Pheochromocytoma			
Tumor Rates			
Overall *(b)*	4/50(8)	10/50(20)	5/49(10)
Adjusted *(c)*	10.1%	24.3%	15.1%
Terminal *(d)*	3/38(8)	8/39(21)	4/31(13)
Statistical Tests *(e)*			
Life Table	P=0.296	P=0.082	P=0.376
Incidental Tumor Test	P=0.322	P=0.056	P=0.452
Cochran-Armitage Trend, Fisher Exact Test	P=0.425	P=0.074	P=0.487
Adrenal: All Pheochromocytoma			
Tumor Rates			
Overall *(b)*	5/50(10)	10/50(20)	5/49(10)
Adjusted *(c)*	12.2%	24.3%	15.1%
Terminal *(d)*	3/38(8)	8/39(21)	4/31(13)
Statistical Tests *(e)*			
Life Table	P=0.401	P=0.141	P=0.494
Incidental Tumor Test	P=0.423	P=0.090	P=0.562
Cochran-Armitage Trend, Fisher Exact Test	P=0.543	P=0.131	P=0.617
Thyroid: C-Cell Adenoma			
Tumor Rates			
Overall *(b)*	2/50(4)	9/49(18)	5/50(10)
Adjusted *(c)*	5.3%	22.3%	14.8%
Terminal *(d)*	2/38(5)	8/39(21)	3/31(10)
Statistical Tests *(e)*			
Life Table	P=0.124	P=0.030	P=0.148
Incidental Tumor Test	P=0.195	P=0.036	P=0.200
Cochran-Armitage Trend, Fisher Exact Test	P=0.210	P=0.023	P=0.218
Thyroid: C-Cell Carcinoma			
Tumor Rates			
Overall *(b)*	0/50(0)	4/49(8)	3/50(6)
Adjusted *(c)*	0.0%	9.9%	8.5%
Terminal *(d)*	0/38(0)	3/39(8)	2/31(6)
Statistical Tests *(e)*			
Life Table	P=0.081	P=0.065	P=0.099
Incidental Tumor Test	P=0.112	P=0.054	P=0.160
Cochran-Armitage Trend, Fisher Exact Test	P=0.119	P=0.056	P=0.121

Table 10. ANALYSIS OF PRIMARY TUMORS IN MALE RATS *(a)* (Continued)

	Control	Low Dose	High Dose
Thyroid: C-Cell Adenoma or Carcinoma			
Tumor Rates			
Overall *(b)*	2/50(4)	13/49(27)	8/50(16)
Adjusted *(c)*	5.3%	31.5%	22.6%
Terminal *(d)*	2/38(5)	11/39(28)	5/31(16)
Statistical Tests *(e)*			
Life Table	P=0.027	P=0.003	P=0.026
Incidental Tumor Test	P=0.056	P=0.003	P=0.053
Cochran-Armitage Trend, Fisher Exact Test	P=0.064	P=0.002	P=0.046
Thyroid: Follicular-Cell Adenoma, Carcinoma, or Cystadenoma			
Tumor Rates			
Overall *(b)*	3/50(6)	1/49(2)	1/50(2)
Adjusted *(c)*	7.9%	2.6%	3.2%
Terminal *(d)*	3/38(8)	1/39(3)	1/31(3)
Statistical Tests *(e)*			
Life Table	P=0.250N	P=0.296N	P=0.380N
Incidental Tumor Test	P=0.250N	P=0.296N	P=0.380N
Cochran-Armitage Trend, Fisher Exact Test	P=0.203N	P=0.316N	P=0.309N
Pancreatic Islets: Islet-Cell Adenoma			
Tumor Rates			
Overall *(b)*	2/50(4)	4/49(8)	2/50(4)
Adjusted *(c)*	5.3%	9.4%	5.5%
Terminal *(d)*	2/38(5)	2/39(5)	0/31(0)
Statistical Tests *(e)*			
Life Table	P=0.502	P=0.343	P=0.627
Incidental Tumor Test	P=0.526N	P=0.354	P=0.665N
Cochran-Armitage Trend, Fisher Exact Test	P=0.588	P=0.329	P=0.691
Pancreatic Islets: Islet-Cell Carcinoma			
Tumor Rates			
Overall *(b)*	3/50(6)	1/49(2)	0/50(0)
Adjusted *(c)*	7.3%	2.6%	0.0%
Terminal *(d)*	2/38(5)	1/39(3)	0/31(0)
Statistical Tests *(e)*			
Life Table	P=0.077N	P=0.300N	P=0.155N
Incidental Tumor Test	P=0.038N	P=0.256N	P=0.068N
Cochran-Armitage Trend, Fisher Exact Test	P=0.061N	P=0.316N	P=0.122N

Table 10. ANALYSIS OF PRIMARY TUMORS IN MALE RATS *(a)* (Continued)

	Control	Low Dose	High Dose
Pancreatic Islets: Islet-Cell Adenoma or Carcinoma			
Tumor Rates			
Overall *(b)*	5/50(10)	5/49(10)	2/50(4)
Adjusted *(c)*	12.4%	11.9%	5.5%
Terminal *(d)*	4/38(11)	3/39(8)	0/31(0)
Statistical Tests *(e)*			
Life Table	P=0.257N	P=0.619N	P=0.297N
Incidental Tumor Test	P=0.119N	P=0.580N	P=0.144N
Cochran-Armitage Trend, Fisher Exact Test	P=0.180N	P=0.617	P=0.218N
Testis: Interstitial-Cell Tumor			
Tumor Rates			
Overall *(b)*	34/50(68)	41/50(82)	34/50(68)
Adjusted *(c)*	79.0%	89.0%	91.8%
Terminal *(d)*	29/38(76)	34/39(87)	28/31(90)
Statistical Tests *(e)*			
Life Table	P=0.079	P=0.137	P=0.099
Incidental Tumor Test	P=0.279	P=0.102	P=0.219
Cochran-Armitage Trend, Fisher Exact Test	P=0.545	P=0.083	P=0.585

(a) Dosed groups received doses of 1,000 or 2,000 ppm of stannous chloride in the diet.

(b) Number of tumor-bearing animals/number of animals examined at the site (percent).

(c) Kaplan-Meier estimated lifetime tumor incidence after adjusting for intercurrent mortality.

(d) Observed tumor incidence in surviving animals killed at the end of the study.

(e) Beneath the control incidence are the P-values associated with the trend tests. Beneath the dosed group incidence are the P-values corresponding to pairwise comparisons between that dosed group and the controls. The life table analysis regards tumors in animals dying before the end of the study as being (directly or indirectly) the cause of death. The incidental tumor test regards these lesions as nonfatal. The Cochran-Armitage trend and Fisher's exact tests compare directly the overall incidence rates. A negative trend is indicated by (N).

Table 11. ANALYSIS OF PRIMARY TUMORS IN FEMALE RATS *(a)*

	Control	Low Dose	High Dose
Hematopoietic System: Undifferentiated Leukemia			
Tumor Rates			
Overall *(b)*	6/50(12)	3/50(6)	3/50(6)
Adjusted *(c)*	13.2%	6.6%	7.1%
Terminal *(d)*	3/42(7)	1/40(3)	1/38(3)
Statistical Tests *(e)*			
Life Table	P=0.213N	P=0.265N	P=0.288N
Incidental Tumor Test	P=0.073N	P=0.145N	P=0.110N
Cochran-Armitage Trend, Fisher Exact Test	P=0.178N	P=0.243N	P=0.243N
Hematopoietic System: Leukemia			
Tumor Rates			
Overall *(b)*	6/50(12)	3/50(6)	4/50(8)
Adjusted *(c)*	13.2%	6.6%	8.9%
Terminal *(d)*	3/42(7)	1/40(3)	1/38(3)
Statistical Tests *(e)*			
Life Table	P=0.337N	P=0.265N	P=0.417N
Incidental Tumor Test	P=0.250N	P=0.145N	P=0.312N
Cochran-Armitage Trend, Fisher Exact Test	P=0.297N	P=0.243N	P=0.370N
Hematopoietic System: Lymphoma or Leukemia			
Tumor Rates			
Overall *(b)*	6/50(12)	3/50(6)	5/50(10)
Adjusted *(c)*	13.2%	6.6%	11.1%
Terminal *(d)*	3/42(7)	1/40(3)	1/38(3)
Statistical Tests *(e)*			
Life Table	P=0.472N	P=0.265N	P=0.544N
Incidental Tumor Test	P=0.356N	P=0.145N	P=0.405N
Cochran-Armitage Trend, Fisher Exact Test	P=0.432N	P=0.243N	P=0.500N
Pituitary: Adenoma			
Tumor Rates			
Overall *(b)*	17/50(34)	10/50(20)	9/48(19)
Adjusted *(c)*	36.5%	22.9%	21.7%
Terminal *(d)*	13/42(31)	7/40(18)	5/36(14)
Statistical Tests *(e)*			
Life Table	P=0.093N	P=0.123N	P=0.127N
Incidental Tumor Test	P=0.099N	P=0.085N	P=0.173N
Cochran-Armitage Trend, Fisher Exact Test	P=0.049N	P=0.088N	P=0.069N

Table 11. ANALYSIS OF PRIMARY TUMORS IN FEMALE RATS *(a)* (Continued)

	Control	Low Dose	High Dose
Pituitary: Adenoma or Carcinoma			
Tumor Rates			
Overall *(b)*	17/50(34)	10/50(20)	10/48(21)
Adjusted *(c)*	36.5%	22.9%	24.2%
Terminal *(d)*	13/42(31)	7/40(18)	6/36(17)
Statistical Tests *(e)*			
Life Table	P=0.141N	P=0.123N	P=0.183N
Incidental Tumor Test	P=0.072N	P=0.085N	P=0.150N
Cochran-Armitage Trend, Fisher Exact Test	P=0.082N	P=0.088N	P=0.109N
Adrenal: Pheochromocytoma			
Tumor Rates			
Overall *(b)*	1/50(2)	4/50(8)	0/50(0)
Adjusted *(c)*	2.4%	9.2%	0.0%
Terminal *(d)*	1/42(2)	2/40(5)	0/38(0)
Statistical Tests *(e)*			
Life Table	P=0.416N	P=0.174	P=0.520N
Incidental Tumor Test	P=0.337N	P=0.229	P=0.520N
Cochran-Armitage Trend, Fisher Exact Test	P=0.390N	P=0.181	P=0.500N
Thyroid: C-Cell Adenoma			
Tumor Rates			
Overall *(b)*	6/50(12)	2/50(4)	2/50(4)
Adjusted *(c)*	14.3%	4.7%	5.3%
Terminal *(d)*	6/42(14)	1/40(3)	2/38(5)
Statistical Tests *(e)*			
Life Table	P=0.101N	P=0.150N	P=0.168N
Incidental Tumor Test	P=0.084N	P=0.141N	P=0.168N
Cochran-Armitage Trend, Fisher Exact Test	P=0.080N	P=0.135N	P=0.135N
Thyroid: C-Cell Carcinoma			
Tumor Rates			
Overall *(b)*	3/50(6)	3/50(6)	1/50(2)
Adjusted *(c)*	6.8%	7.5%	2.6%
Terminal *(d)*	2/42(5)	3/40(7)	1/38(3)
Statistical Tests *(e)*			
Life Table	P=0.270N	P=0.641	P=0.334N
Incidental Tumor Test	P=0.234N	P=0.660	P=0.272N
Cochran-Armitage Trend, Fisher Exact Test	P=0.238N	P=0.661	P=0.309N

Table 11. ANALYSIS OF PRIMARY TUMORS IN FEMALE RATS *(a)* (Continued)

	Control	Low Dose	High Dose
Thyroid: C-Cell Adenoma or Carcinoma			
Tumor Rates			
Overall *(b)*	8/50(16)	5/50(10)	3/50(6)
Adjusted *(c)*	18.5%	12.0%	7.9%
Terminal *(d)*	7/42(17)	4/40(10)	3/38(8)
Statistical Tests *(e)*			
Life Table	P=0.098N	P=0.307N	P=0.132N
Incidental Tumor Test	P=0.072N	P=0.281N	P=0.110N
Cochran-Armitage Trend, Fisher Exact Test	P=0.073N	P=0.277N	P=0.100N
Mammary Gland: Fibroadenoma			
Tumor Rates			
Overall *(b)*	16/50(32)	14/50(28)	12/50(24)
Adjusted *(c)*	37.1%	33.2%	28.1%
Terminal *(d)*	15/42(36)	12/40(30)	8/38(21)
Statistical Tests *(e)*			
Life Table	P=0.311N	P=0.472N	P=0.348N
Incidental Tumor Test	P=0.193N	P=0.441N	P=0.225N
Cochran-Armitage Trend, Fisher Exact Test	P=0.218N	P=0.414N	P=0.252N
Mammary Gland: Adenocarcinoma			
Tumor Rates			
Overall *(b)*	3/50(6)	1/50(2)	1/50(2)
Adjusted *(c)*	7.1%	2.5%	2.0%
Terminal *(d)*	3/42(7)	1/40(3)	0/38(0)
Statistical Tests *(e)*			
Life Table	P=0.223N	P=0.323N	P=0.332N
Incidental Tumor Test	P=0.202N	P=0.323N	P=0.297N
Cochran-Armitage Trend, Fisher Exact Test	P=0.202N	P=0.309N	P=0.309N
Uterus: Endometrial Stromal Polyp			
Tumor Rates			
Overall *(b)*	11/50(22)	12/50(24)	13/50(26)
Adjusted *(c)*	24.1%	29.3%	31.2%
Terminal *(d)*	8/42(19)	11/40(28)	10/38(26)
Statistical Tests *(e)*			
Life Table	P=0.280	P=0.453	P=0.328
Incidental Tumor Test	P=0.332	P=0.457	P=0.372
Cochran-Armitage Trend, Fisher Exact Test	P=0.363	P=0.500	P=0.408

Table 11. ANALYSIS OF PRIMARY TUMORS IN FEMALE RATS *(a)* (Continued)

	Control	Low Dose	High Dose
Uterus: Endometrial Stromal Polyp or Sarcoma			
Tumor Rates			
Overall *(b)*	11/50(22)	13/50(26)	13/50(26)
Adjusted *(c)*	24.1%	30.8%	31.2%
Terminal *(d)*	8/42(19)	11/40(28)	10/38(26)
Statistical Tests *(e)*			
Life Table	P=0.283	P=0.366	P=0.328
Incidental Tumor Test	P=0.343	P=0.397	P=0.372
Cochran-Armitage Trend, Fisher Exact Test	P=0.364	P=0.408	P=0.408

(a) Dosed groups received doses of 1,000 or 2,000 ppm of stannous chloride in the diet.

(b) Number of tumor-bearing animals/number of animals examined at the site (percent).

(c) Kaplan-Meier estimated lifetime tumor incidence after adjusting for intercurrent mortality.

(d) Observed tumor incidence in surviving animals killed at the end of the study.

(e) Beneath the control incidence are the P-values associated with the trend test. Beneath the dosed group incidence are the P-values corresponding to pairwise comparisons between that dosed group and the controls. The life table analysis regards tumors in animals dying before the end of the study as being (directly or indirectly) the cause of death. The incidental tumor test regards these lesions as nonfatal. The Cochran-Armitage trend and Fisher's exact tests compare directly the overall incidence rates. A negative trend is indicated by (N).

PRECHRONIC STUDIES

Single-Dose Study

Mice were observed for 16 days, and then survivors were killed. All mice receiving 2,400 mg/kg died early in the test period. Deaths occurred in 1/5 males and 1/5 females receiving 600 mg/kg and in 1/5 males receiving 1,200 mg/kg (Table 12).

Fourteen-Day Study

All animals survived to the end of the dosing period. Female mice receiving 15,000 and 30,000 ppm gained less weight than did mice receiving lower doses (Table 13). No other compound-associated effects were observed in mice at any dose level.

Thirteen-Week Study

No mice died. Mean body weight gain was depressed by more than 30% in mice receiving the highest dose (30,000 ppm) when compared with that of controls (Table 14). Gross distention of the cecum was observed in 60%-90% of the male mice receiving 3,800 ppm or more and in 30%-100% of the female mice at the same dose levels (Table 15), but no compound-related histopathologic effects were detected in the cecum or stomach or in any of the other tissues examined.

Doses selected for the chronic study were 1,000 or 2,000 ppm stannous chloride in feed.

Table 12. DOSAGE AND SURVIVAL OF MICE ADMINISTERED A SINGLE DOSE OF STANNOUS CHLORIDE BY GAVAGE

Dose (mg/kg)	Survival *(a)*	
	Male	Female
150	5/5	5/5
300	5/5	5/5
600	4/5 *(b)*	4/5 *(b)*
1,200	4/5 *(b)*	5/5
2,400	0/5 *(c)*	0/5 *(d)*

(a) Number surviving/number per group.
(b) Died on day 3.
(c) Four died on day 2 and one on day 3.
(d) All died on day 2.

Table 13. DOSAGE, SURVIVAL, AND MEAN BODY WEIGHTS OF MICE FED DIETS CONTAINING STANNOUS CHLORIDE FOR 14 DAYS

Dose (ppm)	Survival *(a)*	Mean Body Weight (grams) *(b)*		
		Initial	Final	Change
MALE				
1,900	5/5	20.0 ±0.45	21.6 ±0.81	+1.6 ±0.40
3,800	5/5	21.2 ±0.58	22.2 ±1.16	+1.0 ±0.63
7,500	5/5	20.4 ±0.40	22.0 ±0.55	+1.6 ±0.24
15,000	5/5	21.4 ±0.51	22.6 ±0.51	+1.2 ±0.37
30,000	5/5	20.4 ±0.68	21.4 ±0.87	+1.0 ±0.55
FEMALE				
1,900	5/5	17.4 ±0.40	19.2 ±0.37	+1.8 ±0.37
3,800	5/5	16.4 ±0.60	18.2 ±0.58	+1.8 ±0.37
7,500	5/5	16.2 ±0.58	17.6 ±0.75	+1.4 ±0.24
15,000	5/5	16.6 ±0.75	17.4 ±0.51	+0.8 ±0.86
30,000	5/5	15.8 ±0.49	16.4 ±0.68	+0.6 ±0.51

(a) Number surviving/number initially in the group.
(b) Mean weight change of the survivors of the group ± standard error of the mean.

Table 14. DOSAGE, SURVIVAL, MEAN BODY WEIGHTS, AND FEED CONSUMPTION OF MICE FED DIETS CONTAINING STANNOUS CHLORIDE FOR 13 WEEKS

Dose (ppm)	Survival *(a)*	Mean Body Weight (grams) *(b)*			Weight Change Relative to Controls *(c)* (percent)	Average Daily Feed Consumption (grams)
		Initial	Final	Change		
MALE						
0	10/10	22.9 ±0.57	33.2 ±0.73	10.3 ±0.52		6.9
1,900	10/10	24.2 ±0.49	33.3 ±0.65	9.1 ±0.38	−11.7	5.9
3,800	10/10	23.5 ±0.69	34.8 ±0.83	11.3 ±0.68	+ 9.7	6.5
7,500	10/10	22.9 ±0.62	32.6 ±0.58	9.7 ±0.78	− 5.8	6.8
15,000	10/10	22.0 ±0.83	30.6 ±0.79	8.6 ±0.60	−16.5	7.2
30,000	10/10	23.8 ±0.47	28.3 ±0.40	4.5 ±0.45	−56.3	7.5
FEMALE						
0	10/10	18.3 ±0.50	25.2 ±0.61	6.9 ±0.31		7.6
1,900	10/10	18.2 ±0.39	25.7 ±0.65	7.5 ±0.48	+ 8.7	7.3
3,800	10/10	18.5 ±0.45	25.2 ±0.51	6.7 ±0.33	− 2.9	6.9
7,500	10/10	17.6 ±0.50	25.2 ±0.49	7.6 ±0.69	+10.1	7.7
15,000	10/10	17.3 ±0.26	24.2 ±0.33	6.9 ±0.41	0.0	6.8
30,000	10/10	18.8 ±0.44	23.5 ±0.27	4.7 ±0.30	−31.9	6.7

(a) Number surviving/number initially in the group.

(b) Mean weight change of the survivors of the group ± standard error of the mean.

(c) Weight change of the dosed survivors relative to the survivors of the controls =

$$\frac{\text{Weight Change (Dosed Group)} - \text{Weight Change (Control Group)}}{\text{Weight Change (Control Group)}} \times 100$$

Table 15. INCIDENCE OF MICE WITH DISTENDED CECUM OBSERVED AT NECROPSY IN THE 13-WEEK STUDY OF STANNOUS CHLORIDE

Dose (ppm)	Males	Females
0	0/10	0/10
1,900	0/10	0/10
3,800	6/10	5/10
7,500	6/10	3/10
15,000	6/10	10/10
30,000	9/10	10/10 *(a)*

(a) Mucosal surface of the stomach reddened in 9/10.

CHRONIC STUDY

Body Weights and Clinical Signs

Throughout most of the bioassay, mean body weights of dosed and control male mice were comparable; the mean body weight of high-dose female mice was higher than that of the controls (Figure 3 and Appendix Table H2). The average daily feed consumption per mouse by low- and high-dose mice was 97% that of controls for males and 97% and 103% for females (Appendix I). No other compound-related clinical signs were observed.

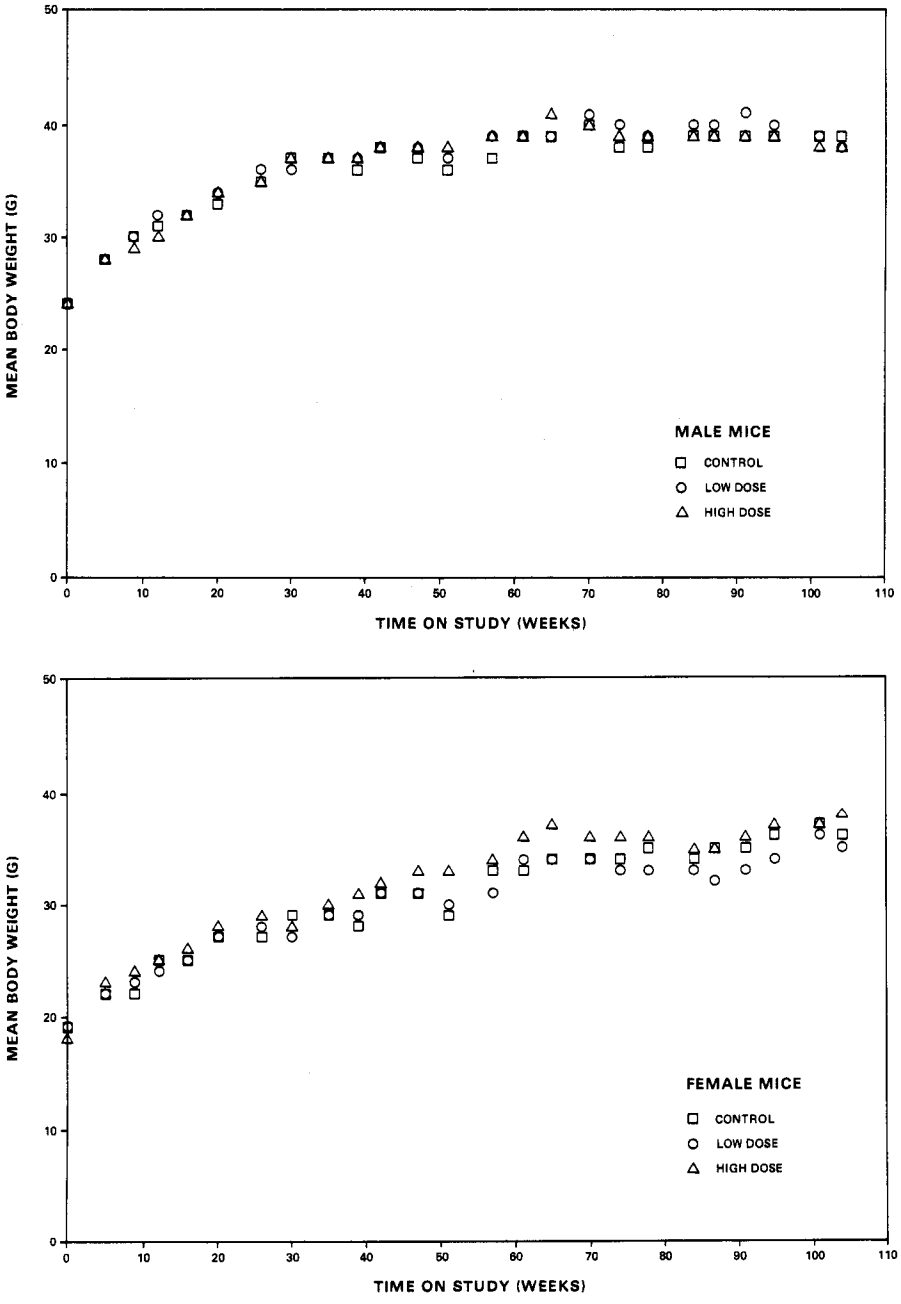


Figure 3. Growth Curves for Mice Fed Diets Containing Stannous Chloride

Survival

Estimates of the probabilities of survival of male and female mice fed diets containing stannous chloride at the concentrations of this bioassay, together with those of the control group, are shown by the Kaplan and Meier curves in Figure 4. Survival of the male mouse control group was significantly ($P < 0.05$) lower than that of either dosed group. No statistically significant differences in survival were observed between the male dosed groups or between any group of female mice; however, survival of female mice appeared to be dose related.

In male mice, 32/50 (64%) of the controls, 42/50 (84%) of the low-dose, and 45/50 (90%) of the high-dose group lived to the end of the study at 105-106 weeks. In female mice, 38/50 (76%) of the controls, 33/50 (66%) of the low-dose, and 28/50 (56%) of the high-dose group lived to the end of the study at 105-106 weeks.

One low-dose male, one control female, and one high-dose female died natural deaths during weeks 105-106; in the statistical analyses reported in tables 16 and 17, no distinctions were made between these animals and the animals killed during the terminal kill period.

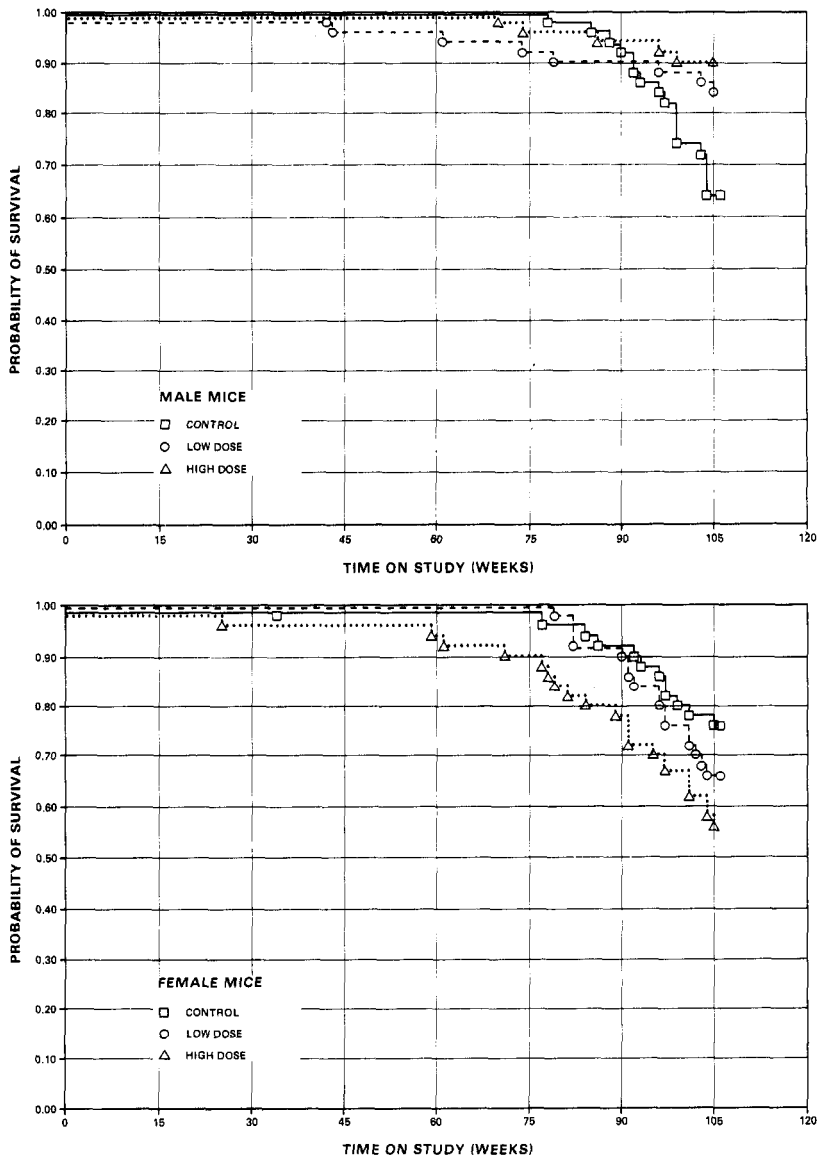


Figure 4. Survival Curves for Mice Fed Diets Containing Stannous Chloride

Pathology and Statistical Analyses of Results

Histopathologic findings on neoplasms occurring in mice are summarized in Appendix B, Tables B1 and B2. Appendix B1, Tables B3 and B4 give the survival and tumor status for each individual animal in the male and female mouse studies. Findings on nonneoplastic lesions are summarized in Appendix D, Tables D1 and D2.

Tables 16 and 17 contain the statistical analyses of those primary tumors that occurred with an incidence of at least 5% in one of the three groups.

Hematopoietic System: Trend tests indicate a significant increase in the incidence of histiocytic lymphomas in female mice ($P < 0.05$). The 4 of 49 animals bearing this tumor died before the end of the study. The combined incidence of lymphomas or leukemias (6/50, 10/49, 11/49) was not significantly elevated in dosed female mice when compared with controls.

Liver: Trend tests indicate a significant ($P < 0.05$) increase in the incidence of female mice with adenomas or carcinomas of the liver (control 3/49, 6%; low-dose, 4/49, 8%; high-dose, 8/49, 16%). No significant incidences of male mice with hepatocellular tumors were observed.

All tumors observed in dosed mice were similar histopathologically to the tumors seen in the controls and to those normally seen in aging B6C3F1/N mice.

Table 16. ANALYSIS OF PRIMARY TUMORS IN MALE MICE *(a)*

	Control	Low Dose	High Dose
Subcutaneous Tissue: Fibrosarcoma			
Tumor Rates			
Overall *(b)*	3/50(6)	0/49(0)	1/50(2)
Adjusted *(c)*	7.9%	0.0%	2.2%
Terminal *(d)*	0/32(0)	0/43(0)	1/45(2)
Statistical Tests *(e)*			
Life Table	P=0.132N	P=0.099N	P=0.232N
Incidental Tumor Test	P=0.577N	P=0.551N	P=0.744N
Cochran-Armitage Trend, Fisher Exact Test	P=0.177N	P=0.125N	P=0.309N
Skin or Subcutaneous Tissue: Fibrosarcoma			
Tumor Rates			
Overall *(b)*	4/50(8)	1/49(2)	2/50(4)
Adjusted *(c)*	10.7%	2.3%	4.4%
Terminal *(d)*	1/32(3)	1/43(2)	2/45(4)
Statistical Tests *(e)*			
Life Table	P=0.157N	P=0.129N	P=0.229N
Incidental Tumor Test	P=0.488N	P=0.467N	P=0.624N
Cochran-Armitage Trend, Fisher Exact Test	P=0.240N	P=0.187N	P=0.339N
Skin or Subcutaneous Tissue: All Sarcomas			
Tumor Rates			
Overall *(b)*	7/50(14)	1/49(2)	5/50(10)
Adjusted *(c)*	17.9%	2.3%	10.6%
Terminal *(d)*	2/32(6)	1/43(2)	3/45(7)
Statistical Tests *(e)*			
Life Table	P=0.196N	P=0.020N	P=0.248N
Incidental Tumor Test	P=0.317	P=0.191N	P=0.337
Cochran-Armitage Trend, Fisher Exact Test	P=0.298N	P=0.032N	P=0.380N
Lung: Alveolar/Bronchiolar Adenoma			
Tumor Rates			
Overall *(b)*	7/50(14)	8/48(17)	8/49(16)
Adjusted *(c)*	20.7%	18.6%	18.2%
Terminal *(d)*	6/32(19)	8/43(19)	8/44(18)
Statistical Tests *(e)*			
Life Table	P=0.415N	P=0.490N	P=0.471N
Incidental Tumor Test	P=0.494N	P=0.592N	P=0.558N
Cochran-Armitage Trend, Fisher Exact Test	P=0.428	P=0.465	P=0.483

Table 16. ANALYSIS OF PRIMARY TUMORS IN MALE MICE *(a)* (Continued)

	Control	Low Dose	High Dose
Lung: Alveolar/Bronchiolar Carcinoma			
Tumor Rates			
Overall *(b)*	3/50(6)	2/48(4)	2/49(4)
Adjusted *(c)*	9.4%	4.7%	4.5%
Terminal *(d)*	3/32(9)	2/43(5)	2/44(5)
Statistical Tests *(e)*			
Life Table	P=0.278N	P=0.366N	P=0.356N
Incidental Tumor Test	P=0.278N	P=0.366N	P=0.356N
Cochran-Armitage Trend, Fisher Exact Test	P=0.416N	P=0.520N	P=0.510N
Lung: Alveolar/Bronchiolar Adenoma or Carcinoma			
Tumor Rates			
Overall *(b)*	10/50(20)	10/48(21)	10/49(20)
Adjusted *(c)*	29.9%	23.3%	22.7%
Terminal *(d)*	9/32(28)	10/43(23)	10/44(23)
Statistical Tests *(e)*			
Life Table	P=0.260N	P=0.319N	P=0.299N
Incidental Tumor Test	P=0.321N	P=0.402N	P=0.368N
Cochran-Armitage Trend, Fisher Exact Test	P=0.529	P=0.558	P=0.579
Hematopoietic System: Malignant Lymphoma, Mixed Type			
Tumor Rates			
Overall *(b)*	5/50(10)	3/49(6)	2/50(4)
Adjusted *(c)*	14.3%	7.0%	4.4%
Terminal *(d)*	3/32(9)	3/43(7)	2/45(4)
Statistical Tests *(e)*			
Life Table	P=0.077N	P=0.226N	P=0.117N
Incidental Tumor Test	P=0.187N	P=0.429N	P=0.273N
Cochran-Armitage Trend, Fisher Exact Test	P=0.159N	P=0.369N	P=0.218N
Hematopoietic System: Lymphoma, All Malignant			
Tumor Rates			
Overall *(b)*	7/50(14)	5/49(10)	4/50(8)
Adjusted *(c)*	19.0%	11.3%	8.9%
Terminal *(d)*	4/32(13)	4/43(9)	4/45(9)
Statistical Tests *(e)*			
Life Table	P=0.099N	P=0.239N	P=0.130N
Incidental Tumor Test	P=0.323N	P=0.584N	P=0.333N
Cochran-Armitage Trend, Fisher Exact Test	P=0.210N	P=0.394N	P=0.262N

Table 16. ANALYSIS OF PRIMARY TUMORS IN MALE MICE *(a)* (Continued)

	Control	Low Dose	High Dose
Circulatory System: Hemangiosarcoma			
Tumor Rates			
Overall *(b)*	3/50(6)	5/49(10)	2/50(4)
Adjusted *(c)*	8.1%	11.2%	4.4%
Terminal *(d)*	1/32(3)	4/43(9)	2/45(4)
Statistical Tests *(e)*			
Life Table	P=0.293N	P=0.473	P=0.381N
Incidental Tumor Test	P=0.465N	P=0.295	P=0.683N
Cochran-Armitage Trend, Fisher Exact Test	P=0.421N	P=0.346	P=0.500N
Liver: Adenoma			
Tumor Rates			
Overall *(b)*	7/50(12)	5/49(10)	5/50(10)
Adjusted *(c)*	20.5%	11.6%	11.1%
Terminal *(d)*	6/32(19)	5/43(12)	5/45(11)
Statistical Tests *(e)*			
Life Table	P=0.146N	P=0.209N	P=0.186N
Incidental Tumor Test	P=0.192N	P=0.268N	P=0.242N
Cochran-Armitage Trend, Fisher Exact Test	P=0.319N	P=0.394N	P=0.380N
Liver: Carcinoma			
Tumor Rates			
Overall *(b)*	10/50(20)	5/49(10)	10/50(20)
Adjusted *(c)*	23.3%	10.9%	22.2%
Terminal *(d)*	3/32(9)	3/43(7)	10/45(22)
Statistical Tests *(e)*			
Life Table	P=0.359N	P=0.097N	P=0.364N
Incidental Tumor Test	P=0.246	P=0.547N	P=0.319
Cochran-Armitage Trend, Fisher Exact Test	P=0.553	P=0.140N	P=0.599
Liver: Adenoma or Carcinoma			
Tumor Rates			
Overall *(b)*	16/50(32)	10/49(20)	15/50(30)
Adjusted *(c)*	37.9%	22.1%	33.3%
Terminal *(d)*	8/32(25)	8/43(19)	15/45(33)
Statistical Tests *(e)*			
Life Table	P=0.191N	P=0.059N	P=0.197N
Incidental Tumor Test	P=0.467	P=0.359N	P=0.529
Cochran-Armitage Trend, Fisher Exact Test	P=0.455N	P=0.140N	P=0.500N

Table 16. ANALYSIS OF PRIMARY TUMORS IN MALE MICE *(a)* (Continued)

	Control	Low Dose	High Dose
Harderian Gland: Papillary Cystadenoma			
Tumor Rates			
Overall *(b)*	0/50(0)	3/49(6)	2/50(4)
Adjusted *(c)*	0.0%	7.0%	4.4%
Terminal *(d)*	0/32(0)	3/43(7)	2/45(4)
Statistical Tests *(e)*			
Life Table	P=0.291	P=0.178	P=0.316
Incidental Tumor Test	P=0.291	P=0.178	P=0.316
Cochran-Armitage Trend, Fisher Exact Test	P=0.202	P=0.117	P=0.247

(a) Dosed groups received doses of 1,000 or 2,000 ppm of stannous chloride in the diet.

(b) Number of tumor-bearing animals/number of animals examined at the site (percent).

(c) Kaplan-Meier estimated lifetime tumor incidence after adjusting for intercurrent mortality.

(d) Observed tumor incidence in surviving animals killed at the end of the study.

(e) Beneath the control incidence are the P-values associated with the trend test. Beneath the dosed group incidence are the P-values corresponding to pairwise comparisons between that dosed group and the controls. The life table analysis regards tumors in animals dying before the end of the study as being (directly or indirectly) the cause of death. The incidental tumor test regards these lesions as nonfatal. The Cochran-Armitage trend and Fisher's exact tests compare directly the overall incidence rates. A negative trend is indicated by (N).

Table 17. ANALYSIS OF PRIMARY TUMORS IN FEMALE MICE *(a)*

	Control	Low Dose	High Dose
Lung: Alveolar/Bronchiolar Adenoma			
Tumor Rates			
Overall *(b)*	4/49(8)	1/48(2)	1/46(2)
Adjusted *(c)*	9.6%	3.1%	3.7%
Terminal *(d)*	3/39(8)	1/32(3)	1/27(4)
Statistical Tests *(e)*			
Life Table	P=0.174N	P=0.235N	P=0.291N
Incidental Tumor Test	P=0.135N	P=0.176N	P=0.216N
Cochran-Armitage Trend, Fisher Exact Test	P=0.112N	P=0.187N	P=0.201N
Lung: Alveolar/Bronchiolar Adenoma or Carcinoma			
Tumor Rates			
Overall *(b)*	4/49(8)	1/48(2)	3/46(7)
Adjusted *(c)*	9.7%	3.1%	9.9%
Terminal *(d)*	3/39(8)	1/32(3)	2/27(7)
Statistical Tests *(e)*			
Life Table	P=0.563N	P=0.236N	P=0.638
Incidental Tumor Test	P=0.457N	P=0.176N	P=0.518N
Cochran-Armitage Trend, Fisher Exact Test	P=0.441N	P=0.187N	P=0.536N
Hematopoietic System: Malignant Lymphoma, Lymphocytic Type			
Tumor Rates			
Overall *(b)*	2/50(4)	6/49(12)	2/49(4)
Adjusted *(c)*	5.1%	18.2%	6.2%
Terminal *(d)*	2/39(5)	6/33(18)	1/29(3)
Statistical Tests *(e)*			
Life Table	P=0.427	P=0.085	P=0.592
Incidental Tumor Test	P=0.444	P=0.085	P=0.627
Cochran-Armitage Trend, Fisher Exact Test	P=0.569	P=0.128	P=0.684
Hematopoietic System: Malignant Lymphoma, Histiocytic Type			
Tumor Rates			
Overall *(b)*	0/50(0)	0/49(0)	4/49(8)
Adjusted *(c)*	0.0%	0.0%	10.5%
Terminal *(d)*	0/39(0)	0/33(0)	0/29(0)
Statistical Tests *(e)*			
Life Table	P=0.011	P=1.000	P=0.049
Incidental Tumor Test	P=0.046	P=1.000	P=0.161
Cochran-Armitage Trend, Fisher Exact Test	P=0.014	P=1.000	P=0.056

Table 17. ANALYSIS OF PRIMARY TUMORS IN FEMALE MICE *(a)* (Continued)

	Control	Low Dose	High Dose
Hematopoietic System: Lymphoma, All Malignant			
Tumor Rates			
Overall *(b)*	5/50(10)	8/49(16)	9/49(18)
Adjusted *(c)*	12.3%	23.5%	23.8%
Terminal *(d)*	4/39(10)	7/33(21)	3/29(10)
Statistical Tests *(e)*			
Life Table	P=0.072	P=0.186	P=0.103
Incidental Tumor Test	P=0.185	P=0.226	P=0.274
Cochran-Armitage Trend, Fisher Exact Test	P=0.151	P=0.264	P=0.183
Hematopoietic System: Lymphoma or Leukemia			
Tumor Rates			
Overall *(b)*	6/50(12)	10/49(20)	11/49(22)
Adjusted *(c)*	14.3%	26.8%	27.8%
Terminal *(d)*	4/39(10)	7/33(21)	3/29(10)
Statistical Tests *(e)*			
Life Table	P=0.052	P=0.142	P=0.072
Incidental Tumor Test	P=0.201	P=0.245	P=0.274
Cochran-Armitage Trend, Fisher Exact Test	P=0.112	P=0.194	P=0.133
Circulatory System: Hemangiosarcoma			
Tumor Rates			
Overall *(b)*	4/50(8)	1/49(2)	1/49(2)
Adjusted *(c)*	9.4%	2.9%	3.4%
Terminal *(d)*	2/39(5)	0/33(0)	1/29(3)
Statistical Tests *(e)*			
Life Table	P=0.156N	P=0.221N	P=0.266N
Incidental Tumor Test	P=0.091N	P=0.109N	P=0.174N
Cochran-Armitage Trend, Fisher Exact Test	P=0.105N	P=0.187N	P=0.187N
Liver: Adenoma			
Tumor Rates			
Overall *(b)*	3/49(6)	1/49(2)	5/49(10)
Adjusted *(c)*	7.7%	3.0%	16.4%
Terminal *(d)*	3/39(8)	1/33(3)	4/29(14)
Statistical Tests *(e)*			
Life Table	P=0.160	P=0.366N	P=0.215
Incidental Tumor Test	P=0.174	P=0.366N	P=0.244
Cochran-Armitage Trend, Fisher Exact Test	P=0.264	P=0.309N	P=0.357

Table 17. ANALYSIS OF PRIMARY TUMORS IN FEMALE MICE *(a)* (Continued)

	Control	Low Dose	High Dose
Liver: Carcinoma			
Tumor Rates			
Overall *(b)*	0/49(0)	3/49(6)	3/49(6)
Adjusted *(c)*	0.0%	8.0%	9.9%
Terminal *(d)*	0/39(0)	2/33(6)	2/29(7)
Statistical Tests *(e)*			
Life Table	P=0.063	P=0.105	P=0.079
Incidental Tumor Test	P=0.090	P=0.146	P=0.106
Cochran-Armitage Trend, Fisher Exact Test	P=0.101	P=0.121	P=0.121
Liver: Adenoma or Carcinoma			
Tumor Rates			
Overall *(b)*	3/49(6)	4/49(8)	8/49(16)
Adjusted *(c)*	7.7%	11.0%	25.6%
Terminal *(d)*	3/39(8)	3/33(9)	6/29(21)
Statistical Tests *(e)*			
Life Table	P=0.026	P=0.424	P=0.038
Incidental Tumor Test	P=0.037	P=0.484	P=0.053
Cochran-Armitage Trend, Fisher Exact Test	P=0.067	P=0.500	P=0.100
Pituitary: Adenoma			
Tumor Rates			
Overall *(b)*	0/43(0)	4/41(10)	2/41(5)
Adjusted *(c)*	0.0%	12.2%	8.3%
Terminal *(d)*	0/36(0)	3/30(10)	2/24(8)
Statistical Tests *(e)*			
Life Table	P=0.123	P=0.048	P=0.154
Incidental Tumor Test	P=0.145	P=0.065	P=0.154
Cochran-Armitage Trend, Fisher Exact Test	P=0.208	P=0.052	P=0.235
Harderian Gland: Adenoma			
Tumor Rates			
Overall *(b)*	3/48(6)	7/46(15)	5/46(11)
Adjusted *(c)*	7.9%	20.5%	17.8%
Terminal *(d)*	3/38(8)	5/31(16)	4/27(15)
Statistical Tests *(e)*			
Life Table	P=0.150	P=0.099	P=0.193
Incidental Tumor Test	P=0.190	P=0.130	P=0.225
Cochran-Armitage Trend, Fisher Exact Test	P=0.284	P=0.141	P=0.333

Table 17. ANALYSIS OF PRIMARY TUMORS IN FEMALE MICE *(a)* (Continued)

	Control	Low Dose	High Dose
Harderian Gland: Adenoma or Carcinoma			
Tumor Rates			
Overall *(b)*	3/48(6)	8/46(17)	5/46(11)
Adjusted *(c)*	7.9%	22.8%	17.8%
Terminal *(d)*	3/38(8)	5/31(16)	4/27(15)
Statistical Tests *(e)*			
Life Table	P=0.152	P=0.060	P=0.193
Incidental Tumor Test	P=0.205	P=0.090	P=0.225
Cochran-Armitage Trend, Fisher Exact Test	P=0.288	P=0.086	P=0.333

(a) Dosed groups received doses of 1,000 or 2,000 ppm of stannous chloride in the diet.

(b) Number of tumor-bearing animals/number of animals examined at the site (percent).

(c) Kaplan-Meier estimated lifetime tumor incidence after adjusting for intercurrent mortality.

(d) Observed tumor incidence in surviving animals killed at the end of the study.

(e) Beneath the control incidence are the P-values associated with the trend test. Beneath the dosed group incidence are the P-values corresponding to pairwise comparisons between that dosed group and the controls. The life table analysis regards tumors in animals dying before the end of the study as being (directly or indirectly) the cause of death. The incidental tumor test regards these lesions as nonfatal. The Cochran-Armitage trend and Fisher's exact tests compare directly the overall incidence rates. A negative trend is indicated by (N).

IV. DISCUSSION AND CONCLUSIONS

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A carcinogenesis bioassay of stannous chloride was conducted in F344/N rats and B6C3F1/N mice. The doses selected for the 2-year chronic study were 1,000 and 2,000 ppm stannous chloride because higher doses (3,800 ppm or more) in the 13-week study caused distention of the cecum in rats and mice and reddened gastric mucosa in rats. Mean body weight gain and feed consumption of dosed and control rats and mice were comparable in the chronic study. Survival of high-dose male rats was somewhat lower than that of the control and low-dose groups (37/50, control; 39/50, low-dose; 30/50, high-dose). Survival of control male mice was less ($P < 0.05$) than that of either dosed group (32/50, 42/50, 45/50); survival of the female mice appeared to be dose related (38/50, 33/50, 28/50).

C-cell adenomas were significantly ($P < 0.05$) increased in low-dose male rats. C-cell carcinomas of the thyroid in male rats did not occur at a significant incidence; however, C-cell adenomas or carcinomas (combined) occurred in male rats with a significant positive trend ($P = 0.027$ for the life table test), and the incidence in either dosed group was significantly ($P < 0.01$, low-dose; $P \leq 0.05$, high-dose) higher than that seen in the controls (control, 2/50, 4%; low-dose, 13/49, 27%; high-dose, 8/50, 16%). The incidence of C-cell carcinomas or the combined incidence of C-cell adenomas and carcinomas in previous control groups of male F344/N rats from this laboratory has been as high as 7% and 20%, respectively (historical incidence at this laboratory: C-cell adenomas, 24/288, 8.3%; C-cell carcinomas, 8/288, 2.8%; C-cell adenomas or carcinomas, 32/288, 11.1%). If the historical control rate is used as a basis of comparison, the low-dose effect remains significant ($P < 0.01$), but the high-dose does not. Since the incidences of these tumors in high-dose male rats were not significantly different from the historical control rate at this laboratory and since the incidence of C-cell hyperplasia in male rats (control, 1/50, 2%; low-dose, 1/49, 2%; high-dose, 2/50, 4%) was similar in dosed groups and controls, the increased incidence of thyroid tumors in dosed male rats is not considered to be clearly related to administration of stannous chloride.

Adenomas of the lung in male rats occurred with a significant ($P < 0.05$) positive trend, but the increased incidence in the high-dose group was not significant in a direct comparison with the control group (controls, 0/50, 0%; low-dose, 0/50, 0%; high-dose, 3/50, 6%). The historical incidence of control F344/N male rats with adenomas of the lung at this laboratory is 2.1% (6/289) with a range of 0%-6%. The incidence of male rats with either adenomas or carcinomas (combined) in the lung was not statistically significant.

Retinal degeneration, found in increased incidence in high-dose male rats and in low-dose female rats, has previously been found at this laboratory to be related to proximity to the fluorescent light.

The incidence of female mice with either hepatocellular adenomas or carcinomas exhibited a significant ($P < 0.05$) dose-related trend (controls, 3/49, 6%; low-dose, 4/49, 8%; high-dose, 8/49, 16%). However, the incidence observed in the high-dose group falls within the historical range for female control B6C3F1/N mice at the laboratory (4%-18%; mean, 24/297, 8%), and is not statistically significant relative to the historical control rate; thus the increase is not considered to be related to administration of stannous chloride.

Histiocytic lymphomas in female mice occurred with a significant positive trend ($P < 0.05$). However, the incidence of histiocytic lymphomas in the female controls (0/50, 0%) is lower than the historical incidence for mice of the same sex and strain at this laboratory (9/298, 3.0%; range, 0%-6%). Furthermore, the incidence of all lymphomas or leukemias was not significantly elevated in groups of dosed female mice (control, 6/50, 12%; low-dose, 10/49, 20%; high-dose, 11/49, 22%). The incidence of lymphomas or leukemias in the dosed groups was similar to the historical incidence for control female B6C3F1/N mice at this laboratory (67/298, 22%).

In summary, although certain tumors observed in the present study occurred at increased incidences in the dosed groups, the historical data from the laboratory suggests these differences could be attributed to normal variations in tumor incidence and could not be unequivocally attributed to administration of stannous chloride. Nonetheless, the increases seen for C-cell tumors in male rats may have been associated with the dietary administration of stannous chloride. In other 2-year studies using Long-Evans rats and Charles River Swiss mice (see Table 1), investigators concluded that stannous chloride was not a carcinogen (Kanisawa and Schroeder, 1967; Schroeder *et al.*, 1968). These two studies were considered inadequate to evaluate the carcinogenicity of stannous

chloride because the doses used were low (0.28 ppm in the diet or 5 ppm in the water) and because histopathological examination was done on a select limited number of tissues.

The absorption of stannous chloride by rats and mice has been demonstrated in the current study (Table 2) and by several previous investigators (Flinn and Inouye, 1928; Kehoe *et al.*, 1940; Schroeder and Balassa, 1967; Schroeder *et al.*, 1968; Yamaguchi *et al.*, 1977; Yamaguchi *et al.*, 1980). The amount retained in various tissues is dependent on the species and dose used (Table 2). For example, F344/N rats in the present study had concentrations of tin in the kidneys that were 28 to 68 times greater than those found in the kidneys of B6C3F1/N mice administered the same doses (Table 2), but both species accumulated equivalent concentrations of tin in the bone and liver.

It is known that ingestion of stannous chloride in humans and rats results in approximately 99% excretion in the feces (Flinn and Inouye, 1928; Fritsch *et al.*, 1977); the extremely low accumulation of tin in the bone, kidney, and liver of animals in the present study is in agreement. Utilization of stannous chloride as a food preservative or exposure to tin leached from canned foods would presumably result in equally low absorption by humans. For example, bone, kidney, and liver from adult males contained only tenths of a μg tin/g tissue (Kehoe *et al.*, 1940).

Conclusions: Under the conditions of this bioassay, stannous chloride was judged not to be carcinogenic for male or female F344/N rats or B6C3F1/N mice, although C-cell tumors of the thyroid gland in male rats may have been associated with the administration of the test chemical.

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APPENDIX A

SUMMARY OF THE INCIDENCE OF NEOPLASMS IN RATS FED DIETS CONTAINING STANNOUS CHLORIDE

TABLE A1.

SUMMARY OF THE INCIDENCE OF NEOPLASMS IN MALE RATS FED DIETS CONTAINING STANNOUS CHLORIDE

	CONTROL	LOW DOSE	HIGH DOSE
ANIMALS INITIALLY IN STUDY	50	50	50
ANIMALS NECROPSIED	50	50	50
ANIMALS EXAMINED HISTOPATHOLOGICALLY	50	50	50
INTEGUMENTARY SYSTEM			
*SKIN	(50)	(50)	(50)
SEBACEOUS ADENOCARCINOMA		1 (2%)	
KERATOACANTHOMA		2 (4%)	2 (4%)
*SUBCUT TISSUE	(50)	(50)	(50)
SQUAMOUS CELL CARCINOMA	1 (2%)		
FIBROMA	1 (2%)	1 (2%)	
FIBROSARCOMA	1 (2%)		
LIPOMA	1 (2%)		1 (2%)
OSTEOSARCOMA			1 (2%)
RESPIRATORY SYSTEM			
#LUNG	(50)	(50)	(50)
NEOPLASM, NOS, METASTATIC		1 (2%)	
SQUAMOUS CELL CARCINOMA			1 (2%)
ALVEOLAR/BRONCHIOLAR ADENOMA			3 (6%)
ALVEOLAR/BRONCHIOLAR CARCINOMA	3 (6%)	1 (2%)	
OSTEOSARCOMA, METASTATIC			1 (2%)
HEMATOPOIETIC SYSTEM			
*MULTIPLE ORGANS	(50)	(50)	(50)
MALIG.LYMPHOMA, HISTIOCYTIC TYPE			2 (4%)
UNDIFFERENTIATED LEUKEMIA	6 (12%)	9 (18%)	7 (14%)
LYMPHOCYTIC LEUKEMIA		1 (2%)	
#SPLEEN	(50)	(50)	(50)
MALIG.LYMPHOMA, HISTIOCYTIC TYPE		1 (2%)	
#MANDIBULAR L. NODE	(50)	(49)	(50)
NEURILEMOMA, METASTATIC	1 (2%)		

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

TABLE A1. MALE RATS: NEOPLASMS (CONTINUED)

	CONTROL	LOW DOSE	HIGH DOSE
CIRCULATORY SYSTEM			
#SPLEEN	(50)	(50)	(50)
HEMANGIOSARCOMA			1 (2%)
#KIDNEY	(50)	(50)	(49)
HEMANGIOSARCOMA, METASTATIC			1 (2%)
DIGESTIVE SYSTEM			
#SALIVARY GLAND	(50)	(48)	(50)
ADENOCARCINOMA, NOS			1 (2%)
NEURILEMOMA, MALIGNANT	1 (2%)		
#LIVER	(50)	(50)	(50)
NEOPLASTIC NODULE	2 (4%)		1 (2%)
#JEJUNUM	(49)	(47)	(50)
MUCINOUS ADENOCARCINOMA			1 (2%)
*RECTUM	(50)	(50)	(50)
NEURILEMOMA, MALIGNANT	1 (2%)		
URINARY SYSTEM			
#KIDNEY	(50)	(50)	(49)
SARCOMA, NOS			1 (2%)
#KIDNEY/CORTEX	(50)	(50)	(49)
CARCINOMA,NOS	1 (2%)		
#URINARY BLADDER	(49)	(49)	(49)
TRANSITIONAL-CELL PAPILLOMA		1 (2%)	
TRANSITIONAL-CELL CARCINOMA		1 (2%)	
ENDOCRINE SYSTEM			
#PITUITARY	(50)	(49)	(49)
CARCINOMA,NOS	1 (2%)	1 (2%)	1 (2%)
ADENOMA, NOS	11 (22%)	10 (20%)	12 (24%)
#ADRENAL	(50)	(50)	(49)
PHEOCHROMOCYTOMA	4 (8%)	10 (20%)	5 (10%)

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

TABLE A1. MALE RATS: NEOPLASMS (CONTINUED)

	CONTROL	LOW DOSE	HIGH DOSE
PHEOCHROMOCYTOMA, MALIGNANT	1 (2%)		
#THYROID	(50)	(49)	(50)
FOLLICULAR-CELL ADENOMA	1 (2%)		1 (2%)
FOLLICULAR-CELL CARCINOMA	1 (2%)	1 (2%)	
C-CELL ADENOMA	2 (4%)	9 (18%)	5 (10%)
C-CELL CARCINOMA		4 (8%)	3 (6%)
#THYROID FOLLICLE	(50)	(49)	(50)
CYSTADENOMA, NOS	1 (2%)		
#PANCREATIC ISLETS	(50)	(49)	(50)
ISLET-CELL ADENOMA	2 (4%)	4 (8%)	2 (4%)
ISLET-CELL CARCINOMA	3 (6%)	1 (2%)	
REPRODUCTIVE SYSTEM			
*MAMMARY GLAND	(50)	(50)	(50)
FIBROADENOMA	1 (2%)		
*PREPUTIAL GLAND	(50)	(50)	(50)
CARCINOMA,NOS		1 (2%)	
#PROSTATE	(50)	(50)	(50)
ADENOMA, NOS	1 (2%)		
#TESTIS	(50)	(50)	(50)
INTERSTITIAL-CELL TUMOR	34 (68%)	41 (82%)	34 (68%)
NERVOUS SYSTEM			
#BRAIN	(50)	(50)	(50)
CARCINOMA, NOS, INVASIVE			1 (2%)
GLIOMA, NOS	1 (2%)		
SPECIAL SENSE ORGANS			
*EAR	(50)	(50)	(50)
SQUAMOUS CELL PAPILLOMA	1 (2%)		1 (2%)
*ZYMBAL'S GLAND	(50)	(50)	(50)
CARCINOMA,NOS			1 (2%)

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

TABLE A1. MALE RATS: NEOPLASMS (CONTINUED)

	CONTROL	LOW DOSE	HIGH DOSE
SEBACEOUS ADENOCARCINOMA		2 (4%)	
MUSCULOSKELETAL SYSTEM			
*SKULL	(50)	(50)	(50)
OSTEOSARCOMA		1 (2%)	
*LUMBAR VERTEBRA	(50)	(50)	(50)
OSTEOSARCOMA			1 (2%)
*FEMUR	(50)	(50)	(50)
OSTEOSARCOMA			1 (2%)
BODY CAVITIES			
*MESENTERY	(50)	(50)	(50)
SARCOMA, NOS	1 (2%)		
*TUNICA VAGINALIS	(50)	(50)	(50)
MESOTHELIOMA, NOS	1 (2%)		1 (2%)
ALL OTHER SYSTEMS			
*MULTIPLE ORGANS	(50)	(50)	(50)
NEOPLASM, NOS, MALIGNANT		1 (2%)	
ALVEOLAR/BRONCHIOLAR CA, METASTA		1 (2%)	
MUCINOUS ADENOCARCINOMA, METASTA			1 (2%)
PHEOCHROMOCYTOMA, METASTATIC	1 (2%)		
SARCOMA, NOS	1 (2%)		1 (2%)
MESOTHELIOMA, NOS			1 (2%)
ORBITAL REGION			
FIBROSARCOMA	1		
TAIL			
SQUAMOUS CELL PAPILLOMA		1	1

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

TABLE A1. MALE RATS: NEOPLASMS (CONTINUED)

	CONTROL	LOW DOSE	HIGH DOSE
ANIMAL DISPOSITION SUMMARY			
ANIMALS INITIALLY IN STUDY	50	50	50
NATURAL DEATH@	6	5	4
MORIBUND SACRIFICE	7	6	16
SCHEDULED SACRIFICE			
ACCIDENTALLY KILLED			
TERMINAL SACRIFICE	37	39	30
ANIMAL MISSING			
TUMOR SUMMARY			
TOTAL ANIMALS WITH PRIMARY TUMORS*	46	50	48
TOTAL PRIMARY TUMORS	87	105	93
TOTAL ANIMALS WITH BENIGN TUMORS	42	49	46
TOTAL BENIGN TUMORS	60	79	67
TOTAL ANIMALS WITH MALIGNANT TUMORS	20	21	20
TOTAL MALIGNANT TUMORS	24	26	23
TOTAL ANIMALS WITH SECONDARY TUMORS#	2	2	4
TOTAL SECONDARY TUMORS	2	2	4
TOTAL ANIMALS WITH TUMORS UNCERTAIN-BENIGN OR MALIGNANT	3		3
TOTAL UNCERTAIN TUMORS	3		3
TOTAL ANIMALS WITH TUMORS UNCERTAIN-PRIMARY OR METASTATIC			
TOTAL UNCERTAIN TUMORS			

@ INCLUDES AUTOLYZED ANIMALS

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

TABLE A2.

SUMMARY OF THE INCIDENCE OF NEOPLASMS IN FEMALE RATS FED DIETS CONTAINING STANNOUS CHLORIDE

	CONTROL	LOW DOSE	HIGH DOSE
ANIMALS INITIALLY IN STUDY	50	50	50
ANIMALS NECROPSIED	50	50	50
ANIMALS EXAMINED HISTOPATHOLOGICALLY	50	50	50
INTEGUMENTARY SYSTEM			
*MULTIPLE ORGANS	(50)	(50)	(50)
FIBROUS HISTIOCYTOMA, MALIGNANT		1 (2%)	
*SUBCUT TISSUE	(50)	(50)	(50)
NEOPLASM, NOS	1 (2%)		
SARCOMA, NOS		2 (4%)	
RESPIRATORY SYSTEM			
#LUNG	(50)	(50)	(50)
ALVEOLAR/BRONCHIOLAR CARCINOMA	1 (2%)		1 (2%)
ENDOMETRIAL STROMAL SARCOMA, MET		1 (2%)	
HEMATOPOIETIC SYSTEM			
*MULTIPLE ORGANS	(50)	(50)	(50)
MALIGNANT LYMPHOMA, MIXED TYPE			1 (2%)
UNDIFFERENTIATED LEUKEMIA	6 (12%)	3 (6%)	3 (6%)
MAST-CELL LEUKEMIA			1 (2%)
#CERVICAL LYMPH NODE	(50)	(50)	(50)
CARCINOMA, NOS, METASTATIC		1 (2%)	

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

TABLE A2. FEMALE RATS: NEOPLASMS (CONTINUED)

	CONTROL	LOW DOSE	HIGH DOSE
CIRCULATORY SYSTEM			
*SUBCUT TISSUE	(50)	(50)	(50)
HEMANGIOSARCOMA			1 (2%)
DIGESTIVE SYSTEM			
#LIVER	(50)	(50)	(50)
NEOPLASTIC NODULE	1 (2%)		1 (2%)
URINARY SYSTEM			
#KIDNEY/CORTEX	(50)	(50)	(50)
CARCINOMA,NOS		1 (2%)	
ENDOCRINE SYSTEM			
#PITUITARY	(50)	(50)	(48)
CARCINOMA,NOS			1 (2%)
ADENOMA, NOS	17 (34%)	10 (20%)	9 (19%)
#ADRENAL	(50)	(50)	(50)
CORTICAL ADENOMA	1 (2%)	1 (2%)	2 (4%)
PHEOCHROMOCYTOMA	1 (2%)	4 (8%)	
#THYROID	(50)	(50)	(50)
CARCINOMA,NOS		1 (2%)	
FOLLICULAR-CELL ADENOMA		1 (2%)	
FOLLICULAR-CELL CARCINOMA			1 (2%)
C-CELL ADENOMA	6 (12%)	2 (4%)	2 (4%)
C-CELL CARCINOMA	3 (6%)	3 (6%)	1 (2%)

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

TABLE A2. FEMALE RATS: NEOPLASMS (CONTINUED)

	CONTROL	LOW DOSE	HIGH DOSE
REPRODUCTIVE SYSTEM			
*MAMMARY GLAND	(50)	(50)	(50)
ADENOMA, NOS	1 (2%)		1 (2%)
ADENOCARCINOMA, NOS	3 (6%)	1 (2%)	1 (2%)
FIBROADENOMA	16 (32%)	14 (28%)	12 (24%)
*CLITORAL GLAND	(50)	(50)	(50)
CARCINOMA,NOS			1 (2%)
#UTERUS	(50)	(50)	(50)
LEIOMYOSARCOMA		1 (2%)	
ENDOMETRIAL STROMAL POLYP	11 (22%)	12 (24%)	13 (26%)
ENDOMETRIAL STROMAL SARCOMA		1 (2%)	
NERVOUS SYSTEM			
#BRAIN	(50)	(50)	(49)
ASTROCYTOMA			1 (2%)
SPECIAL SENSE ORGANS			
*HARDERIAN GLAND	(50)	(50)	(50)
ADENOMA, NOS			1 (2%)
MUSCULOSKELETAL SYSTEM			
*FEMUR	(50)	(50)	(50)
OSTEOSARCOMA	1 (2%)		
*TIBIA	(50)	(50)	(50)
OSTEOSARCOMA	1 (2%)		

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

TABLE A2. FEMALE RATS: NEOPLASMS (CONTINUED)

	CONTROL	LOW DOSE	HIGH DOSE
BODY CAVITIES			
NONE			
ALL OTHER SYSTEMS			
*MULTIPLE ORGANS	(50)	(50)	(50)
SARCOMA, NOS, METASTATIC		1 (2%)	
ANIMAL DISPOSITION SUMMARY			
ANIMALS INITIALLY IN STUDY	50	50	50
NATURAL DEATH@	3	3	4
MORIBUND SACRIFICE	5	8	10
SCHEDULED SACRIFICE			
ACCIDENTALLY KILLED			
TERMINAL SACRIFICE	42	39	36
ANIMAL MISSING			

@ INCLUDES AUTOLYZED ANIMALS

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

TABLE A2. FEMALE RATS: NEOPLASMS (CONTINUED)

	CONTROL	LOW DOSE	HIGH DOSE
TUMOR SUMMARY			
TOTAL ANIMALS WITH PRIMARY TUMORS*	40	38	37
TOTAL PRIMARY TUMORS	70	58	54
TOTAL ANIMALS WITH BENIGN TUMORS	37	35	30
TOTAL BENIGN TUMORS	53	44	40
TOTAL ANIMALS WITH MALIGNANT TUMORS	14	12	13
TOTAL MALIGNANT TUMORS	15	14	13
TOTAL ANIMALS WITH SECONDARY TUMORS#		3	
TOTAL SECONDARY TUMORS		3	
TOTAL ANIMALS WITH TUMORS UNCERTAIN-BENIGN OR MALIGNANT	2		1
TOTAL UNCERTAIN TUMORS	2		1
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 A3.

INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF MALE RATS IN THE 2-YEAR STUDY OF STANNOUS CHLORIDE

CONTROL

ANIMAL NUMBER	0010	0020	0030	0040	0050	0060	0070	0080	0090	0100	0110	0120	0130	0140	0150	0160	0170	0180	0190	0200	0210	0220	0230	0240	0250
WEEKS ON STUDY	105	115	104	105	105	101	104	052	105	075	091	101	105	091	105	105	100	105	103	105	086	105	105	105	105
INTEGUMENTARY SYSTEM																									
SUBCUTANEOUS TISSUE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
SQUAMOUS CELL CARCINOMA												X													
FIBROMA		X																							
FIBROSARCOMA																									
LIPOMA	X																								
RESPIRATORY SYSTEM																									
LUNGS AND BRONCHI	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
ALVEOLAR/BRONCHIOLAR CARCINOMA																									
TRACHEA	+	+	+	+	+	+	+	+	+	+	−	+	+	+	+	+	+	+	+	+	+	+	+	+	+
HEMATOPOIETIC SYSTEM																									
BONE MARROW	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
SPLEEN	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
LYMPH NODES	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
NEURILEMOMA, METASTATIC			X																						
THYMUS	+	+	+	+	+	+	+	+	+	+	−	−	+	+	+	+	+	+	+	+	+	+	+	+	+
CIRCULATORY SYSTEM																									
HEART	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
DIGESTIVE SYSTEM																									
SALIVARY GLAND	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
NEURILEMOMA, MALIGNANT			X																						
LIVER	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
NEOPLASTIC NODULE																							X		
BILE DUCT	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
GALLBLADDER & COMMON BILE DUCT	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
PANCREAS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
ESOPHAGUS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
STOMACH	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
SMALL INTESTINE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
LARGE INTESTINE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
RECTUM	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
NEURILEMOMA, MALIGNANT						X																			
URINARY SYSTEM																									
KIDNEY	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
CARCINOMA,NOS																				X					
URINARY BLADDER	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
ENDOCRINE SYSTEM																									
PITUITARY	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
CARCINOMA,NOS																					X				
ADENOMA, NOS				X														X		X					
ADRENAL	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
PHEOCHROMOCYTOMA							X					X			X										
PHEOCHROMOCYTOMA, MALIGNANT																		X							
THYROID	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
FOLLICULAR-CELL ADENOMA																									
FOLLICULAR-CELL CARCINOMA																									
C-CELL ADENOMA																							X		
CYSTADENOMA, NOS																								X	
PARATHYROID	−	+	+	+	+	+	+	+	+	+	+	−	−	+	+	+	+	+	+	+	+	+	+	+	−
PANCREATIC ISLETS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
ISLET-CELL ADENOMA				X																	X				
ISLET-CELL CARCINOMA													X												
REPRODUCTIVE SYSTEM																									
MAMMARY GLAND	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	•	+	+	+	+	+	+	+
FIBROADENOMA																									
TESTIS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
INTERSTITIAL-CELL TUMOR	X	X	X	X	X	X	X		X			X	X		X			X	X	X			X	X	X
PROSTATE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
ADENOMA, NOS					X																				
NERVOUS SYSTEM																									
BRAIN	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
GLIOMA, NOS														X											
SPECIAL SENSE ORGANS																									
EAR	N	N	N	+	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
SQUAMOUS CELL PAPILLOMA																									
BODY CAVITIES																									
TUNICA VAGINALIS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
MESOTHELIOMA, NOS																									
MESENTERY	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
SARCOMA, NOS																									
ALL OTHER SYSTEMS																									
MULTIPLE ORGANS NOS	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
PHEOCHROMOCYTOMA, METASTATIC																		X							
SARCOMA, NOS								X																	
UNDIFFERENTIATED LEUKEMIA												X							X						
ORBITAL REGION																									
FIBROSARCOMA										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 A3. MALE RATS: TUMOR PATHOLOGY (CONTINUED) CONTROL

ANIMAL NUMBER	026	027	028	029	030	031	032	033	034	035	036	037	038	039	040	041	042	043	044	045	046	047	048	049	050	TOTAL
WEEKS ON STUDY	105	105	105	105	105	105	105	101	105	105	105	105	105	105	105	105	105	105	105	104	105	098	089	105	105	TISSUES TUMORS
INTEGUMENTARY SYSTEM																										
SUBCUTANEOUS TISSUE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50*
SQUAMOUS CELL CARCINOMA																										1
FIBROMA																										1
FIBROSARCOMA							X																			1
LIPOMA																										1
RESPIRATORY SYSTEM																										
LUNGS AND BRONCHI	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
ALVEOLAR/BRONCHIOLAR CARCINOMA							X				X						X									3
TRACHEA	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	−	+	+	48
HEMATOPOIETIC SYSTEM																										
BONE MARROW	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
SPLEEN	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
LYMPH NODES	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
NEURILEMOMA, METASTATIC																										1
THYMUS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	−	+	+		47
CIRCULATORY SYSTEM																										
HEART	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
DIGESTIVE SYSTEM																										
SALIVARY GLAND	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
NEURILEMOMA, MALIGNANT																										1
LIVER	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
NEOPLASTIC NODULE						X																				2
BILE DUCT	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
GALLBLADDER & COMMON BILE DUCT	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	50*
PANCREAS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
ESOPHAGUS	+	+	+	+	+	+	+	−	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	49
STOMACH	+	+	+	+	+	+	+	−	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	49
SMALL INTESTINE	+	+	+	+	+	+	+	−	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	49
LARGE INTESTINE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	−	+	+	+	+	+	+	+	+	+	+	49
RECTUM	N	N	N	N	N	N	N	N	N	N	N	N	N	+	+	N	N	N	N	N	N	N	N	N	N	50*
NEURILEMOMA, MALIGNANT																										1
URINARY SYSTEM																										
KIDNEY	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
CARCINOMA,NOS																										1
URINARY BLADDER	+	+	+	+	+	+	+	−	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	49
ENDOCRINE SYSTEM																										
PITUITARY	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
CARCINOMA,NOS																										1
ADENOMA, NOS		X	X				X	X					X			X				X			X			11
ADRENAL	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
PHEOCHROMOCYTOMA														X												4
PHEOCHROMOCYTOMA, MALIGNANT																										1
THYROID	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
FOLLICULAR-CELL ADENOMA													X													1
FOLLICULAR-CELL CARCINOMA							X																			1
C-CELL ADENOMA							X																			2
CYSTADENOMA, NOS																										1
PARATHYROID	−	+	+	+	+	+	+	+	−	−	+	+	+	+	+	+	−	+	−	+	+	+	+	−	−	39
PANCREATIC ISLETS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
ISLET-CELL ADENOMA						X																				2
ISLET-CELL CARCINOMA													X													3
REPRODUCTIVE SYSTEM																										
MAMMARY GLAND	+	+	+	+	+	+	+	+	+	+	+	+	+	+	•	+	+	N	+	•	+	+	+	+	+	50*
FIBROADENOMA					X																					1
TESTIS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
INTERSTITIAL-CELL TUMOR	X				X	X			X	X	X	X	X	X			X	X	X		X	X		X	X	34
PROSTATE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
ADENOMA, NOS																										1
NERVOUS SYSTEM																										
BRAIN	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
GLIOMA, NOS																										1
SPECIAL SENSE ORGANS																										
EAR	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	50*
SQUAMOUS CELL PAPILLOMA					X																					1
BODY CAVITIES																										
TUNICA VAGINALIS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	X	+	+	+	+	+	50*
MESOTHELIOMA, NOS																										1
MESENTERY	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	50*
SARCOMA, NOS													X													1
ALL OTHER SYSTEMS																										
MULTIPLE ORGANS NOS	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	50*
PHEOCHROMOCYTOMA, METASTATIC																										1
SARCOMA, NOS																										1
UNDIFFERENTIATED LEUKEMIA		X			X																X	X				6
ORBITAL REGION																										
FIBROSARCOMA																										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 A3.

INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF MALE RATS IN THE 2-YEAR STUDY OF STANNOUS CHLORIDE

LOW DOSE

ANIMAL NUMBER	0011	0012	0013	0014	0015	0016	0017	0018	0019	0110	0111	0112	0113	0114	0115	0116	0117	0118	0119	0120	0121	0122	0123	0124	0125
WEEKS ON STUDY	105	105	104	105	105	105	105	105	105	104	105	104	085	088	105	105	098	091	105	105	105	104	105	104	090
INTEGUMENTARY SYSTEM																									
SKIN	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
SEBACEOUS ADENOCARCINOMA									X																
KERATOACANTHOMA																									
SUBCUTANEOUS TISSUE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
FIBROMA																		X							
RESPIRATORY SYSTEM																									
LUNGS AND BRONCHI	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
NEOPLASM, NOS, METASTATIC																									X
ALVEOLAR/BRONCHIOLAR CARCINOMA												X													
TRACHEA	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+
HEMATOPOIETIC SYSTEM																									
BONE MARROW	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+
SPLEEN	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
MALIG.LYMPHOMA, HISTIOCYTIC TYPE							X																		
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	N	N	N	N	N	N
PANCREAS	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+
ESOPHAGUS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
STOMACH	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
SMALL INTESTINE	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	-
LARGE INTESTINE	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+
URINARY SYSTEM																									
KIDNEY	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
URINARY BLADDER	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+
TRANSITIONAL-CELL PAPILLOMA																									
TRANSITIONAL-CELL CARCINOMA																									
ENDOCRINE SYSTEM																									
PITUITARY	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
CARCINOMA,NOS														X	X	X	X								
ADENOMA, NOS		X					X																		
ADRENAL	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
PHEOCHROMOCYTOMA	X							X									X		X						
THYROID	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+
FOLLICULAR-CELL CARCINOMA																									
C-CELL ADENOMA	X						X					X			X	X		X							
C-CELL CARCINOMA						X											X								
PARATHYROID	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+
PANCREATIC ISLETS	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+
ISLET-CELL ADENOMA		X						X						X			X								
ISLET-CELL CARCINOMA																									
REPRODUCTIVE SYSTEM																									
MAMMARY GLAND	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
TESTIS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
INTERSTITIAL-CELL TUMOR	X		X	X	X	X	X	X	X	X	X	X	X			X		X	X		X	X	X	X	X
PROSTATE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
PREPUTIAL/CLITORAL GLAND	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
CARCINOMA,NOS						X																			
SPECIAL SENSE ORGANS																									
ZYMBAL'S GLAND	N	N	+	N	N	N	N	N	+	N	N	N	N	N	+	N	N	N	N	+	N	N	N	N	N
SEBACEOUS ADENOCARCINOMA									X																
MUSCULOSKELETAL SYSTEM																									
BONE	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
OSTEOSARCOMA																									
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
NEOPLASM, NOS, MALIGNANT																									X
ALVEOLAR/BRONCHIOLAR CA, METASTAT												X													
UNDIFFERENTIATED LEUKEMIA			X	X									X				X			X	X				
LYMPHOCYTIC LEUKEMIA																									
TAIL																									
SQUAMOUS CELL PAPILLOMA																								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 A3. MALE RATS: TUMOR PATHOLOGY (CONTINUED) LOW DOSE

ANIMAL NUMBER	026	027	028	029	030	031	032	033	034	035	036	037	038	039	040	041	042	043	044	045	046	047	048	049	050	TOTAL
WEEKS ON STUDY	069	105	105	105	093	104	104	094	105	105	085	089	095	105	102	105	104	105	105	105	105	104	105	104	105	TISSUES TUMORS
INTEGUMENTARY SYSTEM																										
SKIN	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	N	+	+	+	+	+	+	+	+	50*
SEBACEOUS ADENOCARCINOMA																										1
KERATOACANTHOMA				X											X										2
SUBCUTANEOUS TISSUE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	N	+	+	+	+	+	+	+	+	50*
FIBROMA																										1
RESPIRATORY SYSTEM																										
LUNGS AND BRONCHI	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
NEOPLASM, NOS, METASTATIC																										1
ALVEOLAR/BRONCHIOLAR CARCINOMA																										1
TRACHEA	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	48
HEMATOPOIETIC SYSTEM																										
BONE MARROW	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	49
SPLEEN	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
MALIG.LYMPHOMA, HISTIOCYTIC TYPE																										1
LYMPH NODES	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	49
THYMUS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	49
CIRCULATORY SYSTEM																										
HEART	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
DIGESTIVE SYSTEM																										
SALIVARY GLAND	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	48
LIVER	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
BILE DUCT	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
GALLBLADDER & COMMON BILE DUCT	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	50*
PANCREAS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	49
ESOPHAGUS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
STOMACH	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
SMALL INTESTINE	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	47
LARGE INTESTINE	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	48
URINARY SYSTEM																										
KIDNEY	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
URINARY BLADDER	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	49
TRANSITIONAL-CELL PAPILLOMA																										1
TRANSITIONAL-CELL CARCINOMA																							X	X		1
ENDOCRINE SYSTEM																										
PITUITARY	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	49
CARCINOMA,NOS																						X				1
ADENOMA, NOS				X							X		X				X									10
ADRENAL	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
PHEOCHROMOCYTOMA		X			X	X							X				X		X							10
THYROID	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	49
FOLLICULAR-CELL CARCINOMA		X																								1
C-CELL ADENOMA						X								X								X				9
C-CELL CARCINOMA				X																					X	4
PARATHYROID	+	+	+	+	+	-	-	-	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	45
PANCREATIC ISLETS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	49
ISLET-CELL ADENOMA																										4
ISLET-CELL CARCINOMA				X																						1
REPRODUCTIVE SYSTEM																										
MAMMARY GLAND	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50*
TESTIS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
INTERSTITIAL-CELL TUMOR	X	X	X		X	X	X	X	X	X		X	X	X		X	X	X	X	X		X	X	X	X	41
PROSTATE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
PREPUTIAL/CLITORAL GLAND	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	50*
CARCINOMA,NOS																										1
SPECIAL SENSE ORGANS																										
ZYMBAL'S 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	50*
SEBACEOUS ADENOCARCINOMA																				X						2
MUSCULOSKELETAL SYSTEM																										
BONE	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	50*
OSTEOSARCOMA															X											1
ALL OTHER SYSTEMS																										
MULTIPLE ORGANS NOS	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	50*
NEOPLASM, NOS, MALIGNANT																										1
ALVEOLAR/BRONCHIOLAR CA, METASTAT																										1
UNDIFFERENTIATED LEUKEMIA				X	X							X														9
LYMPHOCYTIC LEUKEMIA	X																									1
TAIL																										
SQUAMOUS CELL PAPILLOMA																										1

* ANIMALS NECROPSIED

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

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

TABLE A3.

INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF MALE RATS IN THE 2-YEAR STUDY OF STANNOUS CHLORIDE

HIGH DOSE

ANIMAL NUMBER	0 0 1 1	0 0 2 2	0 0 3 3	0 0 4 4	0 0 5 5	0 0 6 6	0 0 7 7	0 0 8 8	0 0 9 9	0 1 0 0	0 1 1 1	0 1 2 2	0 1 3 3	0 1 4 4	0 1 5 5	0 1 6 6	0 1 7 7	0 1 8 8	0 1 9 9	0 2 0 0	0 2 1 1	0 2 2 2	0 2 3 3	0 2 4 4	0 2 5 5
WEEKS ON STUDY	1 0 0 4	0 1 9 2	1 0 0 5	1 0 8 4	0 1 9 5	1 0 0 4	0 0 0 5	0 0 7 9	0 0 8 0	0 1 1 0	0 0 9 2	0 0 8 7	0 0 9 8	0 1 0 4	0 1 1 5	0 1 0 5	0 1 0 5	0 1 0 5	0 1 1 5	0 1 1 5	0 1 7 7	0 1 8 4	0 1 0 5	0 1 0 4	0 1 6 1	0 1 0 3
INTEGUMENTARY SYSTEM																									
SKIN	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
KERATOACANTHOMA													X						X						
SUBCUTANEOUS TISSUE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
LIPOMA		.													X										
OSTEOSARCOMA																									
RESPIRATORY SYSTEM																									
LUNGS AND BRONCHI	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
SQUAMOUS CELL CARCINOMA																								X	
ALVEOLAR/BRONCHIOLAR ADENOMA			X								X														
OSTEOSARCOMA, METASTATIC													X												
TRACHEA	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
HEMATOPOIETIC SYSTEM																									
BONE MARROW	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
SPLEEN	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
HEMANGIOSARCOMA																									
LYMPH NODES	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
THYMUS	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
CIRCULATORY SYSTEM																									
HEART	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
DIGESTIVE SYSTEM																									
SALIVARY GLAND	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
ADENOCARCINOMA, NOS																									
LIVER	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
NEOPLASTIC NODULE																									
BILE DUCT	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
GALLBLADDER & COMMON BILE DUCT	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
PANCREAS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
ESOPHAGUS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
STOMACH	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
SMALL INTESTINE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
MUCINOUS ADENOCARCINOMA																			X						
LARGE INTESTINE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
URINARY SYSTEM																									
KIDNEY	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+
SARCOMA, NOS																									
HEMANGIOSARCOMA, METASTATIC																									
URINARY BLADDER	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+
ENDOCRINE SYSTEM																									
PITUITARY	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
CARCINOMA,NOS																									X
ADENOMA, NOS	X			X				X	X				X		X	X					X				
ADRENAL	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+
PHEOCHROMOCYTOMA																									
THYROID	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
FOLLICULAR-CELL ADENOMA																									
C-CELL ADENOMA										X	X						X								X
C-CELL CARCINOMA									X														X		
PARATHYROID	+	+	+	-	-	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+
PANCREATIC ISLETS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
ISLET-CELL ADENOMA													X												X
REPRODUCTIVE SYSTEM																									
MAMMARY GLAND	+	+	+	+	+	+	+	+	+	+	+	+	+	+	N	+	+	+	+	+	+	+	+	+	+
TESTIS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
INTERSTITIAL-CELL TUMOR		X	X		X	X	X				X			X	X	X	X		Y			X	X		
PROSTATE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
NERVOUS SYSTEM																									
BRAIN	+	+	•	+	+	+	+	+	+	+	•	+	+	+	+	+	+	+	+	+	+	+	+	+	+
CARCINOMA, NOS, INVASIVE																									X
SPECIAL SENSE ORGANS																									
EAR	N	N	N	N	N	N	N	N	N	N	N	N	N	+	N	N	N	N	N	N	N	N	N	N	N
SQUAMOUS CELL PAPILLOMA										X															
ZYMBAL'S 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
CARCINOMA,NOS		X																							
MUSCULOSKELETAL SYSTEM																									
BONE	N	N	N	N	N	N	N	N	N	N	N	N	X	N	N	N	N	N	N	N	N	N	X	N	N
OSTEOSARCOMA																									
BODY CAVITIES																									
TUNICA VAGINALIS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
MESOTHELIOMA, NOS																									
ALL OTHER SYSTEMS																									
MULTIPLE ORGANS NOS	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
MUCINOUS ADENOCARCINOMA, METASTAT																			X						
SARCOMA, NOS																								X	
MESOTHELIOMA, NOS																									
MALIG.LYMPHOMA, HISTIOCYTIC TYPE																								X	
UNDIFFERENTIATED LEUKEMIA					X						X														
TAIL																									
SQUAMOUS CELL PAPILLOMA																									

+: 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 A3. MALE RATS: TUMOR PATHOLOGY (CONTINUED) HIGH DOSE

ANIMAL NUMBER	026	027	028	029	030	031	032	033	034	035	036	037	038	039	040	041	042	043	044	045	046	047	048	049	050	TOTAL
WEEKS ON STUDY	086	115	107	105	069	015	104	091	089	105	104	105	088	105	105	105	105	041	082	105	105	041	104	105	104	TISSUES TUMORS
INTEGUMENTARY SYSTEM																										
SKIN	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50*
KERATOACANTHOMA																										2
SUBCUTANEOUS TISSUE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50*
LIPOMA																										1
OSTEOSARCOMA																			X							1
RESPIRATORY SYSTEM																										
LUNGS AND BRONCHI	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
SQUAMOUS CELL CARCINOMA																										1
ALVEOLAR/BRONCHIOLAR ADENOMA																										3
OSTEOSARCOMA, METASTATIC																									X	1
TRACHEA	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
HEMATOPOIETIC SYSTEM																										
BONE MARROW	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
SPLEEN	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
HEMANGIOSARCOMA										X																1
LYMPH NODES	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
THYMUS	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	48
CIRCULATORY SYSTEM																										
HEART	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
DIGESTIVE SYSTEM																										
SALIVARY GLAND	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
ADENOCARCINOMA, NOS													X													1
LIVER	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
NEOPLASTIC NODULE									X																	1
BILE DUCT	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
GALLBLADDER & COMMON BILE DUCT	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	50*
PANCREAS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
ESOPHAGUS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
STOMACH	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
SMALL INTESTINE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
MUCINOUS ADENOCARCINOMA																										1
LARGE INTESTINE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
URINARY SYSTEM																										
KIDNEY	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	49
SARCOMA, NOS	X																									1
HEMANGIOSARCOMA, METASTATIC										X																1
URINARY BLADDER	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	49
ENDOCRINE SYSTEM																										
PITUITARY	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	49
CARCINOMA,NOS																										1
ADENOMA, NOS			X					X			X				X											12
ADRENAL	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	49
PHEOCHROMOCYTOMA						X				X				X			X		X							5
THYROID	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
FOLLICULAR-CELL ADENOMA															X											1
C-CELL ADENOMA								X							X											5
C-CELL CARCINOMA																	X									3
PARATHYROID	+	+	+	+	-	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	45
PANCREATIC ISLETS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
ISLET-CELL ADENOMA																										2
REPRODUCTIVE SYSTEM																										
MAMMARY GLAND	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	N	N	+	+	+	+	50*
TESTIS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
INTERSTITIAL-CELL TUMOR	X	X		X		X	X		X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	34
PROSTATE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
NERVOUS SYSTEM																										
BRAIN	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
CARCINOMA, NOS, INVASIVE																										1
SPECIAL SENSE ORGANS																										
EAR	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	+	N	N	+	+	N	N	N	N	50*
SQUAMOUS CELL PAPILLOMA																										1
ZYMBAL'S GLAND	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	+	N	N	+	+	N	N	N	N	50*
CARCINOMA,NOS																										1
MUSCULOSKELETAL SYSTEM																										
BONE	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	50*
OSTEOSARCOMA																										2
BODY CAVITIES																										
TUNICA VAGINALIS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50*
MESOTHELIOMA, NOS		X																								1
ALL OTHER SYSTEMS																										
MULTIPLE ORGANS NOS	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	50*
MUCINOUS ADENOCARCINOMA, METASTAT																										1
SARCOMA, NOS																										1
MESOTHELIOMA, NOS																	X									1
MALIG.LYMPHOMA, HISTIOCYTIC TYPE				X																						2
UNDIFFERENTIATED LEUKEMIA			X				X		X						X								X			7
TAIL																										
SQUAMOUS CELL PAPILLOMA																				X						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 A4.

INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF FEMALE RATS IN THE 2-YEAR STUDY OF STANNOUS CHLORIDE

CONTROL

ANIMAL NUMBER	0011	0012	0013	0014	0015	0016	0017	0018	0019	0020	0111	0112	0113	0114	0115	0116	0117	0118	0119	0120	0121	0122	0123	0124	0125
WEEKS ON STUDY	105	105	105	105	105	105	105	105	105	105	105	105	105	105	105	105	105	105	105	090	105	105	105	105	105
INTEGUMENTARY SYSTEM																									
SUBCUTANEOUS TISSUE NEOPLASM, NOS	+	N	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
RESPIRATORY SYSTEM																									
LUNGS AND BRONCHI ALVEOLAR/BRONCHIOLAR CARCINOMA	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
TRACHEA	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
HEMATOPOIETIC SYSTEM																									
BONE MARROW	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	–	+	+	+	+	+
SPLEEN	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
LYMPH NODES	+	+	+	+	+	+	+	+	•	+	+	+	+	+	+	+	+	+	–	+	+	•	+	+	+
THYMUS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
CIRCULATORY SYSTEM																									
HEART	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
DIGESTIVE SYSTEM																									
SALIVARY GLAND	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
LIVER NEOPLASTIC NODULE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
BILE DUCT	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
GALLBLADDER & COMMON BILE DUCT	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
PANCREAS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
ESOPHAGUS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
STOMACH	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
SMALL INTESTINE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
LARGE INTESTINE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
URINARY SYSTEM																									
KIDNEY	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
URINARY BLADDER	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
ENDOCRINE SYSTEM																									
PITUITARY ADENOMA, NOS	+ X	+	+	+	+ X	+	+ X	+ X	+ X	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
ADRENAL CORTICAL ADENOMA PHEOCHROMOCYTOMA	+	+	+ X	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
THYROID C-CELL ADENOMA C-CELL CARCINOMA	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+ X	+ X	+	+	+	+	+ X
PARATHYROID	–	+	–	+	+	+	–	+	+	+	+	+	+	+	+	+	+	+	–	+	+	+	+	+	+
REPRODUCTIVE SYSTEM																									
MAMMARY GLAND ADENOMA, NOS ADENOCARCINOMA, NOS FIBROADENOMA	+ X	+ X	+	+ X	+ X	+	+	+ X	+	+	+	+	+	+ X	+ X	+ X	+	+	+	+	+	+	+	+	+
UTERUS ENDOMETRIAL STROMAL POLYP	+	+	+ X	+	+	+	+	+	+	+ X	+ X	+	+	+	+ X	+	+	+	+	+	+ X	+	+	+	+
OVARY	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
MUSCULOSKELETAL SYSTEM																									
BONE OSTEOSARCOMA	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N X2	N	N	N	N	N
ALL OTHER SYSTEMS																									
MULTIPLE ORGANS NOS UNDIFFERENTIATED LEUKEMIA	N	N	N	N	N	N	N	N	N	N	N X	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 A4. FEMALE RATS: TUMOR PATHOLOGY (CONTINUED) CONTROL

ANIMAL NUMBER	026	027	028	029	030	031	032	033	034	035	036	037	038	039	040	041	042	043	044	045	046	047	048	049	050	TOTAL TISSUES TUMORS
WEEKS ON STUDY	105	105	105	105	090	093	105	075	105	105	105	105	105	105	105	105	105	072	099	105	105	102	105	105	092	
INTEGUMENTARY SYSTEM																										
SUBCUTANEOUS TISSUE *NEOPLASM, NOS*	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+ X	50M 1
RESPIRATORY SYSTEM																										
LUNGS AND BRONCHI ALVEOLAR/BRONCHIOLAR CARCINOMA	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+ X	+	+	+	+	+	50 1
TRACHEA	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
HEMATOPOIETIC SYSTEM																										
BONE MARROW	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	48
SPLEEN	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
LYMPH NODES	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
THYMUS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
CIRCULATORY SYSTEM																										
HEART	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
DIGESTIVE SYSTEM																										
SALIVARY GLAND	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
LIVER NEOPLASTIC NODULE	+	+	+	+	+	+ X	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50 1
BILE DUCT	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
GALLBLADDER & COMMON BILE DUCT	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	50M
PANCREAS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
ESOPHAGUS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
STOMACH	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
SMALL INTESTINE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	49
LARGE INTESTINE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
URINARY SYSTEM																										
KIDNEY	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
URINARY BLADDER	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
ENDOCRINE SYSTEM																										
PITUITARY ADENOMA, NOS	+	+	+ X	+ X	+ X	+	+ X	+ X	+	+	+ X	+ X	+	+	+	+ X	+ X	+	+	+	+	+	+ X	+ X	+ X	50 17
ADRENAL CORTICAL ADENOMA PHEOCHROMOCYTOMA	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+ X	+	+	+	50 1 1
THYROID C-CELL ADENOMA C-CELL CARCINOMA	+ X	+	+	+	+	+	+ X	+	+ X X	+ X	+	+	+	+ X	+	+	+	+	+	+	+	+	+	+	+	50 6 3
PARATHYROID	+	+	+	+	+	•	+	-	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	44
REPRODUCTIVE SYSTEM																										
MAMMARY GLAND ADENOMA, NOS ADENOCARCINOMA, NOS FIBROADENOMA	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+ X X	+	+	+	+	+ X X X	+	+	+	50M 1 3 16
UTERUS ENDOMETRIAL STROMAL POLYP	+ X	+	+	+ X	+	+ X	+	+ X	+	+	+ X	+	+	+	+	+	+	+	+ X	+	+	+	+	+	+	50 11
OVARY	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
MUSCULOSKELETAL SYSTEM																										
BONE 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	50M 1
ALL OTHER SYSTEMS																										
MULTIPLE ORGANS NOS UNDIFFERENTIATED LEUKEMIA	N	N	N	N	N X	N	N	N	N	N X	N	N	N	N	N	N	N	N	N X	N	N	N X	N	N X	N	50M 6

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

TABLE A4.

INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF FEMALE RATS IN THE 2-YEAR STUDY OF STANNOUS CHLORIDE

LOW DOSE

ANIMAL NUMBER	001	002	003	004	005	006	007	008	009	010	011	012	013	014	015	016	017	018	019	020	021	022	023	024	025
WEEKS ON STUDY	105	105	105	105	104	104	105	102	101	105	105	104	104	105	105	104	105	105	105	105	097	105	092	105	086
INTEGUMENTARY SYSTEM																									
SUBCUTANEOUS TISSUE SARCOMA, NOS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
RESPIRATORY SYSTEM																									
LUNGS AND BRONCHI ENDOMETRIAL STROMAL SARCOMA, META	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+ X	+	+
TRACHEA	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
HEMATOPOIETIC SYSTEM																									
BONE MARROW	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
SPLEEN	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
LYMPH NODES CARCINOMA, NOS, METASTATIC	+	+	+	+	+	+	+	+	+	+	+	+	+ X	+	+	+	+	+	+	+	+	+	+	+	+
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	N	N
PANCREAS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
ESOPHAGUS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	•	+	+	+	+	+	+	+	+	+
STOMACH	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
SMALL INTESTINE	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+
LARGE INTESTINE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
URINARY SYSTEM																									
KIDNEY CARCINOMA,NOS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+ X	+	+	+	+
URINARY BLADDER	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
ENDOCRINE SYSTEM																									
PITUITARY ADENOMA, NOS	+	+ X	+	+	+ X	+ X	+	+	+	+	+ X	+	+	+	+	+	+	+	+	+	+	+ X	+	+ X	+
ADRENAL CORTICAL ADENOMA PHEOCHROMOCYTOMA	+	+	+	+	+	+	+	+	+ X	+	+	+	+	+ X	+	+	+	+	+	+	+	+	+	+	+
THYROID CARCINOMA,NOS FOLLICULAR-CELL ADENOMA C-CELL ADENOMA C-CELL CARCINOMA	+	+	+	+	+	+	+	+	+	+	+	+	• X	+	+	+	+	+	+ X	+	+	+	+	+	+
PARATHYROID	-	+	+	-	+	-	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	-	+	
REPRODUCTIVE SYSTEM																									
MAMMARY GLAND ADENOCARCINOMA, NOS FIBROADENOMA	+ X	+ X	+	+	+	+ X	+	+ X	+	+	+	+	+ X	+	+	+	+ X	+	+	+	+	+ X	+	+ X	+
UTERUS LEIOMYOSARCOMA ENDOMETRIAL STROMAL POLYP ENDOMETRIAL STROMAL SARCOMA	+	+	+	+ X	+	+ X	+ X	+ X	+	+ X	+	+ X	+	+	+	+	+	+	+	+ X	+	+	+	+	+
OVARY	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
ALL OTHER SYSTEMS																									
MULTIPLE ORGANS NOS SARCOMA, NOS, METASTATIC FIBROUS HISTIOCYTOMA, MALIGNANT UNDIFFERENTIATED 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 A4. FEMALE RATS: TUMOR PATHOLOGY (CONTINUED) LOW DOSE

ANIMAL NUMBER	026	027	028	029	030	031	032	033	034	035	036	037	038	039	040	041	042	043	044	045	046	047	048	049	050	TOTAL
WEEKS ON STUDY	084	104	104	105	105	105	100	104	100	105	105	105	105	105	104	058	105	104	104	090	105	105	105	105	105	TISSUES TUMORS
INTEGUMENTARY SYSTEM																										
SUBCUTANEOUS TISSUE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50*
SARCOMA, NOS								X												X						2
RESPIRATORY SYSTEM																										
LUNGS AND BRONCHI	+	+	+	+	+	+	+	+	+	+	+	+	+	+	•	+	•	+	+	+	+	+	+	+	+	50
ENDOMETRIAL STROMAL SARCOMA, META																										1
TRACHEA	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
HEMATOPOIETIC SYSTEM																										
BONE MARROW	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
SPLEEN	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
LYMPH NODES	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
CARCINOMA, NOS, METASTATIC																										1
THYMUS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
CIRCULATORY SYSTEM																										
HEART	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
DIGESTIVE SYSTEM																										
SALIVARY GLAND	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
LIVER	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
BILE DUCT	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
GALLBLADDER & COMMON BILE DUCT	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	50*
PANCREAS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	49
ESOPHAGUS	+	+	+	•	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
STOMACH	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
SMALL INTESTINE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	49
LARGE INTESTINE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
URINARY SYSTEM																										
KIDNEY	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
CARCINOMA, NOS																										1
URINARY BLADDER	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
ENDOCRINE SYSTEM																										
PITUITARY	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
ADENOMA, NOS							X		X											X			X			10
ADRENAL	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
CORTICAL ADENOMA																X										1
PHEOCHROMOCYTOMA	X														X											4
THYROID	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
CARCINOMA, NOS																										1
FOLLICULAR-CELL ADENOMA																						X				1
C-CELL ADENOMA															X											2
C-CELL CARCINOMA					X						X															3
PARATHYROID	+	+	+	+	+	+	+	-	-	+	-	+	+	-	+	+	+	+	+	+	+	+	+	+	+	41
REPRODUCTIVE SYSTEM																										
MAMMARY GLAND	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50*
ADENOCARCINOMA, NOS																										1
FIBROADENOMA		X			X	X		X	X			X								X						14
UTERUS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
LEIOMYOSARCOMA			X																							1
ENDOMETRIAL STROMAL POLYP			X			X						X	X								X					12
ENDOMETRIAL STROMAL SARCOMA																										1
OVARY	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
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	50*
SARCOMA, NOS, METASTATIC								X																		1
FIBROUS HISTIOCYTOMA, MALIGNANT																			X							1
UNDIFFERENTIATED LEUKEMIA				X																						3

* ANIMALS NECROPSIED

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

TABLE A4.

INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF FEMALE RATS IN THE 2-YEAR STUDY OF STANNOUS CHLORIDE

HIGH DOSE

ANIMAL NUMBER	0011	0012	0013	0014	0015	0016	0017	0018	0019	0110	0111	0112	0113	0114	0115	0116	0117	0118	0119	0120	0121	0122	0123	0124	0125
WEEKS ON STUDY	097	104	105	105	105	104	095	095	094	095	104	105	104	095	104	104	101	090	095	104	105	105	105	105	097
INTEGUMENTARY SYSTEM																									
SUBCUTANEOUS TISSUE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
HEMANGIOSARCOMA					X																				
RESPIRATORY SYSTEM																									
LUNGS AND BRONCHI	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
ALVEOLAR/BRONCHIOLAR CARCINOMA																X									
TRACHEA	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
HEMATOPOIETIC SYSTEM																									
BONE MARROW	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
SPLEEN	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
LYMPH NODES	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
THYMUS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
CIRCULATORY SYSTEM																									
HEART	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
DIGESTIVE SYSTEM																									
SALIVARY GLAND	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
LIVER	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
NEOPLASTIC NODULE																		X							
BILE DUCT	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
GALLBLADDER & COMMON BILE DUCT	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
PANCREAS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
ESOPHAGUS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
STOMACH	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
SMALL INTESTINE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
LARGE INTESTINE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
URINARY SYSTEM																									
KIDNEY	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
URINARY BLADDER	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
ENDOCRINE SYSTEM																									
PITUITARY	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
CARCINOMA,NOS																									
ADENOMA, NOS	X	X										X			X										
ADRENAL	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
CORTICAL ADENOMA															X										
THYROID	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
FOLLICULAR-CELL CARCINOMA																			X						
C-CELL ADENOMA																				X					
C-CELL CARCINOMA																									
PARATHYROID	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+
REPRODUCTIVE SYSTEM																									
MAMMARY GLAND	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
ADENOMA, NOS																									
ADENOCARCINOMA, NOS					X				X	X			X	X			X			X					
FIBROADENOMA																									
PREPUTIAL/CLITORAL GLAND	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
CARCINOMA,NOS																									
UTERUS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
ENDOMETRIAL STROMAL POLYP	X			X								X				X	X								
OVARY	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
NERVOUS SYSTEM																									
BRAIN	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+
ASTROCYTOMA																									
SPECIAL SENSE ORGANS																									
HARDERIAN GLAND	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
ADENOMA, NOS																									
ALL OTHER SYSTEMS																									
MULTIPLE ORGANS NOS	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
MALIGNANT LYMPHOMA, MIXED TYPE																									X
UNDIFFERENTIATED LEUKEMIA	X						X																		
MAST-CELL 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 A4. FEMALE RATS: TUMOR PATHOLOGY (CONTINUED) HIGH DOSE

ANIMAL NUMBER	026	027	028	029	031	031	032	033	034	035	036	037	038	039	040	041	042	043	044	045	046	047	048	049	050	TOTAL
WEEKS ON STUDY	105	105	101	103	105	104	104	081	105	104	104	105	104	105	105	093	085	105	105	105	105	105	105	105	104	TISSUES TUMORS
INTEGUMENTARY SYSTEM																										
SUBCUTANEOUS TISSUE HEMANGIOSARCOMA	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50* 1
RESPIRATORY SYSTEM																										
LUNGS AND BRONCHI ALVEOLAR/BRONCHIOLAR CARCINOMA	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50 1
TRACHEA	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
HEMATOPOIETIC SYSTEM																										
BONE MARROW	+	+	+	+	•	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
SPLEEN	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
LYMPH NODES	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
THYMUS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
CIRCULATORY SYSTEM																										
HEART	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
DIGESTIVE SYSTEM																										
SALIVARY GLAND	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
LIVER NEOPLASTIC NODULE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50 1
BILE DUCT	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
~~GALL~~BLADDER & COMMON BILE DUCT	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	50*
PANCREAS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
ESOPHAGUS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	49
STOMACH	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
SMALL INTESTINE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
LARGE INTESTINE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
URINARY SYSTEM																										
KIDNEY	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
URINARY BLADDER	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
ENDOCRINE SYSTEM																										
PITUITARY	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	48
CARCINOMA,NOS										X																1
ADENOMA, NOS				X			X	X														X		X		9
ADRENAL	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
CORTICAL ADENOMA													X													2
THYROID	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
FOLLICULAR-CELL CARCINOMA																										1
C-CELL ADENOMA														X												2
C-CELL CARCINOMA																						X				1
PARATHYROID	+	+	-	+	-	-	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	45
REPRODUCTIVE SYSTEM																										
MAMMARY GLAND	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50*
ADENOMA, NOS	X																									1
ADENOCARCINOMA, NOS								X																		1
FIBROADENOMA		X	X					X														X	X			12
PREPUTIAL/CLITORAL GLAND	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	50*
CARCINOMA,NOS																		X								1
UTERUS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
ENDOMETRIAL STROMAL POLYP		X				X									X		X		X		X		X		X	13
OVARY	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
NERVOUS SYSTEM																										
BRAIN	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	49
ASTROCYTOMA																X										1
SPECIAL SENSE ORGANS																										
HARDERIAN GLAND	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	50*
ADENOMA, NOS																	X									1
ALL OTHER SYSTEMS																										
MULTIPLE ORGANS NOS	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	50*
MALIGNANT LYMPHOMA, MIXED TYPE																										1
UNDIFFERENTIATED LEUKEMIA																						X				3
MAST-CELL LEUKEMIA																								X		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

APPENDIX B

SUMMARY OF THE INCIDENCE OF NEOPLASMS IN MICE FED DIETS CONTAINING STANNOUS CHLORIDE

TABLE B1.

SUMMARY OF THE INCIDENCE OF NEOPLASMS IN MALE MICE FED DIETS CONTAINING STANNOUS CHLORIDE

	CONTROL	LOW DOSE	HIGH DOSE
ANIMALS INITIALLY IN STUDY	50	50	50
ANIMALS NECROPSIED	50	49	50
ANIMALS EXAMINED HISTOPATHOLOGICALLY	50	49	50
INTEGUMENTARY SYSTEM			
*SKIN	(50)	(49)	(50)
FIBROSARCOMA	1 (2%)	1 (2%)	1 (2%)
*SUBCUT TISSUE	(50)	(49)	(50)
SARCOMA, NOS			1 (2%)
FIBROSARCOMA	3 (6%)		1 (2%)
RHABDOMYOSARCOMA	2 (4%)		1 (2%)
NEUROFIBROSARCOMA	1 (2%)		1 (2%)
RESPIRATORY SYSTEM			
#LUNG	(50)	(48)	(49)
HEPATOCELLULAR CARCINOMA, METAST	2 (4%)		4 (8%)
ALVEOLAR/BRONCHIOLAR ADENOMA	7 (14%)	8 (17%)	8 (16%)
ALVEOLAR/BRONCHIOLAR CARCINOMA	3 (6%)	2 (4%)	2 (4%)
LEIOMYOSARCOMA, METASTATIC	1 (2%)		
HEMATOPOIETIC SYSTEM			
*MULTIPLE ORGANS	(50)	(49)	(50)
MALIGNANT LYMPHOMA, NOS		1 (2%)	
MALIG.LYMPHOMA, LYMPHOCYTIC TYPE			1 (2%)
MALIG.LYMPHOMA, HISTIOCYTIC TYPE		1 (2%)	
MALIGNANT LYMPHOMA, MIXED TYPE	4 (8%)	3 (6%)	1 (2%)
#SPLEEN	(48)	(48)	(50)
MALIGNANT LYMPHOMA, MIXED TYPE	1 (2%)		
#MESENTERIC L. NODE	(47)	(49)	(49)
MALIG.LYMPHOMA, LYMPHOCYTIC TYPE			1 (2%)
MALIGNANT LYMPHOMA, MIXED TYPE			1 (2%)

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

TABLE B1. MALE MICE: NEOPLASMS (CONTINUED)

	CONTROL	LOW DOSE	HIGH DOSE
#PEYER'S PATCH	(48)	(44)	(50)
MALIG.LYMPHOMA, LYMPHOCYTIC TYPE	1 (2%)		
*MESENTERY	(50)	(49)	(50)
MALIG.LYMPHOMA, HISTIOCYTIC TYPE	1 (2%)		
CIRCULATORY SYSTEM			
*ABDOMINAL WALL	(50)	(49)	(50)
HEMANGIOSARCOMA, INVASIVE		1 (2%)	
#SPLEEN	(48)	(48)	(50)
HEMANGIOSARCOMA	1 (2%)	1 (2%)	
#LIVER	(50)	(49)	(50)
HEMANGIOSARCOMA	2 (4%)	4 (8%)	1 (2%)
*VAS DEFERENS	(50)	(49)	(50)
HEMANGIOSARCOMA			1 (2%)
DIGESTIVE SYSTEM			
#LIVER	(50)	(49)	(50)
HEPATOCELLULAR ADENOMA	7 (14%)	5 (10%)	5 (10%)
HEPATOCELLULAR CARCINOMA	10 (20%)	5 (10%)	10 (20%)
#ESOPHAGUS	(47)	(49)	(49)
SQUAMOUS CELL CARCINOMA			1 (2%)
URINARY SYSTEM			
*URETER	(50)	(49)	(50)
TRANSITIONAL-CELL CARCINOMA			1 (2%)
ENDOCRINE SYSTEM			
#ADRENAL	(49)	(48)	(49)
CORTICAL ADENOMA		1 (2%)	
PHEOCHROMOCYTOMA		1 (2%)	
#THYROID	(48)	(48)	(49)
FOLLICULAR-CELL ADENOMA		1 (2%)	2 (4%)

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

TABLE B1. MALE MICE: NEOPLASMS (CONTINUED)

	CONTROL	LOW DOSE	HIGH DOSE
#PANCREATIC ISLETS	(49)	(48)	(49)
ISLET-CELL ADENOMA	1 (2%)		
REPRODUCTIVE SYSTEM			
NONE			
NERVOUS SYSTEM			
#BRAIN	(50)	(49)	(50)
ASTROCYTOMA			1 (2%)
SPECIAL SENSE ORGANS			
*HARDERIAN GLAND	(50)	(49)	(50)
PAPILLARY CYSTADENOMA, NOS		3 (6%)	2 (4%)
MUSCULOSKELETAL SYSTEM			
NONE			
BODY CAVITIES			
*THORAX	(50)	(49)	(50)
LEIOMYOSARCOMA	1 (2%)		
*ABDOMINAL WALL	(50)	(49)	(50)
HEPATOCELLULAR CARCINOMA, INVASI		1 (2%)	
*MESENTERY	(50)	(49)	(50)
SARCOMA, NOS			1 (2%)
ALL OTHER SYSTEMS			
*MULTIPLE ORGANS	(50)	(49)	(50)
MESOTHELIOMA, MALIGNANT		1 (2%)	
DIAPHRAGM			
HEPATOCELLULAR CARCINOMA, INVASI		1	

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

TABLE B1. MALE MICE: NEOPLASMS (CONTINUED)

	CONTROL	LOW DOSE	HIGH DOSE
LEG			
NEURILEMOMA		1	
ANIMAL DISPOSITION SUMMARY			
ANIMALS INITIALLY IN STUDY	50	50	50
NATURAL DEATH@	5	6	1
MORIBUND SACRIFICE	13	2	4
SCHEDULED SACRIFICE			
ACCIDENTALLY KILLED			
TERMINAL SACRIFICE	32	42	45
ANIMAL MISSING			
TUMOR SUMMARY			
TOTAL ANIMALS WITH PRIMARY TUMORS*	33	29	33
TOTAL PRIMARY TUMORS	46	39	44
TOTAL ANIMALS WITH BENIGN TUMORS	14	16	16
TOTAL BENIGN TUMORS	15	20	17
TOTAL ANIMALS WITH MALIGNANT TUMORS	24	17	24
TOTAL MALIGNANT TUMORS	31	19	27
TOTAL ANIMALS WITH SECONDARY TUMORS#	3	1	4
TOTAL SECONDARY TUMORS	3	3	4
TOTAL ANIMALS WITH TUMORS UNCERTAIN-BENIGN OR MALIGNANT			
TOTAL UNCERTAIN TUMORS			
TOTAL ANIMALS WITH TUMORS UNCERTAIN-PRIMARY OR METASTATIC			
TOTAL UNCERTAIN TUMORS			

@ INCLUDES AUTOLYZED ANIMALS

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

TABLE B2.

SUMMARY OF THE INCIDENCE OF NEOPLASMS IN FEMALE MICE FED DIETS CONTAINING STANNOUS CHLORIDE

	CONTROL	LOW DOSE	HIGH DOSE
ANIMALS INITIALLY IN STUDY	50	50	50
ANIMALS NECROPSIED	50	49	49
ANIMALS EXAMINED HISTOPATHOLOGICALLY	49	49	49
INTEGUMENTARY SYSTEM			
*SKIN	(50)	(49)	(49)
SQUAMOUS CELL PAPILLOMA	1 (2%)		
RESPIRATORY SYSTEM			
#LUNG	(49)	(48)	(46)
CARCINOMA, NOS, METASTATIC		1 (2%)	
ADENOCARCINOMA, NOS, METASTATIC	1 (2%)		
ALVEOLAR/BRONCHIOLAR ADENOMA	4 (8%)	1 (2%)	1 (2%)
ALVEOLAR/BRONCHIOLAR CARCINOMA	1 (2%)		2 (4%)
HEMATOPOIETIC SYSTEM			
#HARDERIAN GLAND	(48)	(46)	(46)
LYMPHOCYTIC LEUKEMIA		1 (2%)	
*MULTIPLE ORGANS	(50)	(49)	(49)
MALIGNANT LYMPHOMA, NOS	1 (2%)		1 (2%)
MALIG.LYMPHOMA, LYMPHOCYTIC TYPE	1 (2%)	5 (10%)	2 (4%)
MALIG.LYMPHOMA, HISTIOCYTIC TYPE			4 (8%)
MALIGNANT LYMPHOMA, MIXED TYPE	1 (2%)	2 (4%)	2 (4%)
LEUKEMIA,NOS	1 (2%)		
UNDIFFERENTIATED LEUKEMIA		1 (2%)	
LYMPHOCYTIC LEUKEMIA			2 (4%)
*HEAD	(50)	(49)	(49)
LYMPHOCYTIC LEUKEMIA		1 (2%)	
#SPLEEN	(48)	(49)	(47)
MALIGNANT LYMPHOMA, MIXED TYPE	1 (2%)		
#PEYER'S PATCH	(48)	(46)	(46)
MALIG.LYMPHOMA, LYMPHOCYTIC TYPE	1 (2%)	1 (2%)	

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

TABLE B2. FEMALE MICE: NEOPLASMS (CONTINUED)

	CONTROL	LOW DOSE	HIGH DOSE
CIRCULATORY SYSTEM			
*MULTIPLE ORGANS	(50)	(49)	(49)
HEMANGIOSARCOMA		1 (2%)	
*AXILLA	(50)	(49)	(49)
HEMANGIOSARCOMA	1 (2%)		
#BONE MARROW	(49)	(49)	(48)
HEMANGIOSARCOMA	1 (2%)		
#LIVER	(49)	(49)	(49)
HEMANGIOSARCOMA	2 (4%)		
#UTERUS	(49)	(49)	(49)
HEMANGIOSARCOMA			1 (2%)
#UTERUS/MYOMETRIUM	(49)	(49)	(49)
HEMANGIOSARCOMA	1 (2%)		
#OVARY	(44)	(30)	(43)
HEMANGIOMA		1 (3%)	
DIGESTIVE SYSTEM			
#LIVER	(49)	(49)	(49)
HEPATOCELLULAR ADENOMA	3 (6%)	1 (2%)	5 (10%)
HEPATOCELLULAR CARCINOMA		3 (6%)	3 (6%)
#DUODENAL MUCOSA	(48)	(46)	(46)
ADENOMATOUS POLYP, NOS	1 (2%)		
URINARY SYSTEM			
NONE			
ENDOCRINE SYSTEM			
#PITUITARY	(43)	(41)	(41)
ADENOMA, NOS		4 (10%)	2 (5%)
#ADRENAL	(49)	(46)	(45)
PHEOCHROMOCYTOMA	1 (2%)		

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

TABLE B2. FEMALE MICE: NEOPLASMS (CONTINUED)

	CONTROL	LOW DOSE	HIGH DOSE
#ADRENAL CORTEX	(49)	(46)	(45)
SARCOMA, NOS	1 (2%)		
#THYROID	(47)	(42)	(47)
FOLLICULAR-CELL ADENOMA	1 (2%)	1 (2%)	1 (2%)
REPRODUCTIVE SYSTEM			
*MAMMARY GLAND	(50)	(49)	(49)
ADENOCARCINOMA, NOS	1 (2%)		
ACINAR-CELL CARCINOMA	1 (2%)		
MIXED TUMOR, MALIGNANT	1 (2%)	1 (2%)	1 (2%)
#UTERUS	(49)	(49)	(49)
SARCOMA, NOS		1 (2%)	
FIBROSARCOMA			1 (2%)
LEIOMYOSARCOMA	1 (2%)	1 (2%)	
ENDOMETRIAL STROMAL POLYP	1 (2%)	1 (2%)	1 (2%)
ENDOMETRIAL STROMAL SARCOMA	1 (2%)		
#OVARY	(44)	(30)	(43)
GRANULOSA-CELL TUMOR			1 (2%)
NERVOUS SYSTEM			
NONE			
SPECIAL SENSE ORGANS			
#HARDERIAN GLAND	(48)	(46)	(46)
CARCINOMA,NOS		1 (2%)	
ADENOMA, NOS	3 (6%)	7 (15%)	5 (11%)
PAPILLARY CYSTADENOMA, NOS		1 (2%)	
*EXTERNAL EAR	(50)	(49)	(49)
SARCOMA, NOS		1 (2%)	
MUSCULOSKELETAL SYSTEM			
*STERNUM	(50)	(49)	(49)
OSTEOSARCOMA		1 (2%)	

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

TABLE B2. FEMALE MICE: NEOPLASMS (CONTINUED)

	CONTROL	LOW DOSE	HIGH DOSE
BODY CAVITIES			
*PLEURA	(50)	(49)	(49)
OSTEOSARCOMA, INVASIVE		1 (2%)	
ALL OTHER SYSTEMS			
*MULTIPLE ORGANS	(50)	(49)	(49)
ALVEOLAR/BRONCHIOLAR CA, INVASIV			1 (2%)
SARCOMA, NOS		1 (2%)	
NEURILEMOMA, MALIGNANT	1 (2%)		
ANIMAL DISPOSITION SUMMARY			
ANIMALS INITIALLY IN STUDY	50	50	50
NATURAL DEATH@	7	10	18
MORIBUND SACRIFICE	5	7	4
SCHEDULED SACRIFICE			
ACCIDENTALLY KILLED			
TERMINAL SACRIFICE	38	33	28
ANIMAL MISSING			
TUMOR SUMMARY			
TOTAL ANIMALS WITH PRIMARY TUMORS*	22	32	27
TOTAL PRIMARY TUMORS	34	39	35
TOTAL ANIMALS WITH BENIGN TUMORS	13	14	14
TOTAL BENIGN TUMORS	15	17	15
TOTAL ANIMALS WITH MALIGNANT TUMORS	14	20	17
TOTAL MALIGNANT TUMORS	19	22	19
TOTAL ANIMALS WITH SECONDARY TUMORS#	1	2	1
TOTAL SECONDARY TUMORS	1	2	1
TOTAL ANIMALS WITH TUMORS UNCERTAIN- BENIGN OR MALIGNANT			1
TOTAL UNCERTAIN TUMORS			1
TOTAL ANIMALS WITH TUMORS UNCERTAIN- PRIMARY OR METASTATIC			
TOTAL UNCERTAIN TUMORS			

@ INCLUDES AUTOLYZED ANIMALS

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

TABLE B3.

INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF MALE MICE IN THE 2-YEAR STUDY OF STANNOUS CHLORIDE

CONTROL

ANIMAL NUMBER	0011	0012	0013	0014	0015	0016	0017	0018	0019	0110	0111	0112	0113	0114	0115	0116	0117	0118	0119	0120	0121	0122	0123	0124	0125
WEEKS ON STUDY	106	099	061	043	093	091	094	088	041	092	096	041	091	085	092	088	095	096	051	096	061	051	095	041	096
INTEGUMENTARY SYSTEM																									
SKIN	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	N	+	+	+	+	+	+	+	+	+
FIBROSARCOMA																									
SUBCUTANEOUS TISSUE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	N	+	+	+	+	+	+	+	+	+
FIBROSARCOMA				X			X																		
RHABDOMYOSARCOMA		X												X											
NEUROFIBROSARCOMA						X																			
RESPIRATORY SYSTEM																									
LUNGS AND BRONCHI	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
HEPATOCELLULAR CARCINOMA, METASTA					X																				
ALVEOLAR/BRONCHIOLAR ADENOMA																					X				X
ALVEOLAR/BRONCHIOLAR CARCINOMA																	X		X						
LEIOMYOSARCOMA, METASTATIC								X																	
TRACHEA	-	+	-	-	-	-	+	+	+	+	-	-	-	-	+	-	-	-	+	-	-	-	+	-	-
HEMATOPOIETIC SYSTEM																									
BONE MARROW	+	+	+	+	+	+	+	+	•	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+
SPLEEN	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+
HEMANGIOSARCOMA																									
MALIGNANT LYMPHOMA, MIXED TYPE																									
LYMPH NODES	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	-
THYMUS	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	-	-	+	+	+	+	-	+	+	+
CIRCULATORY SYSTEM																									
HEART	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+
DIGESTIVE SYSTEM																									
SALIVARY GLAND	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+
LIVER	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
HEPATOCELLULAR ADENOMA										X															
HEPATOCELLULAR CARCINOMA					X	X									X										X
HEMANGIOSARCOMA													X		X										
BILE DUCT	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
GALLBLADDER & COMMON BILE DUCT	+	+	+	+	N	+	+	+	+	+	+	N	N	+	N	N	+	N	+	+	+	+	+	N	+
PANCREAS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+
ESOPHAGUS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+
STOMACH	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+
SMALL INTESTINE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+
MALIG.LYMPHOMA, LYMPHOCYTIC TYPE																				X					
LARGE INTESTINE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+
URINARY SYSTEM																									
KIDNEY	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
URINARY BLADDER	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	-	+	+	+	+	+	+	+	+	+
ENDOCRINE SYSTEM																									
PITUITARY	+	-	+	+	+	-	-	+	+	-	+	+	-	+	+	-	+	+	+	+	-	+	-	+	+
ADRENAL	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+
THYROID	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+
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
TESTIS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+
PROSTATE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+
BODY CAVITIES																									
PLEURA	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
LEIOMYOSARCOMA								X																	
MESENTERY	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
MALIG.LYMPHOMA, HISTIOCYTIC TYPE										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
MALIGNANT LYMPHOMA, MIXED TYPE							X												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 B3. MALE MICE: TUMOR PATHOLOGY (CONTINUED) CONTROL

ANIMAL NUMBER	026	027	028	029	030	031	032	033	034	035	036	037	038	039	040	041	042	043	044	045	046	047	048	049	050	TOTAL
WEEKS ON STUDY	096	106	106	106	106	105	106	106	078	106	106	105	105	105	106	090	099	106	105	103	106	091	106	097	105	TISSUES TUMORS
INTEGUMENTARY SYSTEM																										
SKIN	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50*
FIBROSARCOMA																						X				1
SUBCUTANEOUS TISSUE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50*
FIBROSARCOMA																						X				3
RHABDOMYOSARCOMA																										2
NEUROFIBROSARCOMA																										1
RESPIRATORY SYSTEM																										
LUNGS AND BRONCHI	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
HEPATOCELLULAR CARCINOMA, METASTA				X																						2
ALVEOLAR/BRONCHIOLAR ADENOMA											X				X			X	X			X				7
ALVEOLAR/BRONCHIOLAR CARCINOMA									X																	3
LEIOMYOSARCOMA, METASTATIC																										1
TRACHEA	+	+	+	-	-	-	+	-	+	-	-	-	-	-	-	+	-	+	+	+	-	-	-	-	+	18
HEMATOPOIETIC SYSTEM																										
BONE MARROW	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	47
SPLEEN	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	48
HEMANGIOSARCOMA																							X	X		1
MALIGNANT LYMPHOMA, MIXED TYPE																										1
LYMPH NODES	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	47
THYMUS	-	-	-	-	+	+	+	+	+	+	-	+	+	+	+	+	-	+	+	+	+	+	+	+	+	40
CIRCULATORY SYSTEM																										
HEART	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	47
DIGESTIVE SYSTEM																										
SALIVARY GLAND	+	+	+	●	+	+	+	+	+	+	●	+	+	+	+	●	+	+	+	+	+	+	+	+	+	48
LIVER	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
HEPATOCELLULAR ADENOMA		X	X	X			X											X						X		7
HEPATOCELLULAR CARCINOMA				X												X	X		X			X		X		10
HEMANGIOSARCOMA																										2
BILE DUCT	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
GALLBLADDER & COMMON BILE DUCT	N	+	+	+	+	+	+	N	+	+	+	+	+	+	+	+	+	N	+	N	+	+	+	N	+	50*
PANCREAS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	49
ESOPHAGUS	-	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	47
STOMACH	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	48
SMALL INTESTINE	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	48
MALIG.LYMPHOMA, LYMPHOCYTIC TYPE																										1
LARGE INTESTINE	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	48
URINARY SYSTEM																										
KIDNEY	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
URINARY BLADDER	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	48
ENDOCRINE SYSTEM																										
PITUITARY	-	+	-	+	+	+	+	-	+	+	+	+	+	+	+	+	-	+	+	+	+	-	+	+	+	37
ADRENAL	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	●	+	+	+	+	+	49
THYROID	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	48
PARATHYROID	+	+	+	-	-	+	+	●	+	-	-	-	-	-	-	+	+	+	+	+	-	+	+	●	-	29
PANCREATIC ISLETS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	49
ISLET-CELL ADENOMA																										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	50*
TESTIS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	49
PROSTATE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	49
BODY CAVITIES																										
PLEURA	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	50*
LEIOMYOSARCOMA																										1
MESENTERY	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	50*
MALIG.LYMPHOMA, HISTIOCYTIC TYPE																										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	50*
MALIGNANT LYMPHOMA, MIXED TYPE																				X						4

* 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 B3.

INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF MALE MICE IN THE 2-YEAR STUDY OF STANNOUS CHLORIDE

LOW DOSE

ANIMAL NUMBER	0012	0023	0034	0045	0056	0067	0078	0089	0100	0111	0123	0134	0145	0156	0167	0178	0189	0200	0211	0223	0241	0252
WEEKS ON STUDY	042	015	015	015	015	015	015	015	079	015	015	015	015	015	015	015	015	041	035	015	015	061
INTEGUMENTARY SYSTEM																						
SKIN	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
FIBROSARCOMA																				X		
RESPIRATORY SYSTEM																						
LUNGS AND BRONCHI	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
ALVEOLAR/BRONCHIOLAR ADENOMA					X			X				X										
ALVEOLAR/BRONCHIOLAR CARCINOMA																X						
TRACHEA	A	-	-	+	-	+	+	-	-	+	-	+	+	+	+	+	+	+	+	-	+	-	+	+
HEMATOPOIETIC SYSTEM																						
BONE MARROW	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
SPLEEN	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
HEMANGIOSARCOMA																						
LYMPH NODES	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
THYMUS	A	+	+	+	+	+	+	-	-	+	+	+	+	+	-	+	+	+	+	+	+	+
CIRCULATORY SYSTEM																						
HEART	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
DIGESTIVE SYSTEM																						
SALIVARY GLAND	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
LIVER	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
HEPATOCELLULAR ADENOMA								X							X							
HEPATOCELLULAR CARCINOMA										X			X						X			
HEMANGIOSARCOMA																	X		X			
BILE DUCT	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
GALLBLADDER & COMMON BILE DUCT	A	+	+	+	N	+	+	+	+	N	+	+	N	+	+	+	+	+	N	+	+	+
PANCREAS	A	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
ESOPHAGUS	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
STOMACH	A	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
SMALL INTESTINE	A	+	+	+	-	+	+	+	+	+	+	+	+	-	+	+	+	+	-	+	+	+
LARGE INTESTINE	A	+	+	+	-	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+
URINARY SYSTEM																						
KIDNEY	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
URINARY BLADDER	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
ENDOCRINE SYSTEM																						
PITUITARY	A	+	+	+	+	+	+	+	+	+	+	-	-	+	+	+	+	-	+	+	+	+
ADRENAL	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
CORTICAL ADENOMA																						
PHEOCHROMOCYTOMA																					X	
THYROID	A	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
FOLLICULAR-CELL ADENOMA									X													
PARATHYROID	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	+
TESTIS	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
PROSTATE	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
SPECIAL SENSE ORGANS																						
HARDERIAN GLAND	A	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
PAPILLARY CYSTADENOMA, NOS																					X			
BODY CAVITIES																						
PERITONEUM	A	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
HEPATOCELLULAR CARCINOMA, INVASIV																			X					
HEMANGIOSARCOMA, INVASIVE																			X					
ALL OTHER SYSTEMS																						
MULTIPLE ORGANS NOS	A	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
MALIGNANT LYMPHOMA, NOS																								
MALIG.LYMPHOMA, HISTIOCYTIC TYPE																								
MALIGNANT LYMPHOMA, MIXED TYPE								X																
DIAPHRAGM NOS	A																							
HEPATOCELLULAR CARCINOMA, INVASIV																			X					
LEG NOS	A																							
NEURILEMMA																								

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

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

TABLE B3. MALE MICE: TUMOR PATHOLOGY (CONTINUED) LOW DOSE

ANIMAL NUMBER	0216	0217	0218	0219	0230	0231	0232	0233	0234	0235	0236	0237	0238	0239	0240	0241	0242	0243	0244	0245	0246	0247	0248	0249	0250	TOTAL
WEEKS ON STUDY	105	105	105	105	105	105	105	105	105	105	105	105	105	105	105	105	105	105	096	105	105	105	105	105	105	TISSUES / TUMORS
INTEGUMENTARY SYSTEM																										
SKIN	+	+	+	+	+	N	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	49*
FIBROSARCOMA																										1
RESPIRATORY SYSTEM																										
LUNGS AND BRONCHI	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	48
ALVEOLAR/BRONCHIOLAR ADENOMA		X						X						X							X			X		8
ALVEOLAR/BRONCHIOLAR CARCINOMA			X																							2
TRACHEA	-	+	+	-	+	-	-	-	-	-	-	-	-	-	-	-	+	-	+	-	-	-	-	-	-	21
HEMATOPOIETIC SYSTEM																										
BONE MARROW	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	49
SPLEEN	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	48
HEMANGIOSARCOMA	X																									1
LYMPH NODES	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	49
THYMUS	-	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	-	42
CIRCULATORY SYSTEM																										
HEART	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	49
DIGESTIVE SYSTEM																										
SALIVARY GLAND	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	49
LIVER	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	49
HEPATOCELLULAR ADENOMA								X		X											X					5
HEPATOCELLULAR CARCINOMA					X																					5
HEMANGIOSARCOMA														X							X					2
BILE DUCT	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	49
GALLBLADDER & COMMON BILE DUCT	+	+	+	+	+	N	-	+	+	+	+	+	+	+	+	+	+	+	N	+	+	+	+	+	+	39*
PANCREAS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	48
ESOPHAGUS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	49
STOMACH	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	47
SMALL INTESTINE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	-	+	+	+	+	44
LARGE INTESTINE	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	-	+	+	+	+	+	+	45
URINARY SYSTEM																										
KIDNEY	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	49
URINARY BLADDER	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	49
ENDOCRINE SYSTEM																										
PITUITARY	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	-	+	+	+	+	-	+	42
ADRENAL	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	48
CORTICAL ADENOMA																					X					1
PHEOCHROMOCYTOMA																										1
THYROID	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	48
FOLLICULAR-CELL ADENOMA																										1
PARATHYROID	+	+	+	-	+	+	-	+	+	+	+	-	+	+	+	-	+	+	-	+	+	+	+	+	+	35
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	49*
TESTIS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	49
PROSTATE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	49
SPECIAL SENSE ORGANS																										
HARDERIAN GLAND	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	49*
PAPILLARY CYSTADENOMA, NOS														X							X					3
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	49*
HEPATOCELLULAR CARCINOMA, INVASIV																										1
HEMANGIOSARCOMA, INVASIVE																										1
ALL OTHER SYSTEMS																										
MULTIPLE ORGANS NOS	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	49*
MESOTHELIOMA, MALIGNANT																										1
MALIGNANT LYMPHOMA, NOS																			X							1
MALIG.LYMPHOMA, HISTIOCYTIC TYPE									X																	1
MALIGNANT LYMPHOMA, MIXED TYPE														X			X									3
DIAPHRAGM NOS																										
HEPATOCELLULAR CARCINOMA, INVASIV																										1
LEG NOS																										
NEURILEMOMA										X																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 B3.

INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF MALE MICE IN THE 2-YEAR STUDY OF STANNOUS CHLORIDE

HIGH DOSE

ANIMAL NUMBER	0012	0023	0034	0045	0056	0067	0078	0089	0101	0112	0123	0134	0145	0156	0167	0178	0191	0202	0212	0223	0234	0245
WEEKS ON STUDY	105	105	074	105	105	105	105	105	105	105	105	105	105	070	105	105	105	105	086	105	105	105
INTEGUMENTARY SYSTEM																						
SKIN	+	+	+	+	+	N	N	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
FIBROSARCOMA								X														
SUBCUTANEOUS TISSUE	+	+	+	+	+	N	N	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
SARCOMA, NOS																			X			
FIBROSARCOMA																						
RHABDOMYOSARCOMA																						
NEUROFIBROSARCOMA																						
RESPIRATORY SYSTEM																						
LUNGS AND BRONCHI	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-
HEPATOCELLULAR CARCINOMA, METASTA													X									
ALVEOLAR/BRONCHIOLAR ADENOMA									X								X	X				
ALVEOLAR/BRONCHIOLAR CARCINOMA								X						X								
TRACHEA	-	-	+	-	-	-	+	+	-	+	+	+	+	-	+	+	-	+	-	-	+	+	-	+
HEMATOPOIETIC SYSTEM																						
BONE MARROW	+	+	+	+	+	+	-	+	-	+	+	+	+	+	+	+	-	+	+	+	+	-	+
SPLEEN	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
LYMPH NODES	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
MALIG.LYMPHOMA, LYMPHOCYTIC TYPE													X									
MALIGNANT LYMPHOMA, MIXED TYPE																						X
THYMUS	+	+	+	-	+	+	+	+	+	+	+	+	+	+	-	+	+	-	+	+	+	-	+
CIRCULATORY SYSTEM																						
HEART	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
DIGESTIVE SYSTEM																						
SALIVARY GLAND	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
LIVER	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
HEPATOCELLULAR ADENOMA						X											X				X	
HEPATOCELLULAR CARCINOMA									X		X			X		X					X	
HEMANGIOSARCOMA																		X				
BILE DUCT	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
GALLBLADDER & COMMON BILE DUCT	N	N	+	+	+	N	+	+	+	+	+	+	+	+	N	+	N	+	+	+	+	+	+
PANCREAS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
ESOPHAGUS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
SQUAMOUS CELL CARCINOMA																						
STOMACH	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
SMALL INTESTINE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
LARGE INTESTINE	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
URINARY SYSTEM																						
KIDNEY	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
URETER	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
TRANSITIONAL-CELL CARCINOMA	X																					
URINARY BLADDER	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
ENDOCRINE SYSTEM																						
PITUITARY	+	+	+	-	+	+	+	+	+	-	+	+	-	+	+	-	+	+	+	+	-	-	+
ADRENAL	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
THYROID	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
FOLLICULAR-CELL ADENOMA																						
PARATHYROID	-	+	-	-	-	+	+	+	+	+	+	+	-	+	-	+	-	+	+	-	+	+	+
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
TESTIS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
PROSTATE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
VAS DEFERNES, SPERMATIC CORD	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
HEMANGIOSARCOMA			X																			
NERVOUS SYSTEM																						
BRAIN	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
ASTROCYTOMA				X																		
SPECIAL SENSE ORGANS																						
HARDERIAN GLAND	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
PAPILLARY CYSTADENOMA, 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
SARCOMA, NOS																						
ALL OTHER SYSTEMS																						
MULTIPLE ORGANS NOS	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
MALIG.LYMPHOMA, LYMPHOCYTIC TYPE																			X			
MALIGNANT LYMPHOMA, MIXED 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 B3. MALE MICE: TUMOR PATHOLOGY (CONTINUED) HIGH DOSE

ANIMAL NUMBER	026	027	028	029	030	031	032	033	034	035	036	037	038	039	040	041	042	043	044	045	046	047	048	049	050	TOTAL TISSUES TUMORS
WEEKS ON STUDY	105	105	105	096	105	105	105	105	105	105	105	105	105	105	091	105	105	105	105	105	105	105	105	105	105	
INTEGUMENTARY SYSTEM																										
SKIN	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
FIBROSARCOMA																										1
SUBCUTANEOUS TISSUE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
SARCOMA, NOS																										1
FIBROSARCOMA																						X				1
RHABDOMYOSARCOMA															X											1
NEUROFIBROSARCOMA																									X	1
RESPIRATORY SYSTEM																										
LUNGS AND BRONCHI	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	49
HEPATOCELLULAR CARCINOMA, METASTA	X					X													X							4
ALVEOLAR/BRONCHIOLAR ADENOMA	X					X		X														X	X			8
ALVEOLAR/BRONCHIOLAR CARCINOMA																										2
TRACHEA	-	-	-	-	-	-	-	-	+	+	-	+	+	-	+	+	-	+	+	-	-	-	-	+	-	23
HEMATOPOIETIC SYSTEM																										
BONE MARROW	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	45
SPLEEN	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
LYMPH NODES	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	49
MALIG.LYMPHOMA, LYMPHOCYTIC TYPE																										1
MALIGNANT LYMPHOMA, MIXED TYPE																										1
THYMUS	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	44
CIRCULATORY SYSTEM																										
HEART	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
DIGESTIVE SYSTEM																										
SALIVARY GLAND	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
LIVER	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
HEPATOCELLULAR ADENOMA															X											5
HEPATOCELLULAR CARCINOMA	X					X	X						X					X	X							10
HEMANGIOSARCOMA																										1
BILE DUCT	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
GALLBLADDER & COMMON BILE DUCT	N	+	N	N	+	+	+	+	+	N	+	N	N	+	+	+	+	N	+	+	+	+	N	+	+	50
PANCREAS	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	49
ESOPHAGUS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	49
SQUAMOUS CELL CARCINOMA			X																							1
STOMACH	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
SMALL INTESTINE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
LARGE INTESTINE	+	+	+	•	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	•	+	49
URINARY SYSTEM																										
KIDNEY	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
URETER	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	50
TRANSITIONAL-CELL CARCINOMA																										1
URINARY BLADDER	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
ENDOCRINE SYSTEM																										
PITUITARY	-	+	+	-	+	+	+	+	+	+	+	-	+	+	-	+	+	+	+	+	+	+	+	+	+	40
ADRENAL	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	49
THYROID	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	X	X	+	+	+	+	-	+	+	+	49
FOLLICULAR-CELL ADENOMA																X	X									2
PARATHYROID	-	+	+	-	+	-	+	+	+	+	+	+	-	+	+	+	-	+	+	-	+	-	-	+	+	34
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	50
TESTIS	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	49
PROSTATE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
VAS DEFERNES, SPERMATIC CORD	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	50
HEMANGIOSARCOMA																										1
NERVOUS SYSTEM																										
BRAIN	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50
ASTROCYTOMA																										1
SPECIAL SENSE ORGANS																										
HARDERIAN GLAND	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	50
PAPILLARY CYSTADENOMA, NOS							X			X																2
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	50
SARCOMA, NOS															X											1
ALL OTHER SYSTEMS																										
MULTIPLE ORGANS NOS	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	50
MALIG.LYMPHOMA, LYMPHOCYTIC TYPE																									X	1
MALIGNANT LYMPHOMA, MIXED TYPE																										1

M ANIMALS NECROPSIED

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

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

TABLE B4.

INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF FEMALE MICE IN THE 2-YEAR STUDY OF STANNOUS CHLORIDE

CONTROL

ANIMAL NUMBER	001	002	003	004	005	006	007	008	009	010	011	012	013	014	015	016	017	018	019	020	021	022	023	024	025
WEEKS ON STUDY	106	106	105	097	106	106	106	106	106	106	105	106	084	105	104	106	106	093	106	107	106	105	106	105	106
INTEGUMENTARY SYSTEM																									
SKIN	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	N	+	+	+	+	+	+	+	+
SQUAMOUS CELL PAPILLOMA																									
RESPIRATORY SYSTEM																									
LUNGS AND BRONCHI	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
ADENOCARCINOMA, NOS, METASTATIC													X												
ALVEOLAR/BRONCHIOLAR ADENOMA													X												
ALVEOLAR/BRONCHIOLAR CARCINOMA																									
TRACHEA	+	-	+	-	-	+	-	+	+	+	-	-	+	+	-	-	-	+	+	+	+	+	+	-	+
HEMATOPOIETIC SYSTEM																									
BONE MARROW	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
HEMANGIOSARCOMA	X																								
SPLEEN	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
MALIGNANT LYMPHOMA, MIXED TYPE					X																				
LYMPH NODES	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
THYMUS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	-	+
CIRCULATORY SYSTEM																									
HEART	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
DIGESTIVE SYSTEM																									
SALIVARY GLAND	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+
LIVER	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
HEPATOCELLULAR ADENOMA						X																			
HEMANGIOSARCOMA	X																								
BILE DUCT	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
GALLBLADDER & COMMON BILE DUCT	N	+	+	N	+	+	+	+	+	+	+	+	+	+	N	+	+	N	+	+	+	+	+	+	N
PANCREAS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+
ESOPHAGUS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
STOMACH	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
SMALL INTESTINE	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+
ADENOMATOUS POLYP, NOS					X																				
MALIG.LYMPHOMA, LYMPHOCYTIC TYPE																									
LARGE INTESTINE	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
URINARY SYSTEM																									
KIDNEY	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
URINARY BLADDER	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	-	+	+	+	+	+	+	+
ENDOCRINE SYSTEM																									
PITUITARY	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	-	+	+	+	+	+	+	+
ADRENAL	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
PHEOCHROMOCYTOMA																									X
SARCOMA, NOS																									
THYROID	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
FOLLICULAR-CELL ADENOMA																									X
PARATHYROID	-	+	+	-	-	+	+	-	+	+	+	-	+	+	-	-	+	+	+	+	+	+	+	+	+
REPRODUCTIVE SYSTEM																									
MAMMARY GLAND	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	N	N	+	+	+	+	+	+	+
ADENOCARCINOMA, NOS																			X						
ACINAR-CELL CARCINOMA																									
MIXED TUMOR, MALIGNANT				X																					
UTERUS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
LEIOMYOSARCOMA																									X
ENDOMETRIAL STROMAL POLYP										X															
ENDOMETRIAL STROMAL SARCOMA										X															
HEMANGIOSARCOMA													X												
OVARY	+	+	+	+	+	+	+	+	+	+	-	-	+	+	+	+	+	-	-	+	+	+	+	+	+
NERVOUS SYSTEM																									
BRAIN	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
SPECIAL SENSE ORGANS																									
HARDERIAN GLAND	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
ADENOMA, NOS																	X								
ALL OTHER SYSTEMS																									
MULTIPLE ORGANS NOS	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
NEURILEMOMA, MALIGNANT																									X
MALIGNANT LYMPHOMA, NOS																			X						
MALIG.LYMPHOMA, LYMPHOCYTIC TYPE																									
MALIGNANT LYMPHOMA, MIXED TYPE								X																	
LEUKEMIA,NOS				X																					
AXILLA NOS																									
HEMANGIOSARCOMA																									

+: 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 B4. FEMALE MICE: TUMOR PATHOLOGY (CONTINUED) CONTROL

ANIMAL NUMBER	0 2 6 7	0 2 7 8	0 2 8 9	0 2 9 0	0 3 1 1	0 3 2 2	0 3 3 3	0 3 4 4	0 3 5 5	0 3 6 6	0 3 7 7	0 3 8 8	0 3 9 9	0 4 0 0	0 4 1 1	0 4 2 2	0 4 3 3	0 4 4 4	0 4 5 5	0 4 6 6	0 4 7 7	0 4 8 8	0 4 9 9	0 5 0 0	TOTAL TISSUES TUMORS
WEEKS ON STUDY	0 3 4	1 0 6	1 0 6	0 8 6	1 0 5	1 0 5	C 9 6	0 9 9	1 0 5	1 0 6	1 0 6	1 0 1	0 9 7	1 0 6	1 0 5	1 0 6	1 0 6	1 0 6	1 0 6	1 0 6	1 0 5	1 0 6	0 9 2	1 0 5	1 0 6	
INTEGUMENTARY SYSTEM																									
SKIN	+	+	+	+	+	+	N	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50*
SQUAMOUS CELL PAPILLOMA																							X		1
RESPIRATORY SYSTEM																									
LUNGS AND BRONCHI	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	49
ADENOCARCINOMA, NOS, METASTATIC																							X		1
ALVEOLAR/BRONCHIOLAR ADENOMA											X					X			X						5
ALVEOLAR/BRONCHIOLAR CARCINOMA																									1
TRACHEA	+	-	-	+	-	-	A	-	+	+	-	+	+	+	-	-	-	-	+	-	+	+	+		27
HEMATOPOIETIC SYSTEM																									
BONE MARROW	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+		49
HEMANGIOSARCOMA																									1
SPLEEN	+	+	+	+	+	+	A	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+		48
MALIGNANT LYMPHOMA, MIXED TYPE																									1
LYMPH NODES	+	+	+	+	+	+	A	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	48
THYMUS	+	+	+	+	+	+	A	+	-	+	+	+	-	-	-	-	+	+	+	+	+	+	+	+	42
CIRCULATORY SYSTEM																									
HEART	+	+	+	+	+	+	A	+	+	+	+	+	-	-	+	+	+	+	+	+	-	+	+	+	47
DIGESTIVE SYSTEM																									
SALIVARY GLAND	+	+	+	+	+	+	A	+	+	+	+	-	-	+	+	+	+	+	+	+	+	+	+	+	46
LIVER	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	49
HEPATOCELLULAR ADENOMA		X										X													3
HEMANGIOSARCOMA								X																	2
BILE DUCT	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	49
GALLBLADDER & COMMON BILE DUCT	N	+	+	+	+	N	N	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50*
PANCREAS	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	48
ESOPHAGUS	+	+	+	+	+	+	A	+	+	+	+	-	-	+	+	+	+	+	+	+	+	+	+	+	47
STOMACH	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	49
SMALL INTESTINE	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	48
ADENOMATOUS POLYP, NOS																									1
MALIG.LYMPHOMA, LYMPHOCYTIC TYPE																	X								1
LARGE INTESTINE	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	48
URINARY SYSTEM																									
KIDNEY	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	49
URINARY BLADDER	+	+	+	+	+	+	A	+	+	+	+	-	+	-	+	+	+	+	+	+	+	+	+	+	45
ENDOCRINE SYSTEM																									
PITUITARY	-	+	-	+	+	+	A	-	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	43
ADRENAL	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	49
PHEOCHROMOCYTOMA																									1
SARCOMA, NOS								X																	1
THYROID	+	+	+	+	+	+	A	+	+	+	+	+	-	+	+	+	+	+	-	+	+	+	+	+	47
FOLLICULAR-CELL ADENOMA																									1
PARATHYROID	-	+	+	+	-	-	A	-	+	+	-	-	-	-	+	+	+	-	+	-	+	+	+	-	31
REPRODUCTIVE SYSTEM																									
MAMMARY GLAND	+	N	+	+	+	N	N	N	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	50*
ADENOCARCINOMA, NOS																							X		1
ACINAR-CELL CARCINOMA																									1
MIXED TUMOR, MALIGNANT																									1
UTERUS	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	49
LEIOMYOSARCOMA																									1
ENDOMETRIAL STROMAL POLYP																									1
ENDOMETRIAL STROMAL SARCOMA																									1
HEMANGIOSARCOMA																									1
OVARY	+	+	+	+	+	+	A	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	44
NERVOUS SYSTEM																									
BRAIN	+	+	+	+	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	49
SPECIAL SENSE ORGANS																									
HARDERIAN GLAND	+	+	+	+	+	-	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	48
ADENOMA, NOS															X							X			3
ALL OTHER SYSTEMS																									
MULTIPLE ORGANS NOS	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	50*
NEURILEMOMA, MALIGNANT																									1
MALIGNANT LYMPHOMA, NOS																									1
MALIG.LYMPHOMA, LYMPHOCYTIC TYPE											X														3
MALIGNANT LYMPHOMA, MIXED TYPE																									1
LEUKEMIA,NOS																									1
AXILLA NOS																									
HEMANGIOSARCOMA																						X			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 B4.

INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF FEMALE MICE IN THE 2-YEAR STUDY OF STANNOUS CHLORIDE

LOW DOSE

ANIMAL NUMBER	001	002	003	004	005	006	007	008	009	010	011	012	013	014	015	016	017	018	019	020	021	022	023	024	025
WEEKS ON STUDY	101	011	015	015	015	015	015	015	079	094	082	097	105	105	102	105	105	105	105	096	105	105	105	105	105
RESPIRATORY SYSTEM																									
LUNGS AND BRONCHI	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
CARCINOMA, NOS, METASTATIC		X																							
ALVEOLAR/BRONCHIOLAR ADENOMA																									
TRACHEA	-	+	+	-	-	-	+	-	-	+	+	-	+	-	+	-	-	+	-	+	-	-	+	-	+
HEMATOPOIETIC SYSTEM																									
BONE MARROW	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
SPLEEN	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
LYMPH NODES	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	
THYMUS	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	-
CIRCULATORY SYSTEM																									
HEART	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
DIGESTIVE SYSTEM																									
SALIVARY GLAND	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+
LIVER	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
HEPATOCELLULAR ADENOMA																									
HEPATOCELLULAR CARCINOMA																									
BILE DUCT	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
GALLBLADDER & COMMON BILE DUCT	+	N	+	+	+	N	+	+	+	+	N	N	+	+	N	+	+	+	+	+	+	+	+	+	N
PANCREAS	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
ESOPHAGUS	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	
STOMACH	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
SMALL INTESTINE	+	+	+	+	+	+	+	+	-	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+
MALIG.LYMPHOMA, LYMPHOCYTIC TYPE																									
LARGE INTESTINE	+	+	+	+	+	+	+	+	-	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+
URINARY SYSTEM																									
KIDNEY	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
URINARY BLADDER	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
ENDOCRINE SYSTEM																									
PITUITARY	+	+	+	+	+	-	+	+	-	+	+	-	+	+	+	-	+	+	+	-	+	+	+	+	+
ADENOMA, NOS																					X		X		
ADRENAL	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+
THYROID	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	-	+	+	+	+	-	+	+	+
FOLLICULAR-CELL ADENOMA																		X							
PARATHYROID	-	-	-	+	-	-	+	+	-	+	-	+	-	+	-	-	-	+	-	+	-	-	+	-	+
REPRODUCTIVE SYSTEM																									
MAMMARY GLAND	+	N	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	N	+	+	+	+	+
MIXED TUMOR, MALIGNANT																									
UTERUS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
SARCOMA, NOS																								X	
LEIOMYOSARCOMA																									
ENDOMETRIAL STROMAL POLYP																									
OVARY	+	+	+	+	-	-	-	+	+	+	+	-	+	+	-	-	+	+	-	-	+	-	-	-	+
HEMANGIOMA																									
NERVOUS SYSTEM																									
BRAIN	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
SPECIAL SENSE ORGANS																									
HARDERIAN GLAND	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
CARCINOMA,NOS		X																							
ADENOMA, NOS	X													X							X				
PAPILLARY CYSTADENOMA, NOS	X																								
LYMPHOCYTIC LEUKEMIA											X														
EAR	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
SARCOMA, NOS							X																		
MUSCULOSKELETAL SYSTEM																									
BONE	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
OSTEOSARCOMA															X										
BODY CAVITIES																									
PLEURA	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
OSTEOSARCOMA, INVASIVE															X										
ALL OTHER SYSTEMS																									
MULTIPLE ORGANS NOS	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
SARCOMA, NOS																				X					
HEMANGIOSARCOMA																									
MALIG.LYMPHOMA, LYMPHOCYTIC TYPE						X						X						X							
MALIGNANT LYMPHOMA, MIXED TYPE										X															
UNDIFFERENTIATED LEUKEMIA																									
HEAD NOS																									
LYMPHOCYTIC 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 B4. FEMALE MICE: TUMOR PATHOLOGY (CONTINUED) LOW DOSE

ANIMAL NUMBER	02 26	02 27	02 28	02 29	03 30	03 31	03 32	03 33	03 34	03 35	03 36	03 37	03 38	03 39	04 40	04 41	04 42	04 43	04 44	04 45	04 46	04 47	04 48	04 49	05 00	TOTAL
WEEKS ON STUDY	10 05	10 05	09 01	09 01	09 02	08 02	09 06	10 05	11 05	09 01	10 05	10 05	10 03	10 05	10 05	09 07	10 05	10 05	10 05	10 05	10 05	08 02	10 05	10 05	10 06	TISSUES TUMORS
RESPIRATORY SYSTEM																										
LUNGS AND BRONCHI	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	−	+	+	+	+	+	+	+	+	48
CARCINOMA, NOS, METASTATIC																										1
ALVEOLAR/BRONCHIOLAR ADENOMA											X															1
TRACHEA	−	−	A	+	+	+	+	−	−	+	−	−	−	−	−	+	+	−	−	−	−	+	−	−	+	20
HEMATOPOIETIC SYSTEM																										
BONE MARROW	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	49
SPLEEN	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	49
LYMPH NODES	−	+	A	+	+	+	+	+	+	+	+	+	+	+	+	−	+	+	+	+	+	+	+	+	+	46
THYMUS	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	−	+	+	+	+	+	+	+	+	+	46
CIRCULATORY SYSTEM																										
HEART	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	48
DIGESTIVE SYSTEM																										
SALIVARY GLAND	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	−	+	+	+	+	+	+	+	+	+	46
LIVER	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	49
HEPATOCELLULAR ADENOMA																								X		1
HEPATOCELLULAR CARCINOMA						X														X					X	3
BILE DUCT	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	49
GALLBLADDER & COMMON BILE DUCT	+	+	A	+	+	N	+	+	+	N	+	+	+	+	N	+	N	+	+	+	+	+	N	+	+	49*
PANCREAS	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	48
ESOPHAGUS	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	47
STOMACH	+	+	A	+	+	+	+	+	+	+	+	+	+	+	−	+	+	+	+	+	+	+	+	+	+	48
SMALL INTESTINE	+	+	A	+	+	+	+	+	+	−	+	+	+	+	+	+	X	+	+	+	+	+	+	+	+	46
MALIG.LYMPHOMA, LYMPHOCYTIC TYPE																	X									1
LARGE INTESTINE	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	47
URINARY SYSTEM																										
KIDNEY	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	49
URINARY BLADDER	+	+	A	+	+	+	+	+	+	+	+	+	+	+	−	+	+	+	+	+	+	−	+	+	+	46
ENDOCRINE SYSTEM																										
PITUITARY	+	+	A	+	+	+	+	+	−	+	+	+	−	+	+	−	+	+	+	+	+	+	+	+	+	41
ADENOMA, NOS											X											X				4
ADRENAL	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	−	+	+	−	+	+	+	+	+	46
THYROID	+	+	A	+	+	+	+	+	−	+	+	+	+	−	+	+	+	−	+	+	+	+	−	+	+	42
FOLLICULAR-CELL ADENOMA																										1
PARATHYROID	−	+	A	+	−	+	+	−	−	+	−	−	−	−	−	+	−	−	+	−	−	+	−	+	+	20
REPRODUCTIVE SYSTEM																										
MAMMARY GLAND	+	+	A	+	+	+	N	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	49*
MIXED TUMOR, MALIGNANT																									X	1
UTERUS	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	49
SARCOMA, NOS															X											1
LEIOMYOSARCOMA																										1
ENDOMETRIAL STROMAL POLYP				X																						1
OVARY	−	−	A	+	+	+	−	−	−	+	+	+	+	+	+	+	+	−	+	−	+	+	+	−	+	30
HEMANGIOMA															X											1
NERVOUS SYSTEM																										
BRAIN	+	+	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	49
SPECIAL SENSE ORGANS																										
HARDERIAN GLAND	+	+	A	+	+	+	+	+	+	+	+	+	+	−	+	−	+	+	+	+	+	+	+	+	+	46
CARCINOMA,NOS																										1
ADENOMA, NOS							X														X		X		X	7
PAPILLARY CYSTADENOMA, NOS																										1
LYMPHOCYTIC LEUKEMIA																										1
EAR	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	49*
SARCOMA, NOS																										1
MUSCULOSKELETAL SYSTEM																										
BONE	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	49*
OSTEOSARCOMA																										1
BODY CAVITIES																										
PLEURA	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	49*
OSTEOSARCOMA, INVASIVE																										1
ALL OTHER SYSTEMS																										
MULTIPLE ORGANS 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	49*
SARCOMA, NOS																										1
HEMANGIOSARCOMA													X													1
MALIG.LYMPHOMA, LYMPHOCYTIC TYPE									X																X	5
MALIGNANT LYMPHOMA, MIXED TYPE								X																		2
UNDIFFERENTIATED LEUKEMIA				X																						1
HEAD NOS			A																							1
LYMPHOCYTIC 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
B: NO NECROPSY PERFORMED

TABLE B4.

INDIVIDUAL ANIMAL TUMOR PATHOLOGY OF FEMALE MICE IN THE 2-YEAR STUDY OF STANNOUS CHLORIDE

HIGH DOSE

ANIMAL NUMBER	001	002	003	004	005	006	007	008	009	010	011	012	013	014	015	016	017	018	019	020	021	022	023	024	025
WEEKS ON STUDY	105	105	105	105	105	079	084	105	077	091	091	105	061	105	104	089	081	059	105	105	105	105	105	101	071
RESPIRATORY SYSTEM																									
LUNGS AND BRONCHI	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	-	+	+	+	+
ALVEOLAR/BRONCHIOLAR ADENOMA																									
ALVEOLAR/BRONCHIOLAR CARCINOMA																									
TRACHEA	-	+	+	-	-	+	+	+	+	+	+	-	+	+	-	+	+	+	-	+	+	-	+	+	+
HEMATOPOIETIC SYSTEM																									
BONE MARROW	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
SPLEEN	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
LYMPH NODES	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
THYMUS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	-	+	+	+	+
CIRCULATORY SYSTEM																									
HEART	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
DIGESTIVE SYSTEM																									
SALIVARY GLAND	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
LIVER	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
HEPATOCELLULAR ADENOMA		X			X															X					
HEPATOCELLULAR CARCINOMA															X										
BILE DUCT	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
GALLBLADDER & COMMON BILE DUCT	+	+	+	N	+	+	+	+	+	+	+	+	+	+	N	+	N	N	+	+	+	+	+	+	+
PANCREAS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
ESOPHAGUS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
STOMACH	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
SMALL INTESTINE	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-
LARGE INTESTINE	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
URINARY SYSTEM																									
KIDNEY	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
URINARY BLADDER	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
ENDOCRINE SYSTEM																									
PITUITARY	+	+	+	+	+	+	+	+	+	-	+	-	+	+	+	-	+	+	+	+	+	+	-	+	+
ADENOMA, NOS		X																							
ADRENAL	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+
THYROID	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
FOLLICULAR-CELL ADENOMA																									
PARATHYROID	+	+	+	+	+	-	+	+	-	-	+	+	-	-	+	+	+	-	+	+	+	+	+	+	+
REPRODUCTIVE SYSTEM																									
MAMMARY GLAND	+	+	+	+	+	N	+	+	+	N	+	+	+	+	+	N	+	+	+	+	+	+	+	+	+
MIXED TUMOR, MALIGNANT																									
UTERUS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
FIBROSARCOMA														X											
ENDOMETRIAL STROMAL POLYP																X									
HEMANGIOSARCOMA																				X					
OVARY	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
GRANULOSA-CELL TUMOR																									
NERVOUS SYSTEM																									
BRAIN	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
SPECIAL SENSE ORGANS																									
HARDERIAN GLAND	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	X	+	+	+	+	+	+	+	+	+
ADENOMA, NOS																				X					
ALL OTHER SYSTEMS																									
MULTIPLE ORGANS NOS	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
ALVEOLAR/BRONCHIOLAR CA, INVASIVE																									
MALIGNANT LYMPHOMA, NOS																									
MALIG.LYMPHOMA, LYMPHOCYTIC TYPE																									
MALIG.LYMPHOMA, HISTIOCYTIC TYPE										X								X					X	
MALIGNANT LYMPHOMA, MIXED TYPE																									
LYMPHOCYTIC 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 B4. FEMALE MICE: TUMOR PATHOLOGY (CONTINUED) HIGH DOSE

ANIMAL NUMBER	02 67	02 78	02 89	03 01	03 11	03 12	03 34	03 35	03 36	03 37	03 38	03 39	04 01	04 11	04 23	04 44	04 45	04 47	04 48	04 49	05 10	TOTAL TISSUES TUMORS
WEEKS ON STUDY	11 05	11 05	10 91	11 05	11 05	11 05	11 05	09 97	09 95	07 78	11 05	11 05	11 05	10 25	10 25	07 25	10 04	10 11	10 05	11 05	09 97	
RESPIRATORY SYSTEM																						
LUNGS AND BRONCHI	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	A	+	+	+	+	46
ALVEOLAR/BRONCHIOLAR ADENOMA			X								X			X								1
ALVEOLAR/BRONCHIOLAR CARCINOMA																						2
TRACHEA	-	+	-	+	-	-	-	+	+	-	-	+	+	-	-	-	-	A	-	-	-	25
HEMATOPOIETIC SYSTEM																						
BONE MARROW	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	+	A	+	+	+	48
SPLEEN	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	A	+	-	+	47
LYMPH NODES	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	49
THYMUS	+	+	+	-	-	+	+	+	+	-	+	+	+	+	+	+	+	A	+	-	+	43
CIRCULATORY SYSTEM																						
HEART	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	+	A	+	+	+	48
DIGESTIVE SYSTEM																						
SALIVARY GLAND	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	+	A	+	-	+	46
LIVER	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	49
HEPATOCELLULAR ADENOMA					X			X					X						X			5
HEPATOCELLULAR CARCINOMA																						3
BILE DUCT	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	+	49
GALLBLADDER & COMMON BILE DUCT	+	+	+	N	+	+	+	+	+	N	+	N	+	+	+	N	+	A	+	+	+	49
PANCREAS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	49
ESOPHAGUS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	49
STOMACH	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	+	A	+	+	+	48
SMALL INTESTINE	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	A	+	+	+	46
LARGE INTESTINE	+	+	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	A	+	+	+	47
URINARY SYSTEM																						
KIDNEY	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	49
URINARY BLADDER	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	49
ENDOCRINE SYSTEM																						
PITUITARY	+	-	+	+	-	+	+	+	+	-	+	+	+	+	-	+	+	A	+	+	+	41
ADENOMA, NOS													X									2
ADRENAL	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	A	+	-	+	45
THYROID	+	+	+	+	+	+	+	+	+	-	+	+	+	+	+	+	-	+	A	+	+	47
FOLLICULAR-CELL ADENOMA						X																1
PARATHYROID	+	-	+	+	+	+	+	+	+	-	+	-	+	+	+	+	-	+	A	+	-	38
REPRODUCTIVE SYSTEM																						
MAMMARY GLAND	+	+	+	+	+	+	+	N	+	N	+	N	+	+	+	+	+	+	A	+	+	49
MIXED TUMOR, MALIGNANT			X																			1
UTERUS	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	49
FIBROSARCOMA																						1
ENDOMETRIAL STROMAL POLYP																						1
HEMANGIOSARCOMA																						1
OVARY	+	-	+	+	+	+	+	+	+	-	-	-	+	+	+	+	+	+	A	+	+	43
GRANULOSA-CELL TUMOR													X									1
NERVOUS SYSTEM																						
BRAIN	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	+	+	49
SPECIAL SENSE ORGANS																						
HARDERIAN GLAND	+	+	+	+	-	+	+	+	+	+	+	+	+	+	-	-	+	A	+	+	+	46
ADENOMA, NOS									X				X							X		5
ALL OTHER SYSTEMS																						
MULTIPLE ORGANS NOS	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	A	N	N	N	N	49
ALVEOLAR/BRONCHIOLAR CA, INVASIVE				X																		1
MALIGNANT LYMPHOMA, NOS										X												1
MALIG.LYMPHOMA, LYMPHOCYTIC TYPE												X									X	2
MALIG.LYMPHOMA, HISTIOCYTIC TYPE																	X					4
MALIGNANT LYMPHOMA, MIXED TYPE							X							X								2
LYMPHOCYTIC LEUKEMIA				X																		2

* 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

APPENDIX C

SUMMARY OF THE INCIDENCE OF NONNEOPLASTIC LESIONS IN RATS FED DIETS CONTAINING STANNOUS CHLORIDE

TABLE C1.

SUMMARY OF THE INCIDENCE OF NONNEOPLASTIC LESIONS IN MALE RATS FED DIETS CONTAINING STANNOUS CHLORIDE

	CONTROL	LOW DOSE	HIGH DOSE
ANIMALS INITIALLY IN STUDY	50	50	50
ANIMALS NECROPSIED	50	50	50
ANIMALS EXAMINED HISTOPATHOLOGICALLY	50	50	50
INTEGUMENTARY SYSTEM			
*SKIN	(50)	(50)	(50)
EPIDERMAL INCLUSION CYST	2 (4%)	1 (2%)	1 (2%)
*SUBCUT TISSUE	(50)	(50)	(50)
CYST, NOS	1 (2%)		
HEMORRHAGIC CYST			1 (2%)
INFLAMMATION, ACUTE/CHRONIC			1 (2%)
INFLAMMATION, CHRONIC	1 (2%)		1 (2%)
RESPIRATORY SYSTEM			
#LUNG	(50)	(50)	(50)
CONGESTION, NOS	3 (6%)	1 (2%)	1 (2%)
EDEMA, NOS	2 (4%)		1 (2%)
INFLAMMATION, INTERSTITIAL		1 (2%)	
PNEUMONIA, ASPIRATION		1 (2%)	
INFLAMMATION, ACUTE/CHRONIC	1 (2%)		
INFLAMMATION, FOCAL GRANULOMATOU			1 (2%)
CHOLESTEROL DEPOSIT		1 (2%)	
HYPERPLASIA, ALVEOLAR EPITHELIUM	1 (2%)		1 (2%)
HEMATOPOIETIC SYSTEM			
#BONE MARROW	(50)	(49)	(50)
APLASIA, HEMATOPOIETIC			1 (2%)
#SPLEEN	(50)	(50)	(50)
INFLAMMATION, CHRONIC	1 (2%)		
HEMOSIDEROSIS			2 (4%)
HEMATOPOIESIS	1 (2%)		1 (2%)
#MANDIBULAR L. NODE	(50)	(49)	(50)
HYPERPLASIA, LYMPHOID	1 (2%)		1 (2%)

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

TABLE C1. MALE RATS: NONNEOPLASTIC LESIONS (CONTINUED)

	CONTROL	LOW DOSE	HIGH DOSE
#INGUINAL LYMPH NODE	(50)	(49)	(50)
ABSCESS, NOS	1 (2%)		
#PEYER'S PATCH	(49)	(47)	(50)
HYPERPLASIA, LYMPHOID	4 (8%)	2 (4%)	
#THYMUS	(47)	(49)	(48)
INFLAMMATION, CHRONIC			1 (2%)
CIRCULATORY SYSTEM			
#HEART	(50)	(50)	(50)
INFLAMMATION, CHRONIC		1 (2%)	
#MYOCARDIUM	(50)	(50)	(50)
INFLAMMATION, ACUTE/CHRONIC	1 (2%)		
INFLAMMATION, CHRONIC	29 (58%)	38 (76%)	33 (66%)
DIGESTIVE SYSTEM			
#SALIVARY GLAND	(50)	(48)	(50)
INFLAMMATION, ACUTE/CHRONIC	1 (2%)		
FIBROSIS			1 (2%)
#LIVER	(50)	(50)	(50)
CONGESTION, NOS			1 (2%)
CHOLANGIOFIBROSIS	1 (2%)		
CYTOPLASMIC CHANGE, NOS	1 (2%)		
CYTOPLASMIC VACUOLIZATION	5 (10%)	3 (6%)	5 (10%)
FOCAL CELLULAR CHANGE	2 (4%)		
CLEAR-CELL CHANGE	1 (2%)		
CYTOLOGIC ALTERATION, NOS		1 (2%)	
ANGIECTASIS		1 (2%)	
#BILE DUCT	(50)	(50)	(50)
HYPERPLASIA, NOS	5 (10%)	9 (18%)	2 (4%)
#PANCREAS	(50)	(49)	(50)
INFLAMMATION, CHRONIC	3 (6%)	2 (4%)	4 (8%)
INFLAMMATION, CHRONIC FOCAL		1 (2%)	
INFLAMMATION, PYOGRANULOMATOUS			1 (2%)
#PANCREATIC ACINUS	(50)	(49)	(50)
ATROPHY, NOS		2 (4%)	

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

TABLE C1. MALE RATS: NONNEOPLASTIC LESIONS (CONTINUED)

	CONTROL	LOW DOSE	HIGH DOSE
*PHARYNX	(50)	(50)	(50)
INFLAMMATION, ACUTE SUPPURATIVE			1 (2%)
#STOMACH	(49)	(50)	(50)
ULCER, CHRONIC			1 (2%)
#GASTRIC SUBMUCOSA	(49)	(50)	(50)
EDEMA, NOS			1 (2%)
FIBROSIS	1 (2%)		
#COLON	(49)	(48)	(50)
NEMATODIASIS	1 (2%)	2 (4%)	1 (2%)
URINARY SYSTEM			
#KIDNEY	(50)	(50)	(49)
INFLAMMATION, CHRONIC	31 (62%)	37 (74%)	31 (63%)
NEPHROSIS, NOS	1 (2%)	1 (2%)	
INFARCT, NOS		1 (2%)	
#URINARY BLADDER	(49)	(49)	(49)
INFLAMMATION, CHRONIC		1 (2%)	
ENDOCRINE SYSTEM			
#PITUITARY	(50)	(49)	(49)
INFLAMMATION, SUPPURATIVE		1 (2%)	
HYPERPLASIA, FOCAL	1 (2%)		
ANGIECTASIS	1 (2%)	2 (4%)	1 (2%)
#ADRENAL CORTEX	(50)	(50)	(49)
CYTOPLASMIC VACUOLIZATION	2 (4%)	2 (4%)	5 (10%)
HYPERPLASIA, FOCAL	2 (4%)	1 (2%)	
#ADRENAL MEDULLA	(50)	(50)	(49)
HYPERPLASIA, FOCAL	3 (6%)	2 (4%)	
ANGIECTASIS			1 (2%)
#THYROID	(50)	(49)	(50)
CYSTIC FOLLICLES		1 (2%)	1 (2%)
FOLLICULAR CYST, NOS		1 (2%)	
DEGENERATION, CYSTIC			2 (4%)

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

TABLE C1. MALE RATS: NONNEOPLASTIC LESIONS (CONTINUED)

	CONTROL	LOW DOSE	HIGH DOSE
HEMOSIDEROSIS	1 (2%)		
ATROPHY, FOCAL	1 (2%)		
HYPERPLASIA, CYSTIC	1 (2%)		
HYPERPLASIA, C-CELL	1 (2%)	1 (2%)	2 (4%)
REPRODUCTIVE SYSTEM			
*MAMMARY GLAND	(50)	(50)	(50)
CYSTIC DUCTS	6 (12%)	5 (10%)	9 (18%)
*PREPUTIAL GLAND	(50)	(50)	(50)
CYSTIC DUCTS	1 (2%)	1 (2%)	
INFLAMMATION, ACUTE/CHRONIC		1 (2%)	
INFLAMMATION, CHRONIC	1 (2%)	1 (2%)	
#PROSTATE	(50)	(50)	(50)
INFLAMMATION, SUPPURATIVE	7 (14%)	7 (14%)	7 (14%)
INFLAMMATION, ACUTE/CHRONIC		1 (2%)	
INFLAMMATION, CHRONIC			1 (2%)
INFLAMMATION, CHRONIC SUPPURATIV	1 (2%)	1 (2%)	
HYPERPLASIA, NOS		1 (2%)	
#TESTIS	(50)	(50)	(50)
ATROPHY, NOS	2 (4%)	1 (2%)	
HYPERPLASIA, INTERSTITIAL CELL	1 (2%)	2 (4%)	1 (2%)
NERVOUS SYSTEM			
#CEREBRUM	(50)	(50)	(50)
HEMORRHAGE			1 (2%)
#BRAIN	(50)	(50)	(50)
HEMORRHAGE	1 (2%)		1 (2%)
GLIOSIS	1 (2%)		
MALACIA	1 (2%)		
SPECIAL SENSE ORGANS			
*EYE	(50)	(50)	(50)
PHTHISIS BULBI	1 (2%)		
*EYE/RETINA	(50)	(50)	(50)
DEGENERATION, NOS	8 (16%)	4 (8%)	30 (60%)

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

TABLE C1. MALE RATS: NONNEOPLASTIC LESIONS (CONTINUED)

	CONTROL	LOW DOSE	HIGH DOSE
MUSCULOSKELETAL SYSTEM			
NONE			
BODY CAVITIES*			
*MESENTERY	(50)	(50)	(50)
INFLAMMATION, CHRONIC			1 (2%)
INFLAMMATION, CHRONIC FOCAL	1 (2%)		
ALL OTHER SYSTEMS			
OMENTUM			
STEATITIS	1		
SPECIAL MORPHOLOGY SUMMARY			
NO LESION REPORTED	2		

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

TABLE C2.

SUMMARY OF THE INCIDENCE OF NONNEOPLASTIC LESIONS IN FEMALE RATS FED DIETS CONTAINING STANNOUS CHLORIDE

	CONTROL	LOW DOSE	HIGH DOSE
ANIMALS INITIALLY IN STUDY	50	50	50
ANIMALS NECROPSIED	50	50	50
ANIMALS EXAMINED HISTOPATHOLOGICALLY	50	50	50
INTEGUMENTARY SYSTEM			
*SKIN	(50)	(50)	(50)
EPIDERMAL INCLUSION CYST			1 (2%)
*SUBCUT TISSUE	(50)	(50)	(50)
ABSCESS, CHRONIC	1 (2%)		
RESPIRATORY SYSTEM			
#LUNG	(50)	(50)	(50)
CONGESTION, NOS	1 (2%)		
EDEMA, NOS		1 (2%)	1 (2%)
HYPERPLASIA, ALVEOLAR EPITHELIUM			1 (2%)
HEMATOPOIETIC SYSTEM			
*MULTIPLE ORGANS	(50)	(50)	(50)
HYPERPLASIA, LYMPHOID		1 (2%)	
#SPLEEN	(50)	(50)	(50)
HEMOSIDEROSIS			3 (6%)
#MANDIBULAR L. NODE	(50)	(50)	(50)
HYPERPLASIA, LYMPHOID	2 (4%)		
#PEYER'S PATCH	(49)	(49)	(50)
HYPERPLASIA, LYMPHOID	1 (2%)		
CIRCULATORY SYSTEM			
#MYOCARDIUM	(50)	(50)	(50)
INFLAMMATION, CHRONIC	10 (20%)	13 (26%)	16 (32%)

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

TABLE C2. FEMALE RATS: NONNEOPLASTIC LESIONS (CONTINUED)

	CONTROL	LOW DOSE	HIGH DOSE
INFLAMMATION, CHRONIC FOCAL		1 (2%)	
DIGESTIVE SYSTEM			
#SALIVARY GLAND	(50)	(50)	(50)
INFLAMMATION, SUPPURATIVE			1 (2%)
INFLAMMATION, NECROTIZING			1 (2%)
#LIVER	(50)	(50)	(50)
CYST, NOS	1 (2%)		
CYTOPLASMIC VACUOLIZATION	1 (2%)	1 (2%)	1 (2%)
BASOPHILIC CYTO CHANGE	1 (2%)		
FOCAL CELLULAR CHANGE	3 (6%)		
ANGIECTASIS			1 (2%)
#LIVER/CENTRILOBULAR	(50)	(50)	(50)
CYTOPLASMIC VACUOLIZATION			1 (2%)
#BILE DUCT	(50)	(50)	(50)
INFLAMMATION, VESICULAR		1 (2%)	
HYPERPLASIA, NOS	1 (2%)		
#PANCREAS	(50)	(49)	(50)
INFLAMMATION, CHRONIC	2 (4%)	1 (2%)	1 (2%)
INFLAMMATION, CHRONIC FOCAL	1 (2%)		
#GASTRIC MUCOSA	(50)	(50)	(50)
ULCER, FOCAL	1 (2%)	1 (2%)	
#GASTRIC SUBMUCOSA	(50)	(50)	(50)
EDEMA, NOS	1 (2%)		1 (2%)
#COLON	(50)	(50)	(50)
NEMATODIASIS	2 (4%)	1 (2%)	1 (2%)
URINARY SYSTEM			
#KIDNEY	(50)	(50)	(50)
INFLAMMATION, CHRONIC	3 (6%)	2 (4%)	1 (2%)
#URINARY BLADDER	(50)	(50)	(50)
INFLAMMATION, SUPPURATIVE			1 (2%)
#U.BLADDER/SUBMUCOSA	(50)	(50)	(50)
HEMORRHAGE			1 (2%)

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

TABLE C2. FEMALE RATS: NONNEOPLASTIC LESIONS (CONTINUED)

	CONTROL	LOW DOSE	HIGH DOSE
ENDOCRINE SYSTEM			
#PITUITARY	(50)	(50)	(48)
HEMORRHAGE	1 (2%)		
HYPERPLASIA, NOS	1 (2%)		
ANGIECTASIS	1 (2%)		
#ADRENAL	(50)	(50)	(50)
PIGMENTATION, NOS	1 (2%)		
ATROPHY, NOS	1 (2%)		
#ADRENAL CORTEX	(50)	(50)	(50)
CYST, NOS			3 (6%)
HEMORRHAGIC CYST		1 (2%)	
DEGENERATION, NOS			1 (2%)
CYTOPLASMIC VACUOLIZATION	5 (10%)	3 (6%)	3 (6%)
HYPERTROPHY, FOCAL	1 (2%)		
HYPERPLASIA, FOCAL	2 (4%)		1 (2%)
#ADRENAL MEDULLA	(50)	(50)	(50)
HEMORRHAGIC CYST	1 (2%)		
CYTOPLASMIC VACUOLIZATION	1 (2%)		
#THYROID	(50)	(50)	(50)
CYSTIC FOLLICLES	1 (2%)	1 (2%)	1 (2%)
FOLLICULAR CYST, NOS		1 (2%)	
LYMPHOCYTIC INFLAMMATORY INFILTR			1 (2%)
DEGENERATION, CYSTIC	2 (4%)		
HYPERPLASIA, C-CELL	4 (8%)	3 (6%)	1 (2%)
#THYROID FOLLICLE	(50)	(50)	(50)
ATROPHY, NOS			1 (2%)
REPRODUCTIVE SYSTEM			
*MAMMARY GLAND	(50)	(50)	(50)
CYSTIC DUCTS	20 (40%)	15 (30%)	21 (42%)
HYPERPLASIA, CYSTIC	1 (2%)	1 (2%)	3 (6%)
*MAMMARY LOBULE	(50)	(50)	(50)
HYPERPLASIA, NOS			1 (2%)
HYPERPLASIA, FOCAL			1 (2%)
*PREPUTIAL GLAND	(50)	(50)	(50)
HYPERPLASIA, NOS		1 (2%)	

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

TABLE C2. FEMALE RATS: NONNEOPLASTIC LESIONS (CONTINUED)

	CONTROL	LOW DOSE	HIGH DOSE
HYPERPLASIA, CYSTIC	1 (2%)		
#CERVIX UTERI	(50)	(50)	(50)
EPIDERMAL INCLUSION CYST		1 (2%)	
#UTERUS/ENDOMETRIUM	(50)	(50)	(50)
ABSCESS, NOS	1 (2%)		
HYPERPLASIA, NOS		2 (4%)	1 (2%)
HYPERPLASIA, FOCAL	1 (2%)		
HYPERPLASIA, CYSTIC	4 (8%)	6 (12%)	4 (8%)
DECIDUAL ALTERATION, NOS		1 (2%)	
#OVARY	(50)	(50)	(50)
FOLLICULAR CYST, NOS			1 (2%)
NERVOUS SYSTEM			
#BRAIN	(50)	(50)	(49)
GLIOSIS		1 (2%)	
SPECIAL SENSE ORGANS			
*EYE	(50)	(50)	(50)
HEMORRHAGE		1 (2%)	
CATARACT		2 (4%)	
*EYE ANTERIOR CHAMBER	(50)	(50)	(50)
HEMORRHAGE			1 (2%)
*EYE/CORNEA	(50)	(50)	(50)
EDEMA, NOS			1 (2%)
*EYE/IRIS	(50)	(50)	(50)
INFLAMMATION, CHRONIC		1 (2%)	
*EYE/RETINA	(50)	(50)	(50)
DEGENERATION, NOS	2 (4%)	37 (74%)	3 (6%)
*EYE/CRYSTALLINE LENS	(50)	(50)	(50)
MINERALIZATION		3 (6%)	
CATARACT		2 (4%)	
MUSCULOSKELETAL SYSTEM			
NONE			

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

TABLE C2. FEMALE RATS: NONNEOPLASTIC LESIONS (CONTINUED)

	CONTROL	LOW DOSE	HIGH DOSE
BODY CAVITIES			
*MESENTERY	(50)	(50)	(50)
INFLAMMATION, FOCAL		1 (2%)	
INFLAMMATION, ACUTE/CHRONIC			1 (2%)
INFLAMMATION, CHRONIC			2 (4%)
NECROSIS, FAT	1 (2%)		
ALL OTHER SYSTEMS			
FOOT			
HYPERKERATOSIS		1	
UTERINE LIGAMENT			
INFLAMMATION, SUPPURATIVE	1		
SPECIAL MORPHOLOGY SUMMARY			
NO LESION REPORTED	1		1

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

APPENDIX D

SUMMARY OF THE INCIDENCE OF NONNEOPLASTIC LESIONS IN MICE FED DIETS CONTAINING STANNOUS CHLORIDE

TABLE D1.

SUMMARY OF THE INCIDENCE OF NONNEOPLASTIC LESIONS IN MALE MICE FED DIETS CONTAINING STANNOUS CHLORIDE

	CONTROL	LOW DOSE	HIGH DOSE
ANIMALS INITIALLY IN STUDY	50	50	50
ANIMALS NECROPSIED	50	49	50
ANIMALS EXAMINED HISTOPATHOLOGICALLY	50	49	50
INTEGUMENTARY SYSTEM			
*SKIN	(50)	(49)	(50)
CYST, NOS	1 (2%)		
INFLAMMATION, NOS	1 (2%)		
ULCER, NOS	1 (2%)		1 (2%)
INFLAMMATION, ACUTE/CHRONIC	1 (2%)		
INFLAMMATION, CHRONIC	9 (18%)	8 (16%)	5 (10%)
ULCER, CHRONIC	1 (2%)	1 (2%)	2 (4%)
FIBROSIS	1 (2%)		1 (2%)
*SUBCUT TISSUE	(50)	(49)	(50)
INFLAMMATION, SUPPURATIVE	1 (2%)	1 (2%)	2 (4%)
INFLAMMATION, CHRONIC SUPPURATIV	2 (4%)		
ABSCESS, CHRONIC	2 (4%)		
INFLAMMATION, GRANULOMATOUS			1 (2%)
INFECTION, FUNGAL			1 (2%)
RESPIRATORY SYSTEM			
#LUNG/BRONCHIOLE	(50)	(48)	(49)
HYPERPLASIA, NOS			3 (6%)
#LUNG	(50)	(48)	(49)
CONGESTION, NOS		2 (4%)	
INFLAMMATION, SUPPURATIVE	1 (2%)		
HYPERPLASIA, ALVEOLAR EPITHELIUM		1 (2%)	3 (6%)
HEMATOPOIETIC SYSTEM			
#BRAIN/MENINGES	(50)	(49)	(50)
HYPERPLASIA, LYMPHOID	1 (2%)		
*BLOOD	(50)	(49)	(50)
ANEMIA, NOS			1 (2%)

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

TABLE D1. MALE MICE: NONNEOPLASTIC LESIONS (CONTINUED)

	CONTROL	LOW DOSE	HIGH DOSE
#BONE MARROW	(47)	(49)	(45)
INFLAMMATION, SUPPURATIVE	1 (2%)		
HYPERPLASIA, GRANULOCYTIC		1 (2%)	1 (2%)
#SPLEEN	(48)	(48)	(50)
HYPERPLASIA, RETICULUM CELL		1 (2%)	
HYPERPLASIA, LYMPHOID	1 (2%)	2 (4%)	2 (4%)
HEMATOPOIESIS	7 (15%)	6 (13%)	7 (14%)
#MANDIBULAR L. NODE	(47)	(49)	(49)
HYPERPLASIA, PLASMA CELL	1 (2%)		
HYPERPLASIA, LYMPHOID		1 (2%)	
#MESENTERIC L. NODE	(47)	(49)	(49)
HEMORRHAGE		1 (2%)	
INFLAMMATION, CHRONIC			1 (2%)
ANGIECTASIS		1 (2%)	
HYPERPLASIA, LYMPHOID			2 (4%)
HEMATOPOIESIS	2 (4%)		1 (2%)
#RENAL LYMPH NODE	(47)	(49)	(49)
HYPERPLASIA, PLASMA CELL	1 (2%)		
#PELVIC LYMPH NODE	(47)	(49)	(49)
HYPERPLASIA, PLASMA CELL		1 (2%)	
#ILIAC LYMPH NODE	(47)	(49)	(49)
HYPERPLASIA, PLASMA CELL	1 (2%)		
#AXILLARY LYMPH NODE	(47)	(49)	(49)
INFLAMMATION, NOS	1 (2%)		
#INGUINAL LYMPH NODE	(47)	(49)	(49)
CYST, NOS		1 (2%)	
INFLAMMATION, NOS	1 (2%)	1 (2%)	1 (2%)
HYPERPLASIA, NOS		2 (4%)	
HYPERPLASIA, LYMPHOID			1 (2%)
#LIVER	(50)	(49)	(50)
HEMATOPOIESIS			1 (2%)
#PEYER'S PATCH	(48)	(44)	(50)
HYPERPLASIA, LYMPHOID	1 (2%)		1 (2%)
#KIDNEY	(50)	(49)	(50)
HYPERPLASIA, LYMPHOID	2 (4%)		1 (2%)

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

TABLE D1. MALE MICE: NONNEOPLASTIC LESIONS (CONTINUED)

	CONTROL	LOW DOSE	HIGH DOSE
CIRCULATORY SYSTEM			
#LUNG	(50)	(48)	(49)
ARTERIOSCLEROSIS, NOS			1 (2%)
#HEART	(47)	(49)	(50)
PERIARTERITIS	1 (2%)		
#LIVER	(50)	(49)	(50)
THROMBOSIS, NOS	1 (2%)		
#URINARY BLADDER	(48)	(49)	(50)
PERIARTERITIS	1 (2%)		
#PROSTATE	(49)	(49)	(50)
PERIARTERITIS	1 (2%)		
DIGESTIVE SYSTEM			
*INTESTINAL TRACT	(50)	(49)	(50)
NEMATODIASIS	1 (2%)		
#LIVER	(50)	(49)	(50)
INFLAMMATION, FOCAL		1 (2%)	
ABSCESS, NOS	1 (2%)		
DEGENERATION PIGMENTARY			1 (2%)
NECROSIS, COAGULATIVE	1 (2%)	1 (2%)	1 (2%)
SEQUESTRUM			1 (2%)
INFARCT, NOS		1 (2%)	
ANISOKARYOSIS	1 (2%)		
ATROPHY, NOS			1 (2%)
#LIVER/CENTRILOBULAR	(50)	(49)	(50)
NECROSIS, NOS		1 (2%)	
CYTOPLASMIC VACUOLIZATION			1 (2%)
#BILE DUCT	(50)	(49)	(50)
DILATATION, NOS		1 (2%)	
CYSTIC DUCTS		2 (4%)	1 (2%)
#PANCREAS	(49)	(48)	(49)
CYSTIC DUCTS	1 (2%)	1 (2%)	
INFLAMMATION, CHRONIC	1 (2%)		

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

TABLE D1. MALE MICE: NONNEOPLASTIC LESIONS (CONTINUED)

	CONTROL	LOW DOSE	HIGH DOSE
ATROPHY, NOS		1 (2%)	
#GASTRIC FUNDAL GLAND	(48)	(47)	(50)
DILATATION, NOS	1 (2%)		
CYSTIC DUCTS		1 (2%)	
#GASTRIC PYLORIC GLAN	(48)	(47)	(50)
COLLOID CYST		1 (2%)	
#SMALL INTESTINE	(48)	(44)	(50)
INFLAMMATION, NOS	1 (2%)		
AMYLOIDOSIS	1 (2%)		
#PEYER'S PATCH	(48)	(44)	(50)
INFLAMMATION, SUPPURATIVE		1 (2%)	
#DUODENUM	(48)	(44)	(50)
CALCIUM DEPOSIT			1 (2%)
#DUODENAL MUCOSA	(48)	(44)	(50)
HYPERPLASIA, ADENOMATOUS	1 (2%)		
URINARY SYSTEM			
#KIDNEY	(50)	(49)	(50)
INFLAMMATION, SUPPURATIVE		1 (2%)	
PYELONEPHRITIS, ACUTE/CHRONIC			1 (2%)
ADHESION, NOS	1 (2%)		
NEPHROSIS, NOS	5 (10%)	7 (14%)	6 (12%)
#KIDNEY/PELVIS	(50)	(49)	(50)
LYMPHOCYTIC INFLAMMATORY INFILTR	1 (2%)		
#URINARY BLADDER	(48)	(49)	(50)
ULCER, NOS	1 (2%)		
INFLAMMATION, SUPPURATIVE		1 (2%)	
ENDOCRINE SYSTEM			
#ANTERIOR PITUITARY	(37)	(42)	(40)
CYST, NOS	1 (3%)		
#ADRENAL	(49)	(48)	(49)
FIBROSIS, FOCAL	1 (2%)		

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

TABLE D1. MALE MICE: NONNEOPLASTIC LESIONS (CONTINUED)

	CONTROL	LOW DOSE	HIGH DOSE
#ADRENAL CORTEX	(49)	(48)	(49)
ATROPHY, BROWN		1 (2%)	
HYPERPLASIA, FOCAL		1 (2%)	
#ADRENAL MEDULLA	(49)	(48)	(49)
HYPERPLASIA, FOCAL		1 (2%)	
#THYROID	(48)	(48)	(49)
ULTIMOBRANCHIAL CYST			1 (2%)
DEGENERATION, CYSTIC	8 (17%)	7 (15%)	5 (10%)
ATROPHY, SENILE			1 (2%)
HYPERPLASIA, CYSTIC		1 (2%)	
REPRODUCTIVE SYSTEM			
*PREPUCE	(50)	(49)	(50)
ULCER, CHRONIC			1 (2%)
*PREPUTIAL GLAND	(50)	(49)	(50)
EPIDERMAL INCLUSION CYST		2 (4%)	1 (2%)
INFLAMMATION, SUPPURATIVE	3 (6%)	5 (10%)	5 (10%)
#PROSTATE	(49)	(49)	(50)
INFLAMMATION, SUPPURATIVE		1 (2%)	
*SEMINAL VESICLE	(50)	(49)	(50)
INFLAMMATION, SUPPURATIVE			1 (2%)
INFLAMMATION, ACUTE SUPPURATIVE	1 (2%)		
*EPIDIDYMIS	(50)	(49)	(50)
INFLAMMATION, CHRONIC		1 (2%)	
INFLAMMATION, PYOGRANULOMATOUS	1 (2%)		
*SCROTUM	(50)	(49)	(50)
INFLAMMATION, SUPPURATIVE			1 (2%)
ADHESION, NOS	1 (2%)		
NERVOUS SYSTEM			
#BRAIN/THALAMUS	(50)	(49)	(50)
PSAMMOMA BODIES	15 (30%)	17 (35%)	13 (26%)

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

TABLE D1. MALE MICE: NONNEOPLASTIC LESIONS (CONTINUED)

	CONTROL	LOW DOSE	HIGH DOSE
SPECIAL SENSE ORGANS			
*EYE	(50)	(49)	(50)
PHTHISIS BULBI			1 (2%)
*EYE/CORNEA	(50)	(49)	(50)
ULCER, NOS			1 (2%)
INFLAMMATION, FOCAL		1 (2%)	
MUSCULOSKELETAL SYSTEM			
*KNEE JOINT	(50)	(49)	(50)
INFLAMMATION, CHRONIC SUPPURATIV	1 (2%)		
*SKELETAL MUSCLE	(50)	(49)	(50)
PARASITISM			1 (2%)
BODY CAVITIES			
*MESENTERY	(50)	(49)	(50)
NECROSIS, FAT	1 (2%)	1 (2%)	1 (2%)
ALL OTHER SYSTEMS			
*MULTIPLE ORGANS	(50)	(49)	(50)
INFLAMMATION, NOS		1 (2%)	
INFLAMMATION, ACUTE	1 (2%)		
INFECTION, FUNGAL	1 (2%)		
ANGIECTASIS	1 (2%)		
SPECIAL MORPHOLOGY SUMMARY			
NO LESION REPORTED	2	3	2
AUTOLYSIS/NO NECROPSY		1	

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

TABLE D2.

SUMMARY OF THE INCIDENCE OF NONNEOPLASTIC LESIONS IN FEMALE MICE FED DIETS CONTAINING STANNOUS CHLORIDE

	CONTROL	LOW DOSE	HIGH DOSE
ANIMALS INITIALLY IN STUDY	50	50	50
ANIMALS NECROPSIED	50	49	49
ANIMALS EXAMINED HISTOPATHOLOGICALLY	49	49	49
INTEGUMENTARY SYSTEM			
*SKIN	(50)	(49)	(49)
CONGESTION, NOS	1 (2%)		
INFLAMMATION, CHRONIC	2 (4%)		
*SUBCUT TISSUE	(50)	(49)	(49)
INFLAMMATION, CHRONIC FOCAL			1 (2%)
RESPIRATORY SYSTEM			
#LUNG/BRONCHIOLE	(49)	(48)	(46)
HYPERPLASIA, NOS		1 (2%)	
#LUNG	(49)	(48)	(46)
INFLAMMATION, SUPPURATIVE		1 (2%)	
HYPERPLASIA, ALVEOLAR EPITHELIUM		1 (2%)	
#LUNG/ALVEOLI	(49)	(48)	(46)
HYPERPLASIA, ADENOMATOUS		1 (2%)	
HEMATOPOIETIC SYSTEM			
#HARDERIAN GLAND	(48)	(46)	(46)
HYPERPLASIA, LYMPHOID	6 (13%)	7 (15%)	5 (11%)
*MULTIPLE ORGANS	(50)	(49)	(49)
HYPERPLASIA, LYMPHOID		1 (2%)	
HEMATOPOIESIS			1 (2%)
*MEDIASTINUM	(50)	(49)	(49)
HYPERPLASIA, LYMPHOID	1 (2%)		1 (2%)
#BONE MARROW	(49)	(49)	(48)
ANGIECTASIS			1 (2%)

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

TABLE D2. FEMALE MICE: NONNEOPLASTIC LESIONS (CONTINUED)

	CONTROL	LOW DOSE	HIGH DOSE
MYELOFIBROSIS		1 (2%)	
HYPERPLASIA, GRANULOCYTIC	3 (6%)	1 (2%)	1 (2%)
#SPLEEN	(48)	(49)	(47)
PLASMA-CELL INFILTRATE	1 (2%)		
INFLAMMATION, CHRONIC FOCAL	1 (2%)		
ANGIECTASIS			1 (2%)
HYPERPLASIA, LYMPHOID		4 (8%)	3 (6%)
HEMATOPOIESIS	5 (10%)	8 (16%)	10 (21%)
#MANDIBULAR L. NODE	(48)	(46)	(49)
INFLAMMATION, NOS			2 (4%)
HYPERPLASIA, PLASMA CELL			1 (2%)
#BRONCHIAL LYMPH NODE	(48)	(46)	(49)
INFLAMMATION, NOS			1 (2%)
HYPERPLASIA, NOS	1 (2%)		
HYPERPLASIA, PLASMA CELL			1 (2%)
HYPERPLASIA, LYMPHOID			1 (2%)
#MEDIASTINAL L.NODE	(48)	(46)	(49)
INFLAMMATION, NOS			1 (2%)
HYPERPLASIA, LYMPHOID	1 (2%)		
#LUMBAR LYMPH NODE	(48)	(46)	(49)
INFLAMMATION, NOS	1 (2%)	2 (4%)	
#MESENTERIC L. NODE	(48)	(46)	(49)
INFLAMMATION, NOS			1 (2%)
INFLAMMATION WITH CAVITATION			1 (2%)
HYPERPLASIA, RETICULUM CELL		1 (2%)	
HYPERPLASIA, LYMPHOID	1 (2%)		1 (2%)
#RENAL LYMPH NODE	(48)	(46)	(49)
INFLAMMATION, NOS		1 (2%)	
HYPERPLASIA, LYMPHOID		1 (2%)	1 (2%)
#ILIAC LYMPH NODE	(48)	(46)	(49)
HYPERPLASIA, LYMPHOID			1 (2%)
#LUNG	(49)	(48)	(46)
LEUKOCYTOSIS, NOS	1 (2%)		
HYPERPLASIA, LYMPHOID	4 (8%)		
HEMATOPOIESIS		2 (4%)	1 (2%)
#HEART	(47)	(48)	(48)
LEUKOCYTOSIS, NOS	1 (2%)		

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

TABLE D2. FEMALE MICE: NONNEOPLASTIC LESIONS (CONTINUED)

	CONTROL	LOW DOSE	HIGH DOSE
#LIVER	(49)	(49)	(49)
LEUKOCYTOSIS, NOS	1 (2%)		
HYPERPLASIA, LYMPHOID	1 (2%)		1 (2%)
HEMATOPOIESIS	2 (4%)	2 (4%)	4 (8%)
#PEYER'S PATCH	(48)	(46)	(46)
HYPERPLASIA, LYMPHOID			1 (2%)
#KIDNEY	(49)	(49)	(49)
HYPERPLASIA, LYMPHOID	3 (6%)		2 (4%)
CIRCULATORY SYSTEM			
#HEART	(47)	(48)	(48)
PERIARTERITIS		1 (2%)	
#MYOCARDIUM	(47)	(48)	(48)
INFLAMMATION, ACUTE/CHRONIC	1 (2%)		
*MESENTERY	(50)	(49)	(49)
PERIARTERITIS	1 (2%)		
#KIDNEY	(49)	(49)	(49)
PERIARTERITIS			1 (2%)
#OVARY	(44)	(30)	(43)
THROMBOSIS, NOS		1 (3%)	
DIGESTIVE SYSTEM			
#LIVER	(49)	(49)	(49)
CYST, NOS			1 (2%)
CONGESTION, NOS			1 (2%)
HEMORRHAGE		1 (2%)	
CHOLANGIOFIBROSIS			1 (2%)
DEGENERATION PIGMENTARY		1 (2%)	1 (2%)
NECROSIS, FOCAL			1 (2%)
NECROSIS, COAGULATIVE		1 (2%)	1 (2%)
SEQUESTRUM		1 (2%)	
CALCIFICATION, FOCAL	1 (2%)		
CYTOPLASMIC VACUOLIZATION	1 (2%)	2 (4%)	
ANGIECTASIS			1 (2%)

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

TABLE D2. FEMALE MICE: NONNEOPLASTIC LESIONS (CONTINUED)

	CONTROL	LOW DOSE	HIGH DOSE
#HEPATIC CAPSULE	(49)	(49)	(49)
INFLAMMATION, SUPPURATIVE		1 (2%)	
#PANCREAS	(48)	(48)	(49)
CYSTIC DUCTS		1 (2%)	
CYTOPLASMIC VACUOLIZATION			1 (2%)
#ESOPHAGUS	(47)	(47)	(49)
INFLAMMATION, SUPPURATIVE		1 (2%)	
#GASTRIC MUCOSA	(49)	(48)	(48)
ULCER, NOS		1 (2%)	
#GASTRIC FUNDAL GLAND	(49)	(48)	(48)
CYST, NOS		1 (2%)	
#SMALL INTESTINE	(48)	(46)	(46)
AMYLOIDOSIS		1 (2%)	
#S.INTESTINE/MUCOSA	(48)	(46)	(46)
AMYLOIDOSIS	1 (2%)		
#PEYER'S PATCH	(48)	(46)	(46)
INFLAMMATION, SUPPURATIVE	1 (2%)		
URINARY SYSTEM			
#KIDNEY	(49)	(49)	(49)
GLOMERULONEPHRITIS, NOS	1 (2%)		
INFLAMMATION, NOS	1 (2%)		
PYELONEPHRITIS, CHRONIC		1 (2%)	
NEPHROSIS, NOS	1 (2%)	1 (2%)	6 (12%)
#URINARY BLADDER	(45)	(46)	(49)
DILATATION, NOS		1 (2%)	
ENDOCRINE SYSTEM			
#PITUITARY	(43)	(41)	(41)
INFLAMMATION, SUPPURATIVE			1 (2%)
HYPERPLASIA, NOS		1 (2%)	2 (5%)
ANGIECTASIS		1 (2%)	

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

TABLE D2. FEMALE MICE: NONNEOPLASTIC LESIONS (CONTINUED)

	CONTROL	LOW DOSE	HIGH DOSE
#ADRENAL CORTEX	(49)	(46)	(45)
AMYLOID, NOS		1 (2%)	
#THYROID	(47)	(42)	(47)
DEGENERATION, CYSTIC	4 (9%)		5 (11%)
ATROPHY, SENILE	1 (2%)	3 (7%)	2 (4%)
HYPERPLASIA, CYSTIC		1 (2%)	
HYPERPLASIA, FOLLICULAR-CELL		1 (2%)	2 (4%)
#THYROID FOLLICLE	(47)	(42)	(47)
HYPERPLASIA, CYSTIC	3 (6%)		
REPRODUCTIVE SYSTEM			
*MAMMARY GLAND	(50)	(49)	(49)
CYSTIC DUCTS	2 (4%)	4 (8%)	3 (6%)
HYPERPLASIA, NOS			1 (2%)
#UTERUS	(49)	(49)	(49)
HEMATOMA, NOS		1 (2%)	
INFLAMMATION, NOS	1 (2%)		
INFLAMMATION, SUPPURATIVE	5 (10%)	4 (8%)	4 (8%)
INFLAMMATION, CHRONIC SUPPURATIV		1 (2%)	
#CERVIX UTERI	(49)	(49)	(49)
EDEMA, NOS			1 (2%)
POLYP	1 (2%)		
#CERVICAL MUCOUS MEMB	(49)	(49)	(49)
INFLAMMATION, SUPPURATIVE	1 (2%)		
#UTERUS/ENDOMETRIUM	(49)	(49)	(49)
INFLAMMATION, SUPPURATIVE	1 (2%)		3 (6%)
INFLAMMATION, CHRONIC SUPPURATIV		1 (2%)	
HYPERPLASIA, CYSTIC	38 (78%)	38 (78%)	34 (69%)
#UTERUS/MYOMETRIUM	(49)	(49)	(49)
INFLAMMATION, CHRONIC SUPPURATIV	1 (2%)		
#OVARY/OVIDUCT	(49)	(49)	(49)
INFLAMMATION, SUPPURATIVE	1 (2%)		
#OVARY	(44)	(30)	(43)
FOLLICULAR CYST, NOS	15 (34%)	8 (27%)	14 (33%)

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

TABLE D2. FEMALE MICE: NONNEOPLASTIC LESIONS (CONTINUED)

	CONTROL	LOW DOSE	HIGH DOSE
INFLAMMATION, SUPPURATIVE	2 (5%)		2 (5%)
ABSCESS, NOS		2 (7%)	4 (9%)
INFLAMMATION, CHRONIC SUPPURATIV		1 (3%)	
ABSCESS, CHRONIC		1 (3%)	
NERVOUS SYSTEM			
#BRAIN/MENINGES	(49)	(49)	(49)
INFLAMMATION, NOS			1 (2%)
#BRAIN	(49)	(49)	(49)
PSAMMOMA BODIES	1 (2%)		
#BRAIN/THALAMUS	(49)	(49)	(49)
PSAMMOMA BODIES	15 (31%)	7 (14%)	15 (31%)
SPECIAL SENSE ORGANS			
#HARDERIAN GLAND	(48)	(46)	(46)
DILATATION, NOS			1 (2%)
INFLAMMATION, CHRONIC			1 (2%)
ATROPHY, NOS			1 (2%)
*MIDDLE EAR	(50)	(49)	(49)
INFLAMMATION, PYOGRANULOMATOUS			1 (2%)
MUSCULOSKELETAL SYSTEM			
NONE			
BODY CAVITIES			
*ABDOMINAL CAVITY	(50)	(49)	(49)
INFLAMMATION, SUPPURATIVE			2 (4%)
*PERITONEUM	(50)	(49)	(49)
INFLAMMATION, SUPPURATIVE		2 (4%)	2 (4%)
INFLAMMATION, CHRONIC SUPPURATIV		1 (2%)	
*MESENTERY	(50)	(49)	(49)
INFLAMMATION, SUPPURATIVE	2 (4%)	1 (2%)	

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

TABLE D2. FEMALE MICE: NONNEOPLASTIC LESIONS (CONTINUED)

	CONTROL	LOW DOSE	HIGH DOSE
NECROSIS, FAT	1 (2%)		
ALL OTHER SYSTEMS			
*MULTIPLE ORGANS	(50)	(49)	(49)
INFLAMMATION, SUPPURATIVE	2 (4%)	3 (6%)	5 (10%)
SPECIAL MORPHOLOGY SUMMARY			
NO LESION REPORTED	1		1
AUTO/NECROPSY/NO HISTO	1		
AUTOLYSIS/NO NECROPSY		1	1

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

APPENDIX E

ANALYSIS OF STANNOUS CHLORIDE (LOT NO. MT 8-27-75)

APPENDIX E

A. ELEMENTAL ANALYSIS

Element	Sn	Cl
Theory	62.60	37.40
Determined	63.2 ±0.3 (δ)	36.8 ±0.1 (δ)

B. TITRATION

Reaction with ferric chloride and titration of ferrous ion with dichromate titrant (Collins and Hebergall, 1962)

RESULTS: 101.39 ±0.41 (δ)%

C. MELTING POINT

Determined	Literature Values
m.p. 239 to 252°C (Dupont 900 DTA) 243 to 252°C (decomp.) (visual, capillary)	246°C (Weast, 1969)

D. SPARK SOURCE MASS SPECTROMETRY

RESULTS: See Table E1.

E. SPECTRAL DATA

(1) Infrared
No infrared absorbance

No literature spectrum found

(2) Ultraviolet/Visible
Instrument: Cary 119
No absorbance 350 to 800 nm at 1 mg/ml
Absorbance begins to increase at
310 nm; no maximum before 210 nm

No literature reference found

Table E1. SPARK SOURCE MASS SPECTROMETRY

Element	Concentration (ppm)	Element	Concentration (ppm)
Uranium	0.14	Terbium	< 0.1
Thorium	< 0.14	Gadolinium	< 0.1
Bismuth	< 0.24	Europium	< 0.1
Lead	2.0	Samarium	< 0.1
Thallium	< 0.1	Neodymium	Int *(a)*
Mercury	< 0.1	Praseodymium	Int *(a)*
Gold	< 0.1	Cerium	Int *(a)*
Platinum	< 0.1	Lanthanum	Int *(a)*
Iridium	< 0.1	Barium	Int *(a)*
Osmium	< 0.1	Cesium	Int *(a)*
Rhenium	Internal Standard	Iodine	< 0.1
		Tellurium	< 0.1
Tungsten	< 0.1	Antimony	0.23
Tantalum	1.9	Tin	Maj.
Hafnium	< 0.1	Indium	Internal Standard
Lutetium	< 0.1		
Ytterbium	< 0.1	Cadmium	< 0.14
Thullium	< 0.1	Silver	< 0.21
Erbium	< 0.1	Palladium	< 0.1
Holmium	< 0.1	Rhodium	< 0.1
Dysprosium	< 0.1	Vanadium	0.16
Ruthenium	< 0.1	Titanium	0.52
Molybdenum	0.60	Scandium	< 0.1
Niobium	0.32	Calcium	10
Zirconium	< 0.1	Potassium	14
Yttrium	< 0.1	Chlorine	Maj.
Strontium	< 0.1	Sulphur	10
Rubidium	< 0.1	Phosphorus	41
Bromine	26	Silicon	< 8.6
Selenium	< 0.1	Aluminum	< 5.2
Arsenic	< 0.61	Magnesium	< 5.5
Germanium	1.4	Sodium	9.8
Gallium	< 0.1	Fluorine	25
Zinc	0.40	Oxygen	NR *(b)*
Copper	2.4	Nitrogen	NR *(b)*
Nickel	Int *(a)*	Carbon	NR *(b)*
Cobalt	Int *(a)*	Boron	1.2
Iron	160	Beryllium	0.18
Manganese	0.90	Lithium	0.10
Chromium	6.7		

(a) Int — Interference by a major component spectrum.

(b) NR — Not reported.

APPENDIX F

ANALYSIS OF FORMULATED DIETS FOR STABILITY OF STANNOUS CHLORIDE (MIDWEST RESEARCH INSTITUTE)

APPENDIX F

A. MIXING AND STORAGE

Half-gram samples of chemical in feed, containing approximately 99,000 ppm stannous chloride were prepared. Each sample was stored in a separate screw-capped glass test tube, and the contents were mixed by vigorously shaking the tube for 10 seconds. Duplicate samples were stored for 2 weeks at each of the four test temperatures, -20°, 5°, 25°, and 45°C (a total of eight samples).

B. EXTRACTION AND ANALYSIS PROCEDURE

The entire half-gram sample from each of the above storage tubes was used for the individual analyses.

To a 500-ml, 3-neck, round-bottom flask was added 175 ml of 6 N hydrochloric acid. Air was purged from the flask with oxygen-free (chromous chloride—amalgamated zinc scrubber (Selig, 1961) nitrogen and the nitrogen stream was maintained at a slow flow throughout the operations in this flask. The hydrochloric acid was boiled for 5 minutes with a heat mantle to expel dissolved oxygen. The heat was removed and 5 g of the feed/chemical mixture was added and stirred well. To this resulting mixture was added approximately 0.37 M ferric chloride in 6 N hydrochloric acid until an excess was present, as indicated by the permanency of the yellow $FeCl_3$ color in the mixture. The mixture was then cooled to room temperature with an ice bath, and the nitrogen atmosphere was removed. The iron (II) in the acid solution was determined via a redox 6 titration with 0.5 N potassium dichromate (Collins and Hebergall, 1962) using a Brinkmann-Metrohm automatic titrator, and the amount of tin (II) originally present was calculated from the results. (The feed residue was not removed from the reaction solution during analysis.)

Working electrode: Platinum disk

Reference electrode: Ag/AgCl

C. RESULTS

Storage Temperature (°C)	Average Percent in Chemical/Feed Mixture	Average Relative Percent Recovery *(a)*
-20	9.7 ±0.2	102 ±5
5	9.8 ±0.2	99 ±5
25	10.0 ±0.2	97 ±5
45	8.2 ±0.2	82 ±5

(a) Relative to calculated theoretical percent. Spiked mixture recovery yield, 100%.

D. CONCLUSION

Stannous chloride in feed may be stored for 2 weeks at temperatures of up to, but not above, 25° C.

APPENDIX G

ANALYSIS OF FORMULATED DIETS FOR CONCENTRATIONS OF STANNOUS CHLORIDE SOUTHERN RESEARCH INSTITUTE

The chemical/feed mixtures (10.0g) were weighed into large test tubes and an aliquot (50 ml) of hydrochloric acid/methanol solution (2.5% v/v HCl) was added to each sample. The mixtures were sonicated for 5 minutes with brief swirling at 1-minute intervals. The mixed samples were then filtered through a fiber glass filter using a Millipore filter apparatus. The residue was washed 5-6 times with 20-ml portions of the hydrochloric acid/methanol mixture. The combined filtrates were transferred to 200-ml volumetric flasks and diluted to volume. A 1-ml aliquot of the filtered solution was diluted to 6 ml and analyzed by atomic absorption spectrophotometry under the following conditions:

Instrument: Perkin Elmer AA Model 603

Electrodeless discharge lamp current: 8 watts

Wavelength: 224.6 nm

Slit Width: 0.2 nm

Flame: Nitrous oxide/acetylene

Background correction: Hydrogen lamp

Plain feed and spiked-plain feed samples were analyzed under the same conditions. No detectable response was observed for the plain feed samples. The standard curve was prepared using stannous chloride dissolved in hydrochloric acid/methanol extracting solvent. Results are presented in Table G1.

Table G1. ANALYSIS OF FORMULATED DIETS FOR CONCENTRATIONS OF STANNOUS CHLORIDE

Date Mixed	Date Used (Week of)	Concentration of Stannous Chloride for Target Concentration of: 2,000 ppm	1,000 ppm
5/3/78	5/10/78	1,800	900
6/7/78	6/14/78	2,000	980
6/28/78	7/5/78	2,100	1,100
7/26/78	8/2/78	1,800	920
			1,100
8/23/78	8/30/78	1,900	900
		2,000	
9/20/78	9/27/78	2,100	1,000
10/18/78	10/25/78	1,600	1,000
11/15/78	11/22/78	2,200	
		1,900	
11/17/78	11/22/78		1,000
12/13/78	12/20/78	2,000	960
1/10/78	1/13/79	2,000	970
1/16/79	1/17/79		930
2/7/79	2/10/79	1,900	
2/11/79	2/14/79	2,100	890
3/7/79	3/10/79	2,000	930
3/13/79	3/14/79		1,000
4/4/79	4/11/79	2,100	1,000
		2,200	
6/27/79	7/4/79	1,800	980
			920
8/22/79	8/29/79	2,000	960
		2,100	
9/19/79	9/26/79	2,000	1,100
			1,100
10/17/79	10/24/79	2,000	720
		2,100	
11/14/79	11/21/79	1,900	1,000
			940
Mean (ppm)		1,983	971
Standard deviation		140	84
Coefficient of variation (%)		7.1	8.7
Range (ppm)		1,600-2,200	720-1,100
Number of samples		24	24

APPENDIX H

CUMULATIVE MEAN BODY WEIGHT CHANGE IN RATS AND MICE FED DIETS CONTAINING STANNOUS CHLORIDE

Table H1. CUMULATIVE MEAN BODY WEIGHT CHANGE (RELATIVE TO CONTROLS) OF RATS FED DIETS CONTAINING STANNOUS CHLORIDE

		Cumulative Mean Body Weight Change from Week 0 (grams)			Weight Change Relative to Controls *(a)* (Percent)	
	Week No.	Control	Low Dose	High Dose	Low Dose	High Dose
MALES	0	116 *(b)*	111 *(b)*	116 *(b)*		
	5	+130	+127	+130	−2	0
	25	+261	+267	+264	+2	+1
	43	+304	+315	+316	+4	+4
	62	+341	+350	+350	+3	+3
	84	+348	+358	+356	+3	+2
	104	+340	+327	+344	−4	+1
FEMALES	0	99 *(b)*	92 *(b)*	93 *(b)*		
	5	+ 59	+ 57	+ 63	−3	+7
	25	+111	+102	+107	−8	−4
	43	+131	+129	+135	−2	+3
	62	+159	+155	+161	−3	+1
	84	+201	+196	+198	−2	−1
	104	+217	+215	+212	−1	−2

(a) Weight Change Relative to Controls =

$$\frac{\text{Weight Change (Dosed Group)} - \text{Weight Change (Control Group)}}{\text{Weight Change (Control Group)}} \times 100$$

(b) Initial weight.

Table H2. CUMULATIVE MEAN BODY WEIGHT CHANGE (RELATIVE TO CONTROLS) OF MICE FED DIETS CONTAINING STANNOUS CHLORIDE

		Cumulative Mean Body Weight Change from Week 0 (grams)			Weight Change Relative to Controls *(a)* (Percent)	
	Week No.	Control	Low Dose	High Dose	Low Dose	High Dose
MALES	0	24 *(b)*	24 *(b)*	24 *(b)*		
	5	+ 4	+ 4	+ 4	0	0
	26	+11	+12	+11	+ 8	0
	47	+13	+14	+14	+ 8	+ 8
	65	+15	+15	+17	0	+13
	84	+15	+16	+15	+ 7	0
	104	+15	+14	+14	− 7	− 7
FEMALES	0	19 *(b)*	19 *(b)*	18 *(b)*		
	5	+ 3	+ 3	+ 5	0	+67
	26	+ 8	+ 9	+11	+12	+38
	47	+12	+12	+15	0	+25
	65	+15	+15	+19	0	+27
	84	+15	+14	+17	− 7	+13
	104	+17	+16	+20	− 6	+18

(a) Weight Change Relative to Controls =

$$\frac{\text{Weight Change (Dosed Group)} - \text{Weight Change (Control Group)}}{\text{Weight Change (Control Group)}} \times 100$$

(b) Initial weight.

APPENDIX I

FEED CONSUMPTION BY RATS AND MICE RECEIVING STANNOUS CHLORIDE IN THE CHRONIC STUDY

Table I1. FEED CONSUMPTION BY MALE RATS RECEIVING STANNOUS CHLORIDE IN THE CHRONIC STUDY

Week	Control	Low		High	
	Grams Feed/ Day *(a)*	Grams Feed/ Day *(a)*	Low/ Control *(b)*	Grams Feed/ Day *(a)*	High/ Control *(b)*
5	18.3	15.5	0.9	17.4	1.0
9	23.1	21.9	0.9	25.5	1.1
12	12.9	13.6	1.1	17.9	1.4
17	17.0	18.0	1.1	20.0	1.2
21	15.0	17.0	1.1	18.0	1.2
25	15.8	18.2	1.2	20.6	1.3
29	15.0	15.0	1.0	17.0	1.1
34	15.3	16.0	1.0	16.0	1.0
39	13.2	13.3	1.0	13.3	1.0
43	16.0	16.0	1.0	16.0	1.0
48	17.0	19.0	1.1	18.0	1.1
52	17.0	19.0	1.1	18.0	1.1
58	17.0	19.0	1.1	18.0	1.1
62	18.0	19.0	1.1	19.0	1.1
66	18.0	19.0	1.1	19.0	1.1
70	18.0	17.0	0.9	18.0	1.0
75	17.0	17.0	1.0	16.0	0.9
79	17.0	16.0	0.9	16.0	0.9
84	17.0	17.0	1.0	17.0	1.0
88	17.0	17.0	1.0	17.0	1.0
92	17.0	17.0	1.0	17.0	1.0
96	17.0	17.0	1.0	17.0	1.0
100	20.7	19.5	0.9	18.2	0.9
104	14.6	13.8	0.9	12.9	0.9
MEAN	16.8	17.1	1.0	17.6	1.1
SD *(c)*	2.1	2.1	0.1	2.4	0.1
CV *(d)*	12.5	12.3	10.0	13.6	9.1

(a) Grams of feed consumed per animal per day.

(b) Grams of feed consumed per animal per day for the dosed group divided by that for the controls.

(c) Standard deviation.

(d) Coefficient of variation = (Standard deviation/Mean) × 100.

Table I2. FEED CONSUMPTION BY FEMALE RATS RECEIVING STANNOUS CHLORIDE IN THE CHRONIC STUDY

	Control	Low		High	
Week	Grams Feed/ Day *(a)*	Grams Feed/ Day *(a)*	Low/ Control *(b)*	Grams Feed/ Day *(a)*	High/ Control *(b)*
5	11.9	11.9	1.0	11.0	0.9
9	15.8	15.8	1.0	15.8	1.0
12	8.6	11.4	1.3	10.0	1.2
17	11.0	13.0	1.2	14.0	1.3
21	11.0	14.0	1.3	11.0	1.0
25	10.9	10.9	1.0	9.7	0.9
29	12.0	10.0	0.8	10.0	0.8
34	12.0	12.0	1.0	11.0	0.9
39	9.9	9.9	1.0	9.9	1.0
43	12.0	12.0	1.0	12.0	1.0
48	12.0	11.0	0.9	11.0	0.9
52	12.0	11.0	0.9	11.0	0.9
58	12.0	11.0	0.9	11.0	0.9
62	13.0	13.0	1.0	13.0	1.0
66	13.0	13.0	1.0	13.0	1.0
70	13.0	13.0	1.0	12.0	0.9
75	13.0	12.0	0.9	12.0	0.9
79	13.0	12.0	0.9	12.0	0.9
84	13.0	13.0	1.0	12.0	0.9
88	13.0	13.0	1.0	12.0	0.9
92	13.0	13.0	1.0	12.0	0.9
96	13.0	13.0	1.0	12.0	0.9
100	17.0	14.5	0.9	14.5	0.9
104	12.0	10.3	0.9	10.3	0.9
MEAN	12.4	12.2	1.0	11.8	1.0
SD *(c)*	1.7	1.4	0.1	1.5	0.1
CV *(d)*	13.7	11.5	10.0	12.7	10.0

(a) Grams of feed consumed per animal per day.

(b) Grams of feed consumed per animal per day for the dosed group divided by that for the controls.

(c) Standard deviation.

(d) Coefficient of variation = (Standard deviation/Mean) × 100.

Table I3. FEED CONSUMPTION BY MALE MICE RECEIVING STANNOUS CHLORIDE IN THE CHRONIC STUDY

	Control	Low		High	
Week	Grams Feed/ Day *(a)*	Grams Feed/ Day *(a)*	Low/ Control *(b)*	Grams Feed/ Day *(a)*	High/ Control *(b)*
5	7.3	7.3	1.0	7.3	1.0
9	8.5	8.5	1.0	8.5	1.0
12	5.0	5.7	1.1	5.0	1.0
16	8.5	9.7	1.1	8.5	1.0
20	7.0	8.0	1.1	8.0	1.1
26	6.0	6.9	1.1	6.9	1.1
30	7.3	8.3	1.1	7.3	1.0
35	6.8	5.8	0.9	5.8	0.9
39	7.0	6.0	0.9	6.0	0.9
42	9.0	7.7	0.9	7.7	0.9
47	6.0	6.0	1.0	6.0	1.0
51	6.0	6.0	1.0	6.0	1.0
57	6.0	6.0	1.0	6.0	1.0
61	7.0	6.0	0.9	6.0	0.9
65	7.0	6.0	0.9	6.0	0.9
70	6.4	5.5	0.9	5.5	0.9
74	5.5	6.6	1.2	6.6	1.2
78	6.0	5.0	0.8	6.0	1.0
84	5.1	5.1	1.0	5.2	1.0
87	7.7	7.7	1.0	7.7	1.0
91	6.0	6.0	1.0	6.0	1.0
95	6.0	6.0	1.0	6.0	1.0
101	6.9	6.0	0.9	6.0	0.9
104	8.8	7.7	0.9	7.7	0.9
MEAN	6.8	6.6	1.0	6.6	1.0
SD *(c)*	1.1	1.2	0.1	1.0	0.1
CV *(d)*	16.2	18.2	10.0	15.2	10.0

(a) Grams of feed consumed per animal per day.

(b) Grams of feed consumed per animal per day for the dosed group divided by that for the controls.

(c) Standard deviation.

(d) Coefficient of variation = (Standard deviation/Mean) × 100.

Table I4. FEED CONSUMPTION BY FEMALE MICE RECEIVING STANNOUS CHLORIDE IN THE CHRONIC STUDY

	Control	Low		High	
Week	Grams Feed/ Day *(a)*	Grams Feed/ Day *(a)*	Low/ Control *(b)*	Grams Feed/ Day *(a)*	High/ Control *(b)*
5	7.3	6.4	0.9	6.4	0.9
9	9.7	8.5	0.9	8.5	0.9
12	5.7	5.0	0.9	5.0	0.9
16	8.5	8.5	1.0	8.5	1.0
20	7.0	7.0	1.0	7.0	1.0
26	6.0	6.0	1.0	6.3	1.1
30	7.3	6.2	0.9	8.3	1.1
35	5.8	5.8	1.0	5.8	1.0
39	6.0	6.0	1.0	6.0	1.0
42	7.7	7.7	1.0	7.7	1.0
47	5.0	6.0	1.2	5.0	1.0
51	5.0	6.0	1.2	5.0	1.0
57	5.0	6.0	1.2	5.0	1.0
61	5.0	5.0	1.0	6.0	1.2
65	5.0	5.0	1.0	6.0	1.2
70	5.5	5.5	1.0	5.5	1.0
74	6.6	5.5	0.8	6.6	1.0
78	6.0	5.0	0.8	6.0	1.0
84	5.2	5.1	1.0	6.0	1.2
87	7.7	7.7	1.0	9.0	1.2
91	6.0	6.0	1.0	7.0	1.2
95	6.0	6.0	1.0	7.0	1.2
101	6.0	6.0	1.0	6.9	1.1
104	7.7	7.7	1.0	8.8	1.1
MEAN	6.4	6.2	1.0	6.6	1.0
SD *(c)*	1.3	1.1	0.1	1.3	0.1
CV *(d)*	20.3	17.7	10.0	19.7	10.0

(a) Grams of feed consumed per animal per day.

(b) Grams of feed consumed per animal per day for the dosed group divided by that for the controls.

(c) Standard deviation.

(d) Coefficient of variation = (Standard deviation/Mean) × 100.

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