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COMPANY CONFIDENTIAL



TWO YEAR ORAL (DIET) TOXICITY / CARCINOGENICITY  
STUDY OF FLUORO-CHEMICAL FC-143 IN RATS

(RIKER EXPERIMENT No. 0281CR0012)

VOLUME 1 OF 4

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TABLE OF CONTENTS

|                                                                                             | PAGE(s) |
|---------------------------------------------------------------------------------------------|---------|
| REPORT SUMMARY . . . . .                                                                    | 1       |
| INTRODUCTION . . . . .                                                                      | 3       |
| MATERIALS AND METHODS . . . . .                                                             | 4       |
| RESULTS . . . . .                                                                           | 10      |
| DISCUSSION . . . . .                                                                        | 19      |
| CONCLUSIONS . . . . .                                                                       | 25      |
| PRINCIPAL PERSONNEL LIST . . . . .                                                          | 26      |
| SIGNATURE PAGE . . . . .                                                                    | 27      |
| REFERENCES . . . . .                                                                        | 28      |
| REPORT TABLES . . . . .                                                                     | 29-92   |
| TABLE 1 - Analysis of FC-143 in the Diet . . . . .                                          | 29      |
| TABLE 2 - Summary of Mean Body Weights -<br>Males . . . . .                                 | 30      |
| TABLE 3 - Summary of Mean Body Weights -<br>Females . . . . .                               | 32      |
| TABLE 4 - Summary of Mean Feed Consumption<br>Per Kilogram Body Weight - Males . . . . .    | 34      |
| TABLE 5 - Summary of Mean Feed Consumption<br>Per Kilogram Body Weight - Females . . . . .  | 36      |
| TABLE 6 - Summary of Mean Absolute Feed Consumption -<br>Males . . . . .                    | 38      |
| TABLE 7 - Summary of Mean Absolute Feed Consumption -<br>Females . . . . .                  | 40      |
| TABLE 8 - Estimated Mean FC-143 Consumption In<br>Milligrams Per Kilogram Per Day . . . . . | 42      |

TABLE OF CONTENTS - Continued

|                                                                                                                                                                                         | PAGE(s) |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| TABLE 9 - Mortality Data . . . . .                                                                                                                                                      | 44      |
| TABLE 10 - Summary of Clinical Signs . . . . .                                                                                                                                          | 46      |
| TABLE 11 - Summary of Ophthalmologic Changes . . . . .                                                                                                                                  | 48      |
| TABLE 12 - Mean and Individual Hemogram Values - Males . . . . .                                                                                                                        | 50      |
| TABLE 13 - Mean and Individual Hemogram Values - Females . . . . .                                                                                                                      | 57      |
| TABLE 14 - Mean and Individual Serum Chemistry Values -<br>Males . . . . .                                                                                                              | 64      |
| TABLE 15 - Mean and Individual Serum Chemistry Values -<br>Females . . . . .                                                                                                            | 71      |
| TABLE 16 - Urinalysis Values . . . . .                                                                                                                                                  | 78      |
| TABLE 17 - Individual Organ Weight, And Absolute Mean Organ<br>Weights, Mean Organ Relative Percent To Whole Body<br>Weight, And Organ To Brain Weight Ratios At<br>One Year . . . . .  | 81      |
| TABLE 18 - Individual Organ Weight, And Absolute Mean Organ<br>Weights, Mean Organ Relative Percent To Whole Body<br>Weight, And Organ To Brain Weight Ratios At<br>Two Years . . . . . | 86      |
| TABLE 19 - Summary of Major Microscopic<br>Findings - Neoplastic Lesions . . . . .                                                                                                      | 91      |
| TABLE 20 - Summary of Major Microscopic<br>Findings - Non-Neoplastic Lesions . . . . .                                                                                                  | 92      |
| REPORT FIGURES . . . . .                                                                                                                                                                | 93-96   |
| FIGURE 1 - Mean Body Weights - Males . . . . .                                                                                                                                          | 93      |
| FIGURE 2 - Mean Body Weights - Females . . . . .                                                                                                                                        | 94      |
| FIGURE 3 - Mean Feed Consumption Per<br>Kilogram Mean Body Weight - Males . . . . .                                                                                                     | 95      |
| FIGURE 4 - Mean Feed Consumption Per<br>Kilogram Mean Body Weight - Females . . . . .                                                                                                   | 96      |

TABLE OF CONTENTS - Continued

|                                                                                                                                             | PAGE(s) |
|---------------------------------------------------------------------------------------------------------------------------------------------|---------|
| APPENDIX . . . . .                                                                                                                          | 97-1223 |
| ITEM A - Air Monitoring of Animal Rooms . . . . .                                                                                           | 98      |
| ITEM B - Diet Analytical Data Sheets . . . . .                                                                                              | 103     |
| ITEM C - Acceptable Ranges for Clinical<br>Pathology Parameters . . . . .                                                                   | 116     |
| ITEM D - Histopathologic Examination and Pathology Report<br>by Dr. Robert G. Geil, External Consultant<br>Veterinary Pathologist . . . . . | 119     |
| ITEM E - Biostatistical Analysis Procedures . . . . .                                                                                       | 407     |
| ITEM F - Summary of Mean Body Weights and Individual Animal<br>Body Weight and Feed Jar Weight Data . . . . .                               | 411     |
| ITEM G - Ophthalmoscopic Evaluation and Data by<br>Dr. Stephen I. Bistner, External Consultant<br>Veterinary Ophthalmologist . . . . .      | 1203    |
| ITEM H - Copy of the Study Protocol with Amendments . . . . .                                                                               | 1206    |
| ITEM I - Quality Assurance Unit Statement . . . . .                                                                                         | 1214    |
| ITEM J - Chemical Analyses of FC-143 and Stability<br>Analyses of FC-143 in Diet . . . . .                                                  | 1215    |

TWO YEAR ORAL (DIET) TOXICITY/ONCOGENICITY  
STUDY OF FLUOROCARBON FC-143 IN RATS

(RIKER Experiment No. 0281CR0012)

REPORT SUMMARY

The purpose of this study was to assess the potential toxicity and oncogenicity of FC-143 (ammonium perfluoroalkyl carboxylate) mixed in the diet and fed to 50 rats per sex per group for two years. An interim sacrifice and evaluation was performed at one year on 15 additional rats per sex from the control and high-dose groups.

A total of 360 Sprague-Dawley male and female rats were assigned to three experimental groups. The FC-143-treated groups were fed diets containing either 300 or 30 ppm of FC-143 for two years, while a control group received only untreated feed.

In-life observations performed during the course of the study included: daily observations for abnormal signs; periodic physical examinations; body weight and feed consumption; ophthalmoscopic examinations; and clinical pathology including hematology, clinical chemistry and urinalysis.

Macroscopic postmortem examinations were performed on all animals that died or were terminated prior to the end of the scheduled dosing. Selected organ weights were obtained from all of the rats necropsied at 1 year as well as from 15 rats/sex/group, randomly selected from the control and both FC-143-treated groups, at the termination of the study. Selected tissue specimens were harvested from each animal at necropsy, and preserved for future histopathologic examination. Microscopic evaluation was performed on all tissues saved from all of the control and high-dose rats, while a similar evaluation was performed on a modified list of tissues obtained from the low-dose animals.

The major in-life findings associated with FC-143 administration consisted of: a dose-related decrease in mean body weight and a treatment-related

increase in feed consumption per kilogram of mean body weight in males; and a slight treatment-related increase in the incidence of ataxia in the females. There was no increase in mortality in the high-dose treatment group when compared to similar values for the control population.

FC-143 related hematologic changes in both treated groups consisted of a decrease in red blood cell counts, hemoglobin concentration and hematocrit values at various times throughout the study. Generally, these hematology parameters remained within the acceptable ranges for the rat.

The primary FC-143 associated changes were found in the liver. These alterations were characterized by increased liver weights, hepatomegalocytosis with vacuolation of the cytoplasm, and some evidence of hepatocellular degeneration with occasional signs of necrosis. These liver changes were found early in the study and showed very little evidence of progression at the end of two years.

The incidence of almost all neoplasms in this study was relatively low, and the types and incidence of neoplasms were generally not different from those commonly found in geriatric Sprague-Dawley rats. Hepatocellular tumors were very slightly increased in the high-dose male rats. The other neoplasms in this study were associated with endocrine and/or endocrine-sensitive organs. The increased incidence of mammary or testicular tumors in the high- and low-dose groups was not statistically significant and/or was similar to the spontaneous incidence reported for Sprague-Dawley rats.

Under the conditions of this study and based on tumor incidence, types of tumors, time of tumor appearance, and the survival rate at two years, FC-143 is not considered to be carcinogenic in the rat.

**TWO YEAR ORAL (DIET) TOXICITY - CARCINOGENICITY  
STUDY OF FLUOROchemical FC-143 IN RATS**

**INTRODUCTION**

This study was designed to evaluate the chronic toxicologic and carcinogenic potential of FC-143, an industrial grade of ammonium perfluoroalkyl carboxylate, in rats following oral administration in the diet for a period of two years. The study was sponsored by the Commercial Chemical Division of 3M Company and was performed by the Pathology and Toxicology Department of Riker Laboratories, Inc., 3M Company, St. Paul, Minnesota, U.S.A. The study and subsequent reporting was coordinated for the sponsor by the 3M Corporate Toxicology Services staff. The in-life or dosing portion of the study began on April 21, 1981, and was completed on May 5, 1983. A copy of the study protocol with amendments is contained in this report as Appendix Item H.

The study was designed to evaluate two separate fluorochemicals, FM-3924 and FC-143, using a common set of control animals. This report will describe the results of the FC-143 treatment while the results relating to the FM-3924 study will be reported separately.

The study was conducted in accordance with the Department's Standard Operating Procedures (ie., SOPs) and in compliance with the Food and Drug Administration's Good Laboratory Practice (GLP) regulations (21 CFR Part 58). Various phases of the study were inspected by the RIKER Quality Assurance Unit; their statement is presented in Appendix Item I of this report. The original signed protocol with amendments, list of study personnel, raw data, study specimens, and other pertinent study samples/documents will be maintained within the Pathology and Toxicology Department archives currently located at 3M Center in St. Paul, Minnesota.

## MATERIALS AND METHODS

**Test System:** Three-hundred and sixty Sprague-Dawley rats [Cr1:COBS<sup>R</sup> CD(SD)BR, Charles River, Portage, MI], 39 to 41 days of age when treatment began, were divided by means of a table of random numbers into three groups. The control and high-dose groups each contained 65 males and 65 females, whereas the low-dose group contained 50 male and 50 female rats.

The rats were housed in hanging stainless steel cages with wire mesh floors and fronts. The males were housed individually, but the females were housed two per cage. The control animals were housed in separate rooms from those which received FC-143 in order to prevent a possible cross contamination by potential vaporization and/or sublimation of the test article which has a finite vapor pressure at room temperature. Air samples were taken from each of the animal treatment rooms four months after the initiation of the study in order to assay for the presence of airborne contaminants. The samples were analyzed by the Analytical Section of the 3M Central Research Laboratory and were found to be below detectable limits for the suspected fluorochemicals. In addition to the air monitoring, 30 untreated sentinel rats were placed in each of the two animal rooms. From each animal room, 5 male and 5 female sentinel rats were euthanized during the first week of the study, and at 1 and 3 months after the start of the study. Plasma samples obtained from these rats were analyzed for organic fluorine and were found to contain less than one part per million (see Appendix Item A).

Each animal room was temperature and humidity controlled with the lighting on a 12 hour light/dark cycle. Individual rats were uniquely identified by an animal number on a cage card and on a tag affixed to their ear. Feed (Certified Purina Laboratory Chow, Ralston-Purina Co., St. Louis, MO) and tap water were provided ad libitum.

**Test Substance/Diet Preparation:** FC-143 (Lot 37) was analyzed by the Commercial Chemicals Divisions (CCD) Analytical Laboratory prior to the start of the study, after approximately one year from the start of the study, and at the termination of the dosing period. No detectable changes were found in the test substance during this time (see CCD Analytical Reports Nos. 308, 348 and 413 in Appendix Item J).

The test substance was a white powder which was added (ie, stratified) directly into an appropriate quantity of untreated diet and mixed in a Hobart<sup>R</sup> blender for approximately 20 minutes for each separate batch. Prior to initiating compound administration to any animals, the test substance/diet mixture was assayed. FC-143 was found to be uniformly blended and stable for one to two weeks in the ground feed (see CCD Analytical Report No. 209 in Appendix Item J).

Test article/diet mixtures were prepared fresh weekly during the study and representative samples of each were collected and assayed for test article content and homogeneity during the first month of the study and at 3 month intervals thereafter (see Appendix Item B). The results of these assays indicated that the level of FC-143 was generally within a few percent of that desired (Table 1).

The rats received either FC-143 treated or control (ie, untreated) diets in glass jars 10.2 cm high x 8.9 cm in diameter. A 5.1 cm access hole was cut in the stainless steel lid. On a weekly basis the diet jars were removed and replaced with clean jars containing fresh diet mixtures.

**Experimental Design:** The study consisted of one control group and two treatment groups. The dosage levels and animal distribution are listed hereinafter.

| Treatment Groups | Dosage Levels (ppm) | Group Size & Animal Numbers |                    |
|------------------|---------------------|-----------------------------|--------------------|
|                  |                     | Males (An. Nos.)            | Females (An. Nos.) |
| 1 - Control      | 0                   | 65 (3516-3580) ✓            | 65 (4576-4640) ✓   |
| 5 - High         | 300                 | 65 (3581-3645) ✓            | 65 (4641-4705) ✓   |
| 6 - Low          | 30                  | 50 (3646-3695) ✓            | 50 (4706-4755) ✓   |

An interim termination at one year involved 15 male and 15 female rats from both the control and high-dose groups. The remaining 50 animals per sex per group continued on study.

**In-Life Observations:** All animals were observed daily throughout the two year dosing period. Weekly physical examinations included palpation for the presence of masses as well as observations for pharmacotoxic signs; mortality was recorded daily. During the study, moribund animals were closely monitored, and euthanized when in the judgement of the Study Director death appeared to be imminent in order to harvest non-autolysed tissue for subsequent histopathologic examination.

Body weights and feed consumption were recorded once per week for the first six months, and then once every two weeks for the remainder of the study.

Eye examinations using indirect ophthalmoscopy and/or slit lamp biomicroscopy were performed on the control and high-dose rats by the Staff Veterinarian prior to compound administration and at approximately one year. The eyes of the surviving control and high-dose animals were examined 2-3 weeks prior to the termination of the study by a consulting Veterinary Ophthalmologist (see Appendix Item G).

Clinical pathology determinations included hematology, clinical (serum) chemistry and urinalysis. Tests were conducted on samples obtained from 15 rats per sex from each group at 3, 6, 12, 18 and 24 months; animals were randomly selected at each time interval. Hematologic tests included total red and white blood cell counts, hemoglobin, hematocrit, and a differential white blood cell count. Clinical chemistry parameters included total bilirubin, total protein, albumin, blood urea nitrogen (BUN), glucose, alkaline phosphatase (AP), creatine phosphokinase (CPK), aspartate aminotransferase (AST-formerly known as SGOT), alanine aminotransferase (ALT-formerly SGPT), and calcium. Urine tests included pH, specific gravity, albumin, glucose, bilirubin, occult blood and ketones.

Blood samples were collected from the retrobulbar venous plexus of anesthetized rats which had been fasted overnight. Blood was generally collected from the right eye. Urine samples were obtained by placing each rat in an individual metabolism cage for 20-22 hours. The specific methods

used for hematology, clinical chemistry and urinalysis are outlined in Appendix C. The mean hematology and clinical chemistry values from the treated groups were compared to both the concurrent control group as well as normal ranges for these parameters obtained from historical control animal data generated in this laboratory (Appendix C).

**Metabolic Examination:** Overnight (ie, about 24 hour) urine and fecal samples were collected at 2, 5, 11 and 23 months from five rats per sex per group for total organic fluoride analysis, and for the presence of FC-143. At the scheduled one and two year necropsies, samples of liver, blood, kidney, spleen, lung and bone marrow (ie, from the femur) were saved from five rats/sex/group. After collection, all specimens were frozen pending subsequent analysis by the RIKER Drug Metabolism Department.

Once these specimens are analyzed, a separate report regarding this experimental work will be prepared by the Drug Metabolism department.

**Postmortem Examinations:** Gross postmortem examinations were performed on all rats which died during the study and those which were terminated at the one year interim and two year necropsies. At necropsy, an examination was made of the external body surface and body orifices. The carcass was then opened and the contents of the abdomen, thorax and cranium were examined in situ and following removal from the body.

Organ weights (ie, wet tissue) were obtained at the interim termination from both the control and high-dose groups, and from the control and both FC-143 treated groups at the two year necropsy. The weights of the adrenal glands, brain, testes, heart, kidneys, liver, spleen and uterus were recorded for 15 randomly selected rats/sex/group. Body weights were obtained just prior to necropsy from the same rats in order to calculate organ weights relative to whole body weights.

Representative samples of the following tissues and organs from each rat were fixed in 10% neutral, buffered formalin for subsequent histologic processing:

|                             |                         |
|-----------------------------|-------------------------|
| Aorta                       | Liver (2 Sections)      |
| Adrenals (2)                | Lung (2 Sections)       |
| Brain (3 Sections including | Lymph node (mesenteric) |

|                                                                                      |                                       |
|--------------------------------------------------------------------------------------|---------------------------------------|
| frontal cortex and basal ganglia, parietal cortex and thalamus; cerebellum and pons) | Mammary Gland (females)               |
| Eyes                                                                                 | Pancreas                              |
| Gonads                                                                               | Pituitary                             |
| Ovaries (2)                                                                          | Salivary Gland                        |
| Testes/Epididymides (2)                                                              | Spinal Cord/Bone Marrow (vertebrae)   |
| Heart                                                                                | Spleen                                |
| Small Intestine (3 Sections)                                                         | Stomach                               |
| Large Intestine                                                                      | Thyroid/Parathyroid/Trachea/Esophagus |
| Kidneys (2 Sections)                                                                 | Urinary Bladder                       |
|                                                                                      | Uterus or Prostate                    |
|                                                                                      | Any tissue masses (suspected tumors)  |
|                                                                                      | Any gross lesion                      |

Light microscopic examination was performed on hematoxylin and eosin stained, paraffin-embedded tissue sections from all tissues listed above, when available, and from all rats in the control (Group 1) and high-dose (Group 5) populations regardless of the cause of death. Microscopic examination of tissues from the low-dose (Group 6) rats included the tissues listed above except: aorta, brain, eyes, small and large intestines, lymph node(s), and spinal cord/bone marrow. The histopathologic examination and evaluation of these tissues was performed by Dr. Robert G. Geil, consulting Veterinary Pathologist (see Appendix Item D).

**Biostatistical Methods:** The means and standard deviations for body weights, feed consumption, absolute organ weight, relative organ weight to whole body weight, organ weight to brain weight ratios and other laboratory data were determined separately for each sex and dose group.

These data were analyzed using Bartlett's test for homogeneity of variance. If this test was not significant at  $\alpha = 0.001$ , the data were further analyzed by comparing each treated group to the control group using a two-tailed Dunnett's test at the  $\alpha = 0.05$  significance level. The results of Dunnett's test have been indicated by asterisks on the mean tables. If Bartlett's test was significant at  $\alpha = 0.001$ , the data were ranked and a two-tailed Dunnett's test was performed on the ranks. These results have been indicated by the pound sign (#) on the mean tables.

In addition, for each organ/lesion classification the sexes were analyzed separately using a two-tailed Fisher's Exact Test comparing each treated group to the controls. An alpha = 0.05 significance level with Bonferroni's adjustment for multiple comparisons was used within each organ/lesion/sex category. If the expected value of each cell was greater than 20, then Yates' corrected Chi-Square test was used. An asterisk on the summary tables indicates a significant difference between the controls and the treated group.

Internal RIKER memoranda pertaining to these biostatistical procedures are presented within Appendix Item E.

## RESULTS

In-Life Findings: Body weight gains were depressed in excess of 10% in the FC-143 high-dose males compared to the control males through 66 weeks of the study. There was an approximate 21% decrease in the high-dose body weights by week 6. This difference was statistically significant from week 2 of the study until week 98 when the high-dose and control male body weights had gradually equalized. Likewise in the low-dose male group, a 5% decrease in body weights was observed at week 6, however, there was little additional decrease thereafter (Table 2, Figure 1 and Appendix F). The occurrence of a mild SDA virus outbreak at different times during the study may have had a slight influence on the body weight data (see p. 12).

Mean body weights were only very slightly decreased in the FC-143-treated females compared to the control female values through the first 18 months of the study. At 18 months, there was a gradual decrease in mean body weights of high-dose females that reached a maximum of -11% at 92 weeks. The low-dose females also showed a decreased body weight, but the effect was not statistically significant and the change was of a much lower magnitude (Table 3, Figure 2 and Appendix F).

Mean feed consumption, presented as grams of diet consumed per day per kilogram of mean body weight, was increased in all of the FC-143-treated males throughout the study when compared to the male control feed consumption. This change was more pronounced in the high dose group where there was roughly a 13% increase noted with sporadic values going as high as 29% during the two year test period. In the females the pattern was less consistent, but there was a trend toward lowered feed consumption in both FC-143-treated groups compared to the female control values (Tables 4 and 5 and Figures 3 and 4). Overall, these variations were related to the variation of body weight among groups.

Actual mean feed consumption (without regard for body weight change) was slightly decreased in the high-dose males relative to control males, for the first year of the study. Feed consumption in low-dose males, while somewhat inconsistent, was slightly increased during this same period.

During the second year, the feed consumption of both FC-143-treated male groups was reasonably stable and consumption was comparable to that of the control group. All of the treated female groups tended to consume less feed than the comparable controls throughout the study. The greatest decreases occurred from 18 months to termination with the high- and low-dose groups being equally affected (Table 6 and 7 and Appendix F).

The test article concentration measured as parts per million in the diet was determined at 3 month intervals with a duplicate analysis performed when aberrant values were detected. The mean deviations from the target concentration of the high- and low-dose FC-143 groups were less than 3% (Table 1).

Actual test article consumption was determined for each 2 week period for each sex and each experimental group, and expressed as mg/kg/day. The mean test article consumption was estimated to be: males, 14.2 and 1.3 mg/kg/day; females 16.1 and 1.6 mg/kg/day for the high- and low-dose groups, respectively. Mean test article consumption values calculated at 2 week intervals for the entire study are presented in Table 8.

Overall survival rates for the FC-143-treated rats were good during the full two years of the test period. There were fewer deaths recorded in the high-dose males and females than in the comparable control populations. At the end of 1 year, 15 rats/sex from the control and high-dose groups were terminated to fulfill the protocol requirement for the interim sacrifice. The final survival rate then based on 50 rats/sex/group at the end of 104 weeks was: males, 70%, 88% and 72%; and females, 50%, 58% and 48% for the control, high- and low-dose groups, respectively. The increased survival rate observed in the high-dose male rats compared to the control male rats, was statistically significant ( $p \leq 0.05$ ). Monthly mortality data are presented in Table 9.

A summary of the most commonly seen clinical signs is contained in Table 10. The only clinical sign that occurred more frequently in the test article-treated groups was a dose-related increase in ataxia reported for the FC-143- treated females. While the ataxia was most commonly associated

with morbid animals and was seen in the control males and females, only the treated females showed an increase in the incidence of this clinical sign; 2, 15 and 9 cases in the control, high- and low-dose groups, respectively. The incidences of all other clinical signs in the FC-143-treated groups were generally less than or equal to the incidence of the same signs in the control group.

Rats administered the test article experienced a suspected outbreak of sialodacryoadenitis (SDA) viral infection between the first and second months of the study. Clinical signs included swollen submandibular salivary glands and occasional ocular manifestations. The submandibular swelling was resolved within 10 days, and the incidence of ocular changes was extremely low. Similarly, the control animals had comparable symptoms during the sixteenth month of the study. Thirteen males and 13 females in the control group demonstrated signs of this condition which lasted for about 16 days from the time of onset. One male and 3 females developed ocular opacities during this period.

The incidence of palpable tissue masses in FC-143-treated groups was comparable to that of the control group. There were more animals with masses in the male controls than in the male treated groups; that is, 19, 10 and 7 animals in the control, high- and low-dose groups, respectively. Likewise, when the number of palpable masses which regressed or resolved before the termination of the experimental period were evaluated, there were still fewer masses found in the FC-143-treated animals than in the control group (Table 10).

The results of the final ophthalmoscopic examinations were negative relative to any FC-143 treatment-related effects. Changes that were observed included a random distribution of cataracts believed to be normal geriatric changes of the lens and some cases of chronic uveitis and superficial keratitis which were also considered to be within normal limits for aging populations of rats (Table 11 and Appendix G). Many of the rats found to have ocular lesions were identified as rats which were used to obtain blood samples via the retrobulbar venous plexus.

Red blood cell counts, hemoglobin and hematocrit values were minimally decreased in the high-dose male rats compared to control values, from 3 through 18 months. Statistically significant ( $p = <0.05$ ) decreases were seen at various times in the following parameters: erythrocytes at 6, 12 and 18 months; hemoglobin, 3 and 18 months; and hematocrit at 3, 12 and 18 months. While some of these parameters were also altered in the low-dose males, the changes were of a lesser magnitude and in some cases, were increased as well as decreased (Table 12). The female high-dose erythrocyte counts and hematocrits were slightly decreased at 3 months, but were slightly increased at 6 months compared to control values. At 12 months there was a statistically significant decrease in erythrocyte count, hemoglobin, and hematocrit (Table 13).

Mean leucocyte counts were increased in both male treatment groups compared to control values, through the first year of the study. These changes were due to increases in absolute counts of lymphocytes at 3 and 6 months, and in neutrophils at 12 months. Statistically significant increases were observed: in lymphocyte counts at 3 months in the high- and low-dose groups, and at 6 and 18 months in the low-dose group; and in neutrophil counts at 12 months in both groups (Table 12). Similar changes were not seen in the FC-143-treated females with the exception of a slight increase in neutrophils and a slight decrease in lymphocytes seen in the low-dose group at 18 months (Table 13).

Clinical chemistry findings at 3 months included slight increases in alanine aminotransferase (ALT), aspartate aminotransferase (AST), and alkaline phosphatase (AP), as well as a moderate decrease in creatine phosphokinase (CPK) in both FC-143- treated male groups. From 6 until 18 months, the high- and low-dose male ALT, AST and AP values were increased above the concurrent control values, whereas these values in the high-dose group were still elevated at 24 months. Albumin values remained very slightly elevated in the high-dose males until the end of the study. Similar changes in clinical chemistry were not observed in the FC-143-treated female groups (Tables 14 and 15).

Urinary findings included increases in incidence and severity of albumin and occult blood in all of the male and female control and FC-143-treated groups at 12, 18, and 24 months. These findings were more pronounced in the males than in the females at the termination of the study. Other than an occasional incident of slight ketonuria in both control and FC-143-treated animals, there were no other remarkable urinary findings (Table 16).

Postmortem Findings: The Consulting Pathologist's complete report is located in Appendix D. The gross pathology findings seen at the 1 year interim sacrifice were unremarkable with the possible exception of a single high-dose male having small testes and 3/15 high-dose females with mammary masses compared to an incidence of 1/15 in control female rats.

Possible FC-143-related gross findings seen in male and female high-dose rats which were either found dead, euthanized in extremis, or euthanized at the termination of the study, included liver and testicular observations in the males and only a very slight increase in the incidence of mammary masses in the low-dose females. The liver findings seen in the males consisted of a slight increase in the incidence of liver masses, nodules and raised lesions, mottled livers and yellow or pale liver foci. While small testes were observed grossly in the control males as well as in both treated groups, testicular masses were found in 6/50 high-dose and 1/50 low-dose rats, but not in any of the controls. Mammary masses reported at necropsy in 1 high-dose and 2 low-dose males were found microscopically to be non-mammary lesions. Mammary masses were observed in 27/50, 26/50 and 37/50 of the control, high- and low-dose female rats, respectively. No remarkable FC-143-related liver changes were seen grossly in the female rats. Other gross pathologic findings were typical of findings in aging rats of this strain (Appendix D).

Organ weights presented as either absolute or relative (ratio of organ/body weight or organ/brain weight) values are contained in Tables 17 and 18. At the 1 year interim sacrifice where the only groups examined were the high-dose and controls (n = 15/sex/group), there was no change in male body weight (absolute) but a statistically significant (p = <0.05) increase in

relative liver and kidney weights (vs. body weight) for the FC-143-treated males only. At the terminal necropsy, slight increases in relative (organ vs. body weight) liver weights were noted for both the males and females of both dose groups, but the increases were not statistically significant. Slight increases in relative kidney weights were observed in both the male and female rats in the high-dose group; however, only in the females was this finding statistically significant.

Complete details of the histopathologic findings are contained in Appendix D and a summary of the major neoplastic and non-neoplastic microscopic changes found after 2 years of continuous oral administration of FC-143 are listed in Tables 19 and 20.

Histopathologic evaluation of the tissues from the animals necropsied at 1 year indicated the major FC-143 effects were confined to the liver. Diffuse hepatomegalocytosis (12/15 animals), hepatocellular necrosis (6/15 animals), and portal mononuclear cell infiltration (13/15 animals) were seen in the high-dose males while incidences in the control group were 0/15, 0/15 and 7/15, respectively. Testicular tubular atrophy with marked aspermatogenesis was found in 2/15 high-dose males but was absent in the control males. The only remarkable change seen in the high-dose females was minimal to mild hepatocellular vacuolation; the incidence for this finding was 11/15 at the high dose and 5/15 in the control group.

The majority of neoplasms observed after 2 years of dosing with FC-143, involved either the liver or one of several endocrine or endocrine-related organs (Table 19). Hepatocellular carcinomas were found in 6%, 10%, and 2% of the males from the control, high-, and low-dose groups, respectively. For the females, hepatocellular carcinomas were found only in the high-dose group with an incidence of 2%. The organ with the highest incidence of tumors was the pituitary gland where the incidences of adenomas in the males was 35%, 28% and 36%, and in the females at 71%, 71% and 83% for the control, high- and low-dose groups, respectively.

Mammary gland adenocarcinomas were present in both control and treated females at an incidence of 15%, 11% and 31% for the control, high- and

low-dose groups, respectively. In a similar comparison, fibroadenomas were seen in 22%, 48% and 42% of the female rats at the end of the study. Mammary gland adenomas (7%) and carcinomas (2%), were seen only in the female controls, while one high-dose female had a lymphangiosarcoma. An increase in testicular Leydig cell adenomas was statistically significant ( $p = <0.05$ ) in the high-dose males. The incidence for this lesion was 0%, 14% and 4% in the control, high- and low-dose groups, respectively. There were minor variations in the tumor incidence patterns in the adrenals (pheochromocytomas) and thyroids which represent deviations in two commonly occurring spontaneous tumors of this strain of rat. Only the incidence of C-cell adenomas of the thyroid in male rats, appeared to show a slight dose dependent increase; namely, 0%, 9% and 4% for the control, high- and low-dose groups, respectively. However, C-cell carcinomas were seen only in the controls at an incidence of 5%.

Non-neoplastic changes were found at the termination of the study in the adrenals, heart, liver, lung, pancreas, ovaries, salivary glands, spleen, testes, thyroids and uterus (Table 20). As noted in the 1 year interim histopathologic evaluation, the liver was the primary organ associated with FC-143 treatment-related effects, and there was a remarkable consistency in the type of findings observed in the males after the second full year of test article administration. Megalocytosis, cystoid degeneration, and portal mononuclear cell infiltration were the major dose-related changes seen in both male and female test article-treated groups. Megalocytosis was found at an incidence of 0%, 80% and 12% in the males, and 0%, 16% and 2% in the females from the control, high- and low-dose groups, respectively. Hepatic cystoid degeneration, a condition characterized by areas of multilocular microcysts in the liver parenchyma, was more commonly seen in male rats with a control incidence of 8%, whereas the high- and low-dose males had incidences of 56% and 14%, respectively. The incidence of this lesion in females was 2% in both of the FC-143-treated groups. Hepatocellular necrosis was equally distributed between the control and FC-143-treated groups. The incidence of hyperplastic nodules, a localized proliferation of hepatic parenchymal cells, was slightly increased in the high dose groups with an incidence of 6% in the males and 2% in the females as compared to 0% and 2% in the control males and females, respectively.

No hyperplastic nodules were found in the low-dose group. The incidences of other hepatic changes such as basophilic hepatocyte alteration and/or chronic inflammatory changes consisting of portal mononuclear cell infiltration were slightly increased in the high-dose males, but only against a high incidence of similar changes in the control group.

Pulmonary changes that may be associated with the administration of FC-143 in the high-dose males, consisted of an increase in the incidence of alveolar macrophages (62%) and hemorrhage (44%) compared to control incidences of 20%. However, the incidence of chronic interstitial pneumonia and perivascular mononuclear infiltration was greatly reduced in the high-dose males when compared to the male controls. Pulmonary vascular mineralization was observed commonly in both control and test article-treated male and female rats; however, the FC-143-treated females displayed an increase that was inversely related to the dose.

The incidence of chronic sialadenitis, an inflammatory change of the salivary gland and often associated in rats with an antemortem viral infection, was increased in both the high- and low-dose males.

Hemosiderin, an iron rich pigment, was found in greater concentrations in the spleens of both high-dose males and females, but in greatly reduced amounts in the low-dose males and females as compared to controls.

Two changes observed in the gonads of both sexes, appeared to be related to the administration of FC-143. Vascular mineralization of the testes occurred in 18% of the high-dose males and 6% of the low-dose males, but was not seen in the controls. The incidence of testicular tubular atrophy was only slightly increased in the high-dose (22%) and low-dose (20%) males compared to the control males (14%).

In the test article-treated females, there was a dose-related, statistically significant increase in tubular hyperplasia of the ovarian stroma. Tubular hyperplasia is considered to be a diffuse, non-neoplastic increase in stromal tubular elements which is usually bilateral and associated with decreased or absent follicular development. The incidence

of this change was 0%, 32% and 14% in the control, high- and low-dose groups, respectively. Cystic glands of the uterine endometrium were found at a higher incidence in the low-dose females (24%) when compared to the controls (14%) and high-dose females (10%).

Other non-neoplastic lesions (Table 20) are commonly associated with either endemic diseases and/or geriatric changes found in this strain of rat. The following changes were considered equivocal test article-related findings or were usually decreased below the concurrent incidence in control rats. Adrenal changes are commonly seen in aging rats of this strain and the incidences were inconsistently either higher or lower than the control values. The incidence of sinusoidal ectasia (dilatation) was increased very slightly only in the high-dose males (32%) compared to the control males (22%), while the control and FC-143-treated females were almost equally affected (82 and 86%). The incidence of chronic myocarditis was reduced in an apparent dose-related fashion in the females while being increased above the control incidence in the high- and low-dose males. The incidence of thyroid C-cell hyperplasia was slightly increased in the high dose females, while only the low-dose males showed a similar change. The incidence of acinar atrophy of the pancreas was very slightly increased in the treated males, while being slightly depressed below control values in the high-dose female.

## DISCUSSION

The purposes of this study was to define the long term toxicity and oncogenicity profile of FC-143, an anionic fluorochemical surfactant belonging to the chemical class of ammonium perfluoroalkyl carboxylates. The study was successfully completed with sufficient numbers of animals surviving in all of the experimental groups. The survival rates for the high-dose male and female rats were actually higher than those of the control rats after 24 months of the test.

The general health of a rat exposed to the experimental conditions of a 2 year feeding study may be examined at the beginning of the test by evaluating body weight gains and feed consumption compared to the study control animal population. Body weight gains of the FC-143-treated males decreased as early as the second week of the study, stabilized after 6 weeks, but remained slightly depressed in the high-dose males by at least 10% through 66 weeks. The treated females did not demonstrate any real decrease in body weight until the 18th month, so there appeared to be a rather obvious sex difference in this parameter. The body weight changes did not appear to be associated with the palatability of the diet admix since feed consumed on a body weight basis was actually increased. Further, since there was a modest dose-related effect seen in the male FC-143-treated rats, it appears that these body weight changes could be associated with a direct test article effect.

The concentration of the test article in the diet was within a 3% range of the proposed levels of 300 and 30 ppm for the full 2 years of the study. The average daily dose of FC-143 for the same time period and for both sexes combined, was estimated to be 15 and 1.5 mg/kg/day. Both in-life and postmortem results confirmed the systemic absorption of the test article and the 300 ppm dosage level appeared to adequately comply with the concept of a maximum tolerated dose for a long term study in this strain of rat.

The only clinical sign seen during the study which was associated with a test article effect was ataxia. The incidence of ataxia was increased in a dose related manner in the females, but not in the treated males. A

background incidence of this finding was seen in the male and female control population.

During the early course of the study, a decrease in red blood cell parameters was observed in the high-dose males. While these hematologic values were often decreased below the control male measurements at a statistically significant level ( $p \leq 0.05$ ), generally the decreased values were still within the acceptable ranges for these parameters in the rat.

The elevation of serum alkaline phosphatase, aspartate aminotransferase and alanine aminotransferase activities only in test article-treated male rats, suggested that FC-143 affected hepatocytes. These changes were seen from 3 to 18 months in both of the male FC-143-treatment groups, but only in the high-dose males at 24 months. These findings were substantiated by organ weight changes and histopathology observed at the 1 and 2 year sacrifices.

Changes in the character of the urine specimens were similar in both control and treated rats examined during the course of the study. These findings were considered to be associated with the slowly developing degenerative changes of naturally occurring chronic renal disease commonly found in rats of this strain.

The liver was the primary target organ affected as seen by an increase in relative organ weights, gross findings at necropsy, and histopathologic alterations. These changes seen at the 1 year necropsy showed remarkably little progression 1 year later. The FC-143-treated males were more obviously affected than the females. The sex differences seen in this study were consistent with earlier pharmacokinetic studies using carbon-14 labeled ammonium perfluorooctanoate, in which the females during 24 hours had excreted essentially 100% of an intravenous dose in the urine while the males excreted only 20%. Radioactive tissue residues were not detectable after 17 days in the females, while at 36 days, male rats had 2.8% of the carbon-14 in the liver, 1.1% in plasma, and lower but still detectable amounts in other organs.<sup>1</sup> Similar results were reported by Hanhijarvi, et al.<sup>6</sup>

Hepatomegalocytosis and hepatocellular vacuolation are characteristic of increased metabolic activity in the rat. Following chronic hepatic stimulation, evidence of cystoid degeneration and, occasionally, hepatocellular necrosis may also be observed. Since the liver in the rat rarely repairs parenchymal cell loss with fibrosis or scar tissue, the most common finding is hepatocellular hyperplasia. In this study, the incidence of hyperplastic nodules was increased very slightly in the high-dose group, but the incidence was not significantly different from controls. It is also important to note that no proliferative hepatic lesions (i.e. neither hyperplasia nor neoplasia) were seen in any of the high-dose rats receiving FC-143 for 1 year. The observed hepatomegalocytosis was similar to that reported by Pastoor et al in which perfluorooctanoic acid was administered orally to male rats at a higher dosage (50 mg/kg/day).<sup>2</sup> It was proposed that the hepatocytic enlargement was due to proliferation of smooth, endoplasmic reticulum, mitochondria, and peroxisomes.

The only hepatic neoplasms found in this study were hepatocellular carcinomas. The incidence of this tumor was 6%, 10% and 2% in the control, high- and low-dose male rats, respectively. Only one high-dose female was found to have this liver tumor. The incidence of hepatocellular carcinomas in high-dose males was not significantly greater than that of the control males and was comparable with the reported spontaneous incidence of this tumor.<sup>3</sup> Based on these findings, FC-143 was not considered to be a hepatic carcinogen in the rat.

The other neoplasms observed in this study originated from endocrine and/or endocrine sensitive organs; namely, the adrenal gland, mammary gland, pituitary gland, testes, and thyroid gland. The incidence for each of these tumors are presented in Table 19.

The incidence of mammary gland adenocarcinomas was 15%, 11% and 31% for the control, high- and low-dose female groups, respectively. While mammary gland carcinomas and adenomas were found only in the controls, there was an increased incidence of fibroadenomas in the high-dose (48%, statistically significant:  $p \leq 0.05$ ), and the low-dose (42%) compared to controls (22%). It should also be noted that 2/13 of the high-dose females necropsied at 1

year were found to have fibroadenomas, while 0/15 of the controls were similarly affected. Although the incidence of fibroadenomas in high-dose females was significantly greater than that for the control females, the incidence was similar to that reported for untreated aging rats.<sup>4</sup> In addition, when the incidences for benign mammary gland tumors (adenoma and fibroadenoma) are combined, the tumor incidence in the high-dose group is no longer statistically significant.

Leydig cell adenomas (i.e. benign tumors of the testicular interstitial tissue), were found at an incidence of 0%, 14% and 4% in the control, high- and low-dose groups, respectively. The high-dose incidence for this lesion was statistically significant ( $p \leq 0.05$ ) because the incidence in the control group was unusually low (0%). In addition, the spontaneous incidence reported for this neoplasm in this strain of rat was 7.4% for rats 24 to 29 months of age and was 14.6% at 30 to 38 months of age<sup>3</sup>. Based on another set of Sprague-Dawley two year study data compiled by Hazleton Laboratories, the spontaneous incidence of interstitial cell tumors was 28.7%.<sup>5</sup>

The remaining non-neoplastic findings reported from the histopathologic evaluation of all of the animals originally scheduled for the 2 year phase of the study were mostly geriatric lesions common to this strain of rat. The organs in which these lesions were found included: adrenal, heart, kidney, lung, testes, ovary, thyroid, urinary bladder and uterus. Specific deviations from control values seen in FC-143-treated groups were addressed in the results section of this report; however, the following changes may be considered incidental or equivocal test article-related effects.

The incidence of nodular hyperplasia of the adrenal cortex was increased (not statistically significant) in the high-dose males (18%) compared to the same finding in the controls (4%), while the high-dose females showed a much lower incidence (2%). Increases in the incidences of adrenal gland sinusoidal ectasia (dilatation) were reported in the high- (32%) and low- (26%) dose males compared to male controls (22%) while the incidences in

all test article-treated females were equal to control values. It should be noted that adrenal lesions are commonly seen in old rats.

Thyroid C-cell hyperplasia was seen in the control males and FC-143-treated groups with an incidence of 10% and 7% for the low-dose males and the high-dose females, respectively. The incidences were not dose-related or statistically significant and were lower than the reported spontaneous incidence of this lesion.<sup>3</sup>

Chronic myocarditis (inflammation) was seen at a slightly higher incidence in the low-dose (36%) and the high-dose (34%) males compared to the control (28%) group. The female incidence for this lesion was 32%, 20% and 10% in the control, high- and low-dose groups, respectively. Inflammation of the heart is common in old rats. The lack of a true dose-related effect in either sex suggests that this finding is probably not a treatment related phenomenon.

Chronic renal histopathologic changes, commonly observed in aging rats, were not meaningfully altered by FC-143 treatment. None of these changes were apparently severe enough to produce pathologic lesions over a 2 year period. Therefore, none of these findings are considered to be directly related to treatment.

Lung changes which were seen more commonly in FC-143-treated rats than in controls included an increase in alveolar macrophages, pulmonary hemorrhage (agonal) and vascular mineralization. The first two lesions were seen predominantly in the high-dose males where the incidences were statistically significant ( $p \leq 0.05$ ). Control males on the other hand, had higher incidences of interstitial pneumonia and pulmonary perivascular mononuclear cell infiltration. Pulmonary changes are common in aging rats.<sup>3</sup> Other than the possibility that an increase in the alveolar macrophages may be associated with FC-143 administration, all of the pulmonary changes were not considered related to test article treatment.

Chronic sialadenitis or inflammation of the salivary glands was significantly ( $p \leq 0.05$ ) increased in the test article-treated males, but

not in the test article-treated females. These changes were attributed to outbreaks of sialodacryoadenitis viral infections which occurred in both the control and FC-143 animal rooms, but at different time periods and apparently with different levels of intensity.

The incidence of splenic hemosiderosis, depositions of iron-containing pigment in the sinusoids of the spleen, was increased above control levels by approximately 12% in only the high-dose males. However, the incidence in high-dose males was not significantly greater than the control incidence. The incidence of this lesion in FC-143 treated females was significantly lower than the incidence of splenic hemosiderosis in control females.

A statistically significant, dose-related increase in the incidences of ovarian (stromal) tubular hyperplasia was found in low and high-dose groups. The interpretation of these changes in the absence of any observable progressive pathologic lesion after 2 years of treatment, must be considered as equivocally related to FC-143 treatment.

## CONCLUSIONS

The results obtained under the conditions of this study when FC-143 was administered in the diet of male and female rats at concentrations of 300 and 30 ppm for 2 years may be summarized as follows:

1. FC-143-related changes were found more commonly in males than in females of each of the two treatment groups. This finding supports earlier pharmacokinetic studies that demonstrated a increased FC-143 retention by treated males compared to treated female rats.
2. The major dose-related findings were observed in the liver and consisted of megalocytosis and cystoid degeneration with only a minimal proliferative response and related elevations of serum enzyme activities.
3. Other non-neoplastic findings reported in this study were not considered primary test article-related effects, but rather were related to spontaneous changes occurring in aging rats.
4. Based on the incidence, types of tumors, time of tumor appearance, malignancy patterns of tumors and survival rate after 2 years, FC-143 is not considered to be carcinogenic in the rat.

PRINCIPAL PERSONNEL INVOLVED WITH THE CONDUCT AND REPORTING OF  
RIKER EXPERIMENT NO. 0281CR0012 - TWO YEAR ORAL (DIET)  
TOXICITY/CARCINOGENICITY STUDY OF FLUOROCEMICAL FC-143 IN RATS

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TWO YEAR ORAL (DIET) TOXICITY/CARCINOGENICITY STUDY OF  
FLUOROCEMICAL FC-143 IN RATS

RIKER Experiment No. 0281CR0012

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## REFERENCES

1. Johnson, J.D. Extent and Route of Excretion and Tissue Distribution of Total Carbon-14 in Male and Female Rats After a Single IV Dose of FC-143- C. Riker Laboratories, Inc., St. Paul, MN 55101, Internal Drug Metabolism Report, 1-20, January 30, 1980.
2. Pastoor, T.P., Lee, K.P. and Gillies, P.J. Morphological and Biochemical Characteristics of Perfluorooctanoate - Induced Liver Enlargement. *The Toxicologist*, 5(1):155, March 1985.
3. Anver, M.R., Cohen, B.J., Lattuada, C.P. and Foster, S.J. Age-Associated Lesions in Barrier-Reared Male Sprague-Dawley Rats: A Comparison Between Hap: (SD) and Cr1: COBS CD (SD) Stocks. *Exper. Aging Res.*, 8(1)Part 1:3-24, Spring, 1982.
4. Prejean, J.D., Peckman, J.C., Casey, A.E., Griswold, D.P., Weisburger, E.K., and Weisbureger, J.H. Spontaneous Tumors in Sprague-Dawley Rats and Swiss Mice. *Cancer Research* 33:2768-2773, November, 1973.
5. Hazleton Laboratories, Vienna, VA. Historical Control Data, page 16, February 17, 1984.
6. Hanhijarvi, H., Ophaug, R.H. and Singer, L. The Sex-Related Difference in Perfluorooctanoate Excretion in the Rat. *Proc. Soc. Expr. Biol. Med.* 171:50-55, 1982.

Table 1

Two Year Oral (Diet) Toxicity - Oncogenicity Study  
of Fluorocarbon FC-143 in Rats

Analytical Analysis of FC-143<sup>a</sup>  
(% Above/Below Desired Concentration)

| Approximate<br>Study Month   | CCD Analytical<br>Report Numbers | Dosage Levels (ppm) |        |
|------------------------------|----------------------------------|---------------------|--------|
|                              |                                  | 300                 | 30     |
| 0 (Initial)                  | 213                              | + 0.6%              | - 1.0% |
| 1                            | 229                              | + 0.3%              | + 1.0% |
| 4                            | 250                              | + 5.0%              | - 2.3% |
| 7                            | 289                              | + 1.2%              | + 0.0% |
| 10                           | 319                              | <sup>b</sup> -34.0% | - 6.7% |
| 11                           | 328                              | - 6.1%              | ----   |
| 13                           | 340                              | - 2.3%              | + 7.7% |
| 16                           | 366                              | + 2.6%              | + 4.4% |
| 19                           | 384                              | + 2.0%              | + 2.2% |
| 22                           | 395                              | + 3.0%              | + 3.3% |
| 24                           | 404                              | + 9.4%              | +10.0% |
| Mean Deviation for the Study |                                  | <sup>c</sup> + 1.6% | + 1.9% |

<sup>a</sup> Commercial Chemicals Division (CCD)

<sup>b</sup> Incorrect values given at this level due to instrument malfunction:  
this dosage level was reanalyzed after new detector was installed.

<sup>c</sup> Excluding from mean deviation the percentages over + 20% acceptable limit.

Table 2

Two Year Oral (Diet) Toxicity-Oncogenicity Study  
of Fluorocarbon FC-143 in Rats

Summary of Mean Body Weights (g)  $\pm$  % Difference from Control

MALES

| Study Week | Control Mean Wt. | 300 ppm Mean Wt. | % Diff. | 30 ppm Mean Wt. | % Diff. |
|------------|------------------|------------------|---------|-----------------|---------|
| 0          | 165.3            | 162.1            | - 1.9   | 167.0           | + 1.0   |
| 2          | 270.9            | 234.3            | -13.5   | 271.0           | + 0.0   |
| 4          | 334.0            | 276.7            | -17.2   | 328.5           | - 1.6   |
| 6          | 390.7            | 308.6            | -21.0   | 369.4           | - 5.4   |
| 8          | 429.2            | 353.2            | -17.7   | 410.3           | - 4.4   |
| 10         | 456.2            | 380.1            | -16.7   | 441.5           | - 3.2   |
| 12         | 475.5            | 398.0            | -16.3   | 458.1           | - 3.7   |
| 14         | 493.2            | 412.8            | -16.3   | 475.4           | - 3.6   |
| 16         | 502.9            | 425.4            | -15.4   | 487.9           | - 3.0   |
| 18         | 515.3            | 436.0            | -15.4   | 498.5           | - 3.3   |
| 20         | 526.8            | 447.4            | -15.1   | 512.1           | - 2.8   |
| 22         | 542.3            | 456.1            | -15.9   | 519.4           | - 4.2   |
| 24         | 550.4            | 464.2            | -15.7   | 526.3           | - 4.4   |
| 26         | 561.0            | 475.0            | -15.3   | 538.9           | - 3.9   |
| 28         | 567.5            | 484.9            | -14.6   | 546.2           | - 3.8   |
| 30         | 576.3            | 497.2            | -13.7   | 558.6           | - 3.1   |
| 32         | 580.6            | 505.7            | -12.9   | 566.4           | - 2.4   |
| 34         | 582.9            | 511.8            | -12.2   | 571.3           | - 2.0   |
| 36         | 591.0            | 514.2            | -13.0   | 575.4           | - 2.6   |
| 38         | 599.4            | 524.8            | -12.4   | 584.0           | - 2.6   |
| 40         | 608.4            | 535.2            | -12.0   | 592.5           | - 2.6   |
| 42         | 612.9            | 540.9            | -11.7   | 600.5           | - 2.0   |
| 44         | 619.8            | 550.8            | -11.1   | 610.4           | - 1.5   |
| 46         | 623.5            | 552.0            | -11.5   | 612.1           | - 1.8   |
| 48         | 626.1            | 558.5            | -10.8   | 618.9           | - 1.1   |
| 50         | 639.2            | 566.7            | -11.3   | 627.1           | - 1.9   |
| 52         | 638.6            | 570.1            | -10.7   | 633.6           | - 0.8   |

Table 2 (concluded)

Two Year Oral (Diet) Toxicity-Oncogenicity Study  
of Fluorocarbon FC-143 in Rats

Summary of Mean Body Weights (g) + % Difference from Control

MALES

| Study Week | Control Mean Wt. | 300 ppm Mean Wt. | % Diff. | 30 ppm Mean Wt. | % Diff. |
|------------|------------------|------------------|---------|-----------------|---------|
| 54         | 654.3            | 577.6            | -11.7   | 641.9           | - 1.9   |
| 56         | 661.6            | 583.1            | -11.9   | 646.4           | - 2.3   |
| 58         | 668.0            | 587.9            | -12.0   | 652.7           | - 2.3   |
| 60         | 673.2            | 590.8            | -12.2   | 656.8           | - 2.4   |
| 62         | 674.4            | 593.2            | -12.0   | 655.7           | - 2.8   |
| 64         | 664.5            | 596.8            | -10.2   | 658.3           | - 0.9   |
| 66         | 650.8            | 598.2            | - 8.1   | 662.5           | + 1.8   |
| 68         | 656.6            | 604.9            | - 7.9   | 666.5           | + 1.5   |
| 70         | 661.9            | 608.2            | - 8.1   | 666.2           | + 0.6   |
| 72         | 658.3            | 608.5            | - 7.6   | 664.4           | + 0.9   |
| 74         | 660.8            | 601.1            | - 7.6   | 659.2           | - 0.2   |
| 76         | 667.7            | 605.4            | - 9.3   | 663.8           | - 0.6   |
| 78         | 668.8            | 604.6            | - 9.6   | 661.7           | - 1.1   |
| 80         | 670.6            | 611.8            | - 8.8   | 669.2           | - 0.2   |
| 82         | 663.1            | 610.0            | - 8.0   | 666.9           | + 0.6   |
| 84         | 668.1            | 617.5            | - 7.6   | 662.3           | - 0.9   |
| 86         | 675.6            | 617.4            | - 8.6   | 664.5           | - 1.6   |
| 88         | 678.9            | 614.7            | - 9.5   | 654.7           | - 3.6   |
| 90         | 690.0            | 624.6            | - 9.5   | 662.4           | - 4.0   |
| 92         | 686.0            | 621.8            | - 9.4   | 652.9           | - 4.8   |
| 94         | 678.3            | 627.6            | - 7.5   | 660.0           | - 2.7   |
| 96         | 677.5            | 621.0            | - 8.3   | 653.4           | - 3.6   |
| 98         | 675.7            | 627.2            | - 7.2   | 659.7           | - 2.4   |
| 100        | 671.1            | 625.5            | - 6.8   | 660.0           | - 1.7   |
| 102        | 665.9            | 629.4            | - 5.5   | 664.0           | - 0.3   |
| 104        | 642.0            | 613.3            | - 4.5   | 650.8           | + 1.4   |

Table 3

Two Year Oral (Diet) Toxicity-Oncogenicity Study  
of Fluorocarbon FC-143 in Rats

Summary of Mean Body Weights (g)  $\pm$  % Difference from Control

## FEMALES

| Study Week | Control Mean Wt. | 300 ppm Mean Wt. | % Diff. | 30 ppm Mean Wt. | % Diff. |
|------------|------------------|------------------|---------|-----------------|---------|
| 0          | 138.2            | 138.1            | + 0.0   | 137.2           | - 0.7   |
| 2          | 159.2            | 167.3            | + 5.1   | 166.0           | + 4.3   |
| 4          | 209.5            | 213.8            | + 2.1   | 214.9           | + 2.6   |
| 6          | 238.7            | 237.4            | - 0.5   | 235.7           | - 1.3   |
| 8          | 256.9            | 254.6            | - 0.9   | 253.8           | - 1.2   |
| 10         | 269.2            | 263.3            | - 2.2   | 261.3           | - 2.9   |
| 12         | 279.5            | 274.2            | - 1.9   | 275.5           | - 1.4   |
| 14         | 289.7            | 286.4            | - 1.1   | 282.8           | - 2.4   |
| 16         | 291.8            | 285.4            | - 2.2   | 285.9           | - 2.0   |
| 18         | 306.8            | 299.4            | - 2.4   | 298.0           | - 2.9   |
| 20         | 311.6            | 307.6            | - 1.3   | 304.1           | - 2.4   |
| 22         | 319.1            | 314.6            | - 1.4   | 309.9           | - 2.9   |
| 24         | 324.5            | 322.5            | - 0.6   | 318.6           | - 1.8   |
| 26         | 327.3            | 326.0            | - 0.4   | 323.6           | - 1.1   |
| 28         | 333.7            | 331.6            | - 0.6   | 330.4           | - 1.0   |
| 30         | 338.3            | 338.6            | + 0.1   | 339.0           | + 0.2   |
| 32         | 345.5            | 344.1            | - 0.4   | 344.9           | - 0.2   |
| 34         | 350.7            | 352.8            | + 0.6   | 353.5           | + 0.8   |
| 36         | 355.5            | 357.1            | + 0.5   | 358.0           | + 0.7   |
| 38         | 359.3            | 362.3            | + 0.8   | 363.1           | + 1.1   |
| 40         | 363.2            | 366.0            | + 0.8   | 367.5           | + 1.2   |
| 42         | 371.2            | 373.2            | + 0.5   | 375.9           | + 1.3   |
| 44         | 380.1            | 380.4            | + 0.1   | 382.0           | + 0.5   |
| 46         | 385.7            | 385.9            | + 0.0   | 389.7           | + 1.0   |
| 48         | 392.3            | 391.6            | - 0.2   | 395.8           | + 0.9   |
| 50         | 398.6            | 399.3            | + 0.2   | 399.7           | + 0.3   |
| 52         | 406.1            | 406.1            | + 0.0   | 406.2           | + 0.0   |

Table 3 (concluded)

Two Year Oral (Diet) Toxicity-Oncogenicity Study  
of Fluorocarbon FC-143 in Rats

Summary of Mean Body Weights (g)  $\pm$  % Difference from Control

FEMALES

| Study Week | Control Mean Wt. | 300 ppm Mean Wt. | % Diff. | 30 ppm Mean Wt. | % Diff.   |
|------------|------------------|------------------|---------|-----------------|-----------|
| 54         | 414.1            | 411.5            | - 0.6   | 412.6           | - 0.4     |
| 56         | 419.1            | 421.2            | + 0.5   | 420.7           | + 0.4     |
| 58         | 420.9            | 426.4            | + 1.3   | 427.3           | + 1.5     |
| 60         | 423.6            | 427.0            | + 0.8   | 430.0           | + 1.5     |
| 62         | 426.6            | 431.9            | + 1.2   | 435.7           | + 2.1     |
| 64         | 426.1            | 434.0            | + 1.9   | 439.9           | + 3.2     |
| 66         | 424.9            | 435.5            | + 2.5   | 446.5           | + 5.1     |
| 68         | 427.5            | 433.0            | + 1.3   | 445.3           | + 4.2     |
| 70         | 431.4            | 429.1            | - 0.5   | 443.5           | + 2.8     |
| 72         | 435.2            | 432.8            | - 0.6   | 448.6           | + 3.1     |
| 74         | 446.5            | 444.6            | - 0.4   | 463.3           | + 3.8     |
| 76         | 455.2            | 447.4            | - 1.7   | 468.8           | + 3.0     |
| 78         | 464.8            | 452.7            | - 2.6   | 471.3           | + 1.4     |
| 80         | 474.9            | 457.0            | - 3.8   | 475.8           | + 0.2     |
| 82         | 484.0            | 461.8            | - 4.6   | 485.7           | + 0.4     |
| 84         | 484.8            | 457.6            | - 5.6   | 476.3           | - 1.8     |
| 86         | 492.7            | 458.2            | - 7.0   | 479.7           | - 2.6     |
| 88         | 499.1            | 456.6            | - 8.5   | 483.4           | - 3.1     |
| 90         | 500.6            | 451.8            | - 9.7   | 485.2           | - 3.1     |
| 92         | 512.5            | 455.9            | -11.0   | 486.3           | - 5.1     |
| 94         | 505.7            | 451.0            | -10.8   | 492.0           | - 2.7     |
| 96         | 506.9            | 464.5            | - 8.4   | 504.3           | - 0.5     |
| 98         | 500.0            | 468.0            | - 6.4   | 505.5           | + 1.1     |
| 100        | 501.2            | 464.2            | - 7.4   | 505.6           | + 0.9     |
| 102        | 503.6            | 462.8            | - 8.1   | 503.3           | - 0.1     |
| 104        | 502.0            | 450.3            | -10.3   | 501.8           | $\pm$ 0.0 |

Table 4

Two Year Oral (Diet) Toxicity-Oncogenicity Study  
of Fluorocarbon FC-143 in Rats

Summary of Mean Food Consumption Per Kilogram Body Weight  
(g of diet consumed per day)  $\pm$  % Difference from Control

## MALES

| Study Week | Control Mean Wt. | 300 ppm Mean Wt. | % Diff. | 30 ppm Mean Wt. | % Diff. |
|------------|------------------|------------------|---------|-----------------|---------|
| 1          | 102.0            | 98.6             | - 3.3   | 103.8           | + 1.8   |
| 2          | 85.2             | 96.8             | +13.6   | 85.0            | - 0.2   |
| 4          | 76.4             | 84.0             | +10.0   | 77.0            | + 0.8   |
| 6          | 69.4             | 67.7             | - 2.5   | 61.2            | -11.8   |
| 8          | 61.5             | 70.6             | +14.8   | 64.1            | + 4.2   |
| 10         | 53.7             | 63.0             | +17.3   | 57.4            | + 6.9   |
| 12         | 50.7             | 58.1             | +14.6   | 51.3            | + 1.2   |
| 14         | 51.7             | 59.5             | +15.1   | 53.5            | + 3.5   |
| 16         | 48.0             | 55.2             | +15.0   | 49.3            | + 2.7   |
| 18         | 46.8             | 52.6             | +12.4   | 47.7            | + 1.9   |
| 20         | 46.9             | 54.5             | +16.2   | 48.9            | + 4.3   |
| 22         | 44.9             | 51.9             | +15.6   | 47.3            | + 5.4   |
| 24         | 45.0             | 52.0             | +15.6   | 46.3            | + 2.9   |
| 26         | 43.7             | 49.2             | +12.6   | 44.9            | + 2.8   |
| 28         | 42.8             | 48.3             | +12.9   | 44.5            | + 4.0   |
| 30         | 43.2             | 48.7             | +12.7   | 43.7            | + 1.2   |
| 32         | 42.9             | 47.2             | +10.0   | 44.0            | + 2.6   |
| 34         | 41.8             | 46.5             | +11.2   | 42.8            | + 2.4   |
| 36         | 38.4             | 42.5             | +10.7   | 39.7            | + 3.4   |
| 38         | 40.7             | 46.0             | +13.0   | 42.2            | + 3.7   |
| 40         | 39.5             | 43.9             | +11.1   | 41.8            | + 5.8   |
| 42         | 39.3             | 44.0             | +12.0   | 41.3            | + 5.1   |
| 44         | 38.9             | 43.6             | +12.1   | 40.5            | + 4.1   |
| 46         | 39.0             | 42.6             | + 9.2   | 39.7            | + 1.8   |
| 48         | 39.0             | 43.3             | +11.0   | 38.9            | - 0.3   |
| 50         | 38.5             | 43.2             | +12.2   | 39.4            | + 2.3   |
| 52         | 36.5             | 41.1             | +12.6   | 36.1            | - 1.1   |

Table 4 (concluded)

Two Year Oral (Diet) Toxicity-Oncogenicity Study  
of Fluorocarbon FC-143 in Rats

Summary of Mean Food Consumption Per Kilogram Body Weight  
(g of diet consumed per day) + % Difference from Control

MALES

| Study Week | Control Mean Wt. | 300 ppm Mean Wt. | % Diff. | 30 ppm Mean Wt. | % Diff. |
|------------|------------------|------------------|---------|-----------------|---------|
| 54         | 37.0             | 42.2             | +14.1   | 36.3            | - 1.9   |
| 56         | 36.6             | 41.2             | +12.6   | 37.9            | + 3.6   |
| 58         | 36.1             | 40.7             | +12.7   | 37.5            | + 3.9   |
| 60         | 35.4             | 40.6             | +14.7   | 37.3            | + 5.4   |
| 62         | 35.9             | 37.1             | + 3.3   | 37.1            | + 3.3   |
| 64         | 31.0             | 40.2             | +29.7   | 34.5            | +11.3   |
| 66         | 36.3             | 40.8             | +12.4   | 36.4            | + 0.3   |
| 68         | 32.9             | 36.5             | +10.9   | 33.5            | + 1.8   |
| 70         | 32.6             | 37.7             | +15.6   | 33.0            | + 1.2   |
| 72         | 33.0             | 37.5             | +13.6   | 34.9            | + 5.8   |
| 74         | 34.4             | 37.9             | +10.2   | 36.7            | + 6.7   |
| 76         | 37.1             | 39.2             | + 5.7   | 36.9            | - 0.5   |
| 78         | 36.6             | 39.7             | + 8.5   | 34.9            | - 4.9   |
| 80         | 34.6             | 39.4             | +13.9   | 36.8            | + 6.4   |
| 82         | 36.3             | 36.7             | + 1.1   | 37.6            | + 3.6   |
| 84         | 35.6             | 38.5             | + 8.2   | 34.3            | - 3.7   |
| 86         | 35.1             | 38.6             | +10.0   | 35.4            | + 0.9   |
| 88         | 34.8             | 33.0             | - 5.2   | 33.0            | - 5.2   |
| 90         | 34.9             | 36.3             | + 4.9   | 34.7            | - 0.6   |
| 92         | 35.1             | 37.3             | + 6.3   | 35.1            | + 0.0   |
| 94         | 38.5             | 40.5             | + 5.2   | 36.8            | - 4.4   |
| 96         | 37.1             | 40.1             | + 8.1   | 37.5            | + 1.1   |
| 98         | 37.3             | 38.9             | + 4.3   | 37.4            | + 0.3   |
| 100        | 36.7             | 38.1             | + 3.8   | 37.3            | + 1.6   |
| 102        | 35.0             | 38.3             | + 9.4   | 37.2            | + 6.3   |
| 104        | 33.8             | 37.8             | +11.8   | 37.5            | +11.0   |

Table 5

Two Year Oral (Diet) Toxicity-Oncogenicity Study  
of Fluorocarbon FC-143 in Rats

Summary of Mean Food Consumption Per Kilogram Body Weight  
(g of diet consumed per day) ± % Difference from Control

FEMALES

| Study Week | Control Mean Wt. | 300 ppm Mean Wt. | % Diff. | 30 ppm Mean Wt. | % Diff. |
|------------|------------------|------------------|---------|-----------------|---------|
| 1          | 98.8             | 96.6             | - 2.2   | 96.1            | - 2.7   |
| 2          | 107.0            | 101.6            | - 5.1   | 103.0           | - 3.7   |
| 4          | 97.2             | 81.8             | -15.8   | 83.6            | -14.0   |
| 6          | 81.0             | 81.1             | + 0.1   | 82.8            | + 2.2   |
| 8          | 74.1             | 74.9             | + 1.1   | 73.4            | - 0.9   |
| 10         | 72.6             | 72.5             | - 0.1   | 73.5            | + 1.2   |
| 12         | 70.2             | 70.4             | + 0.3   | 69.7            | - 0.7   |
| 14         | 64.2             | 62.0             | - 3.4   | 64.9            | + 1.1   |
| 16         | 57.2             | 56.3             | - 1.6   | 58.8            | + 2.8   |
| 18         | 64.3             | 62.9             | + 2.2   | 64.6            | + 0.5   |
| 20         | 63.4             | 61.5             | - 3.0   | 65.5            | + 3.3   |
| 22         | 58.6             | 61.2             | + 4.4   | 63.2            | + 7.9   |
| 24         | 59.5             | 58.0             | - 2.5   | 61.2            | + 2.9   |
| 26         | 57.0             | 56.2             | - 1.4   | 57.0            | + 0.0   |
| 28         | 61.7             | 58.1             | - 5.8   | 58.3            | - 5.5   |
| 30         | 59.7             | 57.4             | - 3.9   | 59.0            | - 1.2   |
| 32         | 58.4             | 56.1             | - 3.9   | 55.7            | - 4.6   |
| 34         | 52.9             | 51.4             | - 2.8   | 51.5            | - 2.7   |
| 36         | 56.7             | 54.2             | - 4.4   | 57.0            | + 0.5   |
| 38         | 56.8             | 52.7             | - 7.2   | 54.3            | - 4.4   |
| 40         | 58.4             | 51.6             | -11.6   | 50.3            | -13.9   |
| 42         | 54.2             | 53.6             | - 1.1   | 52.9            | - 2.4   |
| 44         | 54.7             | 51.8             | - 5.3   | 53.9            | - 1.5   |
| 46         | 48.5             | 50.8             | + 4.7   | 52.1            | + 7.4   |
| 48         | 49.2             | 50.3             | + 2.2   | 51.8            | + 5.3   |
| 50         | 51.4             | 45.1             | -12.3   | 50.0            | - 2.7   |
| 52         | 48.3             | 48.3             | + 0.0   | 48.0            | - 0.6   |

Table 5 (concluded)

Two Year Oral (Diet) Toxicity-Oncogenicity Study  
of Fluorocarbon FC-143 in Rats

Summary of Mean Food Consumption Per Kilogram Body Weight  
(g of diet consumed per day)  $\pm$  % Difference from Control

FEMALES

| Study Week | Control Mean Wt. | 300 ppm Mean Wt. | % Diff. | 30 ppm Mean Wt. | % Diff. |
|------------|------------------|------------------|---------|-----------------|---------|
| 54         | 48.1             | 47.1             | - 2.1   | 47.3            | - 1.7   |
| 56         | 51.5             | 48.4             | - 6.0   | 47.1            | - 8.5   |
| 58         | 46.3             | 47.6             | + 2.8   | 46.3            | + 0.0   |
| 60         | 49.6             | 49.2             | - 0.8   | 47.7            | - 3.8   |
| 62         | 47.1             | 46.5             | - 1.3   | 44.8            | - 4.9   |
| 64         | 48.4             | 46.1             | - 4.8   | 44.1            | - 8.9   |
| 66         | 41.0             | 39.5             | - 3.7   | 39.6            | - 3.4   |
| 68         | 44.9             | 41.3             | - 8.0   | 39.8            | -11.4   |
| 70         | 46.1             | 43.1             | - 6.5   | 41.0            | -11.1   |
| 72         | 45.3             | 44.1             | - 2.7   | 44.4            | - 2.0   |
| 74         | 48.4             | 45.9             | - 5.2   | 44.5            | - 8.1   |
| 76         | 48.3             | 45.8             | - 5.2   | 44.4            | - 8.1   |
| 78         | 44.1             | 44.0             | - 0.2   | 43.7            | - 0.9   |
| 80         | 45.7             | 44.4             | - 2.8   | 38.5            | -15.8   |
| 82         | 44.0             | 42.0             | - 4.6   | 39.1            | -11.1   |
| 84         | 43.5             | 39.8             | - 8.5   | 38.2            | -12.2   |
| 86         | 44.3             | 39.1             | -11.7   | 37.7            | -14.9   |
| 88         | 45.3             | 42.3             | - 6.6   | 37.2            | -21.8   |
| 90         | 46.1             | 45.6             | - 1.1   | 38.5            | -16.5   |
| 92         | 45.9             | 43.9             | - 4.4   | 39.9            | -13.1   |
| 94         | 46.9             | 47.5             | + 1.3   | 42.7            | - 9.0   |
| 96         | 42.4             | 44.4             | + 4.7   | 37.7            | -11.1   |
| 98         | 46.8             | 44.2             | - 5.6   | 41.4            | -11.5   |
| 100        | 41.5             | 44.0             | + 6.0   | 42.5            | + 2.4   |
| 102        | 42.5             | 46.2             | + 8.7   | 46.3            | + 8.9   |
| 104        | 41.6             | 50.9             | +22.4   | 43.2            | + 3.9   |

Table 6

Two Year Oral (Diet) Toxicity-Oncogenicity Study  
of Fluorocarbon FC-143 in Rats

Summary of Mean Food Consumption - Absolute  
(g/rat/day) ± % Difference from Control

## MALES

| Study Week | Control Mean Wt. | 300 ppm Mean Wt. | % Diff. | 30 ppm Mean Wt. | % Diff. |
|------------|------------------|------------------|---------|-----------------|---------|
| 1          | 22.2             | 18.7             | -15.8   | 22.9            | + 3.2   |
| 2          | 23.1             | 22.7             | - 1.7   | 23.0            | - 0.4   |
| 4          | 25.5             | 23.2             | - 9.0   | 25.3            | - 0.8   |
| 6          | 27.1             | 20.9             | -22.9   | 22.6            | -16.6   |
| 8          | 26.4             | 24.9             | - 5.7   | 26.3            | - 0.4   |
| 10         | 24.5             | 24.0             | - 2.0   | 25.4            | + 3.7   |
| 12         | 24.1             | 23.1             | - 4.2   | 23.5            | - 2.5   |
| 14         | 25.5             | 24.6             | - 3.5   | 25.4            | - 0.4   |
| 16         | 24.1             | 23.5             | - 2.5   | 24.1            | + 0.0   |
| 18         | 24.1             | 22.9             | - 5.0   | 23.8            | - 1.2   |
| 20         | 24.7             | 24.4             | - 1.2   | 25.1            | + 1.6   |
| 22         | 24.3             | 23.7             | - 2.5   | 24.6            | + 1.2   |
| 24         | 24.8             | 24.1             | - 2.8   | 24.4            | - 1.6   |
| 26         | 24.5             | 23.4             | - 4.5   | 24.2            | - 1.2   |
| 28         | 24.3             | 23.4             | - 3.7   | 24.3            | + 0.0   |
| 30         | 24.9             | 24.2             | - 2.8   | 24.4            | - 2.0   |
| 32         | 24.9             | 23.9             | - 4.0   | 24.9            | + 0.0   |
| 34         | 24.3             | 23.8             | - 2.1   | 24.5            | + 0.8   |
| 36         | 22.7             | 21.9             | - 3.5   | 22.8            | + 0.4   |
| 38         | 24.4             | 24.1             | - 1.2   | 24.7            | + 1.2   |
| 40         | 24.0             | 23.5             | - 2.1   | 24.8            | + 3.3   |
| 42         | 24.1             | 23.8             | - 1.2   | 24.8            | + 2.9   |
| 44         | 24.1             | 24.0             | - 0.4   | 24.7            | + 2.5   |
| 46         | 24.3             | 23.5             | - 3.3   | 24.3            | + 0.0   |
| 48         | 24.4             | 24.2             | - 0.8   | 24.1            | - 1.2   |
| 50         | 24.6             | 24.5             | - 0.4   | 24.7            | + 0.4   |
| 52         | 23.3             | 23.4             | + 0.4   | 22.9            | - 1.7   |

Table 6

Two Year Oral (Diet) Toxicity-Oncogenicity Study  
of Fluorocarbon FC-143 in Rats

Summary of Mean Food Consumption - Absolute  
(g/rat/day)  $\pm$  % Difference from Control

## MALES

| Study Week | Control Mean Wt. | 300 ppm Mean Wt. | % Diff. | 30 ppm Mean Wt. | % Diff. |
|------------|------------------|------------------|---------|-----------------|---------|
| 54         | 24.2             | 24.4             | + 0.8   | 23.3            | - 3.7   |
| 56         | 24.2             | 24.0             | - 0.8   | 24.5            | + 1.2   |
| 58         | 24.1             | 23.9             | - 0.8   | 24.5            | + 1.7   |
| 60         | 23.8             | 24.0             | + 0.8   | 24.5            | + 2.9   |
| 62         | 24.2             | 22.0             | - 9.1   | 24.3            | + 0.4   |
| 64         | 20.6             | 24.0             | +16.5   | 22.7            | +10.2   |
| 66         | 23.6             | 24.4             | + 3.4   | 24.1            | + 2.1   |
| 68         | 21.6             | 22.1             | + 2.3   | 22.3            | + 3.2   |
| 70         | 21.6             | 22.9             | + 6.0   | 22.0            | + 1.9   |
| 72         | 21.7             | 22.8             | + 5.1   | 23.2            | + 6.9   |
| 74         | 22.7             | 22.8             | + 0.4   | 24.2            | + 6.6   |
| 76         | 24.8             | 23.7             | - 4.4   | 24.5            | - 1.2   |
| 78         | 24.5             | 24.0             | - 2.0   | 23.1            | - 5.7   |
| 80         | 23.2             | 24.1             | + 3.9   | 24.6            | + 6.0   |
| 82         | 24.1             | 22.4             | - 7.1   | 25.1            | + 4.2   |
| 84         | 23.8             | 23.8             | + 0.0   | 22.7            | - 4.6   |
| 86         | 23.7             | 23.8             | + 0.4   | 23.5            | - 0.8   |
| 88         | 23.6             | 20.3             | -14.0   | 21.6            | - 8.5   |
| 90         | 24.1             | 22.7             | - 5.8   | 23.0            | - 4.6   |
| 92         | 24.1             | 23.2             | - 3.7   | 22.9            | - 5.0   |
| 94         | 26.1             | 25.4             | - 2.7   | 24.3            | - 6.9   |
| 96         | 25.1             | 24.9             | - 0.8   | 24.5            | - 2.4   |
| 98         | 25.2             | 24.4             | - 3.2   | 24.7            | - 2.0   |
| 100        | 24.6             | 23.8             | - 3.3   | 24.6            | + 0.0   |
| 102        | 23.3             | 24.1             | + 3.4   | 24.7            | + 6.0   |
| 104        | 21.7             | 23.2             | + 6.9   | 24.4            | +12.4   |

Table 7

Two Year Oral (Diet) Toxicity-Oncogenicity Study  
of Fluorocarbon FC-143 in Rats

Summary of Mean Food Consumption - Absolute  
(g/rat/day) ± % Difference from Control

FEMALES

| Study Week | Control Mean Wt. | 300 ppm Mean Wt. | % Diff. | 30 ppm Mean Wt. | % Diff. |
|------------|------------------|------------------|---------|-----------------|---------|
| 1          | 13.5             | 13.5             | + 0.0   | 13.3            | - 1.5   |
| 2          | 17.0             | 17.0             | + 0.0   | 17.1            | + 0.6   |
| 4          | 20.4             | 17.5             | -14.2   | 18.0            | -11.8   |
| 6          | 19.3             | 19.2             | - 0.5   | 19.5            | + 1.0   |
| 8          | 19.0             | 19.1             | + 0.5   | 18.6            | - 2.1   |
| 10         | 19.5             | 19.1             | - 2.1   | 19.2            | - 1.5   |
| 12         | 19.6             | 19.3             | - 1.5   | 19.2            | - 2.0   |
| 14         | 18.6             | 17.8             | - 4.3   | 18.4            | - 1.1   |
| 16         | 16.7             | 16.1             | - 3.6   | 16.8            | + 0.6   |
| 18         | 19.7             | 18.8             | - 4.6   | 19.3            | - 2.0   |
| 20         | 19.8             | 18.9             | - 4.6   | 19.9            | + 0.5   |
| 22         | 18.7             | 19.2             | + 2.7   | 19.6            | + 4.8   |
| 24         | 19.3             | 18.7             | - 3.1   | 19.5            | + 1.0   |
| 26         | 18.7             | 18.3             | - 2.1   | 18.4            | - 1.6   |
| 28         | 20.6             | 19.3             | - 6.3   | 19.3            | - 6.3   |
| 30         | 20.2             | 19.4             | - 4.0   | 20.0            | - 1.0   |
| 32         | 20.2             | 19.3             | - 4.5   | 19.2            | - 5.0   |
| 34         | 18.5             | 18.1             | - 2.2   | 18.2            | - 1.6   |
| 36         | 20.2             | 19.4             | - 4.0   | 20.4            | + 1.0   |
| 38         | 20.4             | 19.1             | - 6.4   | 19.7            | - 3.4   |
| 40         | 21.2             | 18.9             | -10.9   | 18.5            | -12.7   |
| 42         | 20.1             | 20.0             | - 0.5   | 19.9            | - 1.0   |
| 44         | 20.8             | 19.7             | - 5.3   | 20.6            | - 1.0   |
| 46         | 18.7             | 19.6             | + 4.8   | 20.3            | + 8.6   |
| 48         | 19.3             | 19.7             | + 2.1   | 20.5            | + 6.2   |
| 50         | 20.5             | 18.0             | -12.2   | 20.0            | - 2.4   |
| 52         | 19.6             | 19.6             | + 0.0   | 19.5            | - 0.5   |

Table 7

Two Year Oral (Diet) Toxicity-Oncogenicity Study  
of Fluorocarbon FC-143 in Rats

Summary of Mean Food Consumption - Absolute  
(g/rat/day)  $\pm$  % Difference from Control

FEMALES

| Study Week | Control Mean Wt. | 300 ppm Mean Wt. | % Diff.   | 30 ppm Mean Wt. | % Diff. |
|------------|------------------|------------------|-----------|-----------------|---------|
| 54         | 19.9             | 19.4             | - 2.5     | 19.5            | - 2.0   |
| 56         | 21.6             | 20.4             | - 5.6     | 19.8            | - 8.3   |
| 58         | 19.5             | 20.3             | + 4.1     | 19.8            | + 1.5   |
| 60         | 21.0             | 21.0             | $\pm$ 0.0 | 20.5            | - 2.4   |
| 62         | 20.1             | 20.1             | $\pm$ 0.0 | 19.5            | - 3.0   |
| 64         | 20.6             | 20.0             | - 2.9     | 19.4            | - 5.8   |
| 66         | 17.4             | 17.2             | - 1.2     | 17.7            | + 1.7   |
| 68         | 19.2             | 17.9             | - 6.8     | 17.7            | - 7.8   |
| 70         | 19.9             | 18.5             | - 7.0     | 18.2            | - 8.5   |
| 72         | 19.7             | 19.1             | - 3.1     | 19.9            | + 1.0   |
| 74         | 21.6             | 20.4             | - 5.6     | 20.6            | - 4.6   |
| 76         | 22.0             | 20.5             | - 6.8     | 20.8            | - 5.5   |
| 78         | 20.5             | 19.9             | - 2.9     | 20.6            | + 0.5   |
| 80         | 21.7             | 20.3             | - 6.5     | 18.3            | -15.7   |
| 82         | 21.3             | 19.4             | - 8.9     | 19.0            | -10.8   |
| 84         | 21.1             | 18.2             | -13.7     | 18.2            | -13.7   |
| 86         | 21.8             | 17.9             | -17.9     | 18.1            | -17.0   |
| 88         | 22.6             | 19.3             | -14.6     | 18.0            | -20.4   |
| 90         | 23.1             | 20.6             | -10.8     | 18.7            | -19.1   |
| 92         | 23.5             | 20.0             | -14.9     | 19.4            | -17.5   |
| 94         | 23.7             | 21.4             | - 9.7     | 21.0            | -11.4   |
| 96         | 21.5             | 20.6             | - 4.2     | 19.0            | -11.6   |
| 98         | 23.4             | 20.7             | -11.5     | 20.9            | -10.7   |
| 100        | 20.8             | 20.4             | - 1.9     | 21.5            | + 3.4   |
| 102        | 21.4             | 21.4             | $\pm$ 0.0 | 23.3            | + 8.9   |
| 104        | 20.9             | 22.9             | + 9.6     | 21.7            | + 3.8   |

TABLE 8  
Estimated Mean FC-143 (mg/kg Body Weight)  
Consumption Per Day

| Study<br>Week | <u>300 ppm</u> |        | <u>30 ppm</u> |        |
|---------------|----------------|--------|---------------|--------|
|               | Male           | Female | Male          | Female |
| 1             | 29.6           | 29.0   | 3.1           | 2.9    |
| 2             | 29.0           | 30.5   | 2.6           | 3.1    |
| 4             | 25.2           | 24.5   | 2.3           | 2.5    |
| 6             | 20.3           | 24.3   | 1.8           | 2.5    |
| 8             | 21.2           | 22.5   | 1.9           | 2.2    |
| 10            | 18.9           | 21.8   | 1.7           | 2.2    |
| 12            | 17.5           | 21.1   | 1.5           | 2.1    |
| 14            | 17.9           | 18.6   | 1.6           | 2.0    |
| 16            | 16.6           | 16.9   | 1.5           | 1.8    |
| 18            | 15.8           | 18.9   | 1.4           | 1.9    |
| 20            | 16.4           | 18.4   | 1.5           | 2.0    |
| 22            | 15.6           | 18.3   | 1.4           | 1.9    |
| 24            | 15.6           | 17.4   | 1.4           | 1.8    |
| 26            | 14.8           | 16.9   | 1.4           | 1.7    |
| 28            | 14.5           | 17.4   | 1.3           | 1.8    |
| 30            | 14.6           | 17.2   | 1.3           | 1.8    |
| 32            | 14.2           | 16.8   | 1.3           | 1.7    |
| 34            | 13.9           | 15.4   | 1.3           | 1.6    |
| 36            | 12.8           | 16.3   | 1.2           | 1.7    |
| 38            | 13.8           | 15.8   | 1.3           | 1.6    |
| 40            | 13.2           | 15.5   | 1.3           | 1.5    |
| 42            | 13.2           | 16.1   | 1.2           | 1.6    |
| 44            | 13.1           | 15.5   | 1.2           | 1.6    |
| 46            | 12.8           | 15.2   | 1.2           | 1.6    |
| 48            | 13.0           | 15.1   | 1.2           | 1.5    |
| 50            | 13.0           | 13.5   | 1.2           | 1.5    |
| 52            | 12.3           | 14.5   | 1.1           | 1.4    |

TABLE 8 (Continued)  
Estimated Mean FC-143 (mg/kg Body Weight)  
Consumption Per Day

| Study<br>Week | <u>300 ppm</u> |        | <u>30 ppm</u> |        |
|---------------|----------------|--------|---------------|--------|
|               | Male           | Female | Male          | Female |
| 54            | 12.7           | 14.1   | 1.1           | 1.4    |
| 56            | 12.4           | 14.5   | 1.1           | 1.4    |
| 58            | 12.2           | 14.3   | 1.1           | 1.4    |
| 60            | 12.2           | 14.8   | 1.1           | 1.4    |
| 62            | 11.1           | 14.0   | 1.1           | 1.3    |
| 64            | 12.1           | 13.8   | 1.0           | 1.3    |
| 66            | 12.2           | 11.9   | 1.1           | 1.2    |
| 68            | 11.0           | 12.4   | 1.0           | 1.2    |
| 70            | 11.3           | 12.9   | 1.0           | 1.2    |
| 72            | 11.2           | 13.2   | 1.1           | 1.3    |
| 74            | 11.4           | 13.8   | 1.1           | 1.3    |
| 76            | 11.7           | 13.8   | 1.1           | 1.3    |
| 78            | 11.9           | 13.2   | 1.1           | 1.3    |
| 80            | 11.8           | 13.3   | 1.1           | 1.2    |
| 82            | 11.0           | 12.6   | 1.1           | 1.2    |
| 84            | 11.6           | 11.9   | 1.0           | 1.2    |
| 86            | 11.6           | 11.7   | 1.1           | 1.1    |
| 88            | 9.9            | 12.7   | 1.0           | 1.1    |
| 90            | 10.9           | 13.7   | 1.0           | 1.2    |
| 92            | 11.2           | 13.2   | 1.1           | 1.2    |
| 94            | 12.1           | 14.2   | 1.1           | 1.3    |
| 96            | 12.0           | 13.3   | 1.1           | 1.1    |
| 98            | 11.7           | 13.3   | 1.1           | 1.2    |
| 100           | 11.4           | 13.2   | 1.1           | 1.3    |
| 102           | 11.5           | 13.9   | 1.1           | 1.4    |
| 104           | 11.4           | 15.3   | 1.1           | 1.3    |

TABLE 9

TWO YEAR URAL (DIET) TOXICITY-UNCOGENICITY STUDY OF FLUOROCARBON FC-143 IN RATS  
MORTALITY DATA

| DOSE_GROUP           | INITIAL<br>NO. | WEEK OF STUDY |         |          |           |           |           |           |           |           |           |           |           |           |           |  |  |  |  |  |
|----------------------|----------------|---------------|---------|----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|--|--|--|--|--|
|                      |                | 1-<br>4       | 5-<br>8 | 9-<br>12 | 13-<br>16 | 17-<br>20 | 21-<br>24 | 25-<br>28 | 29-<br>32 | 33-<br>36 | 37-<br>40 | 41-<br>44 | 45-<br>48 | 49-<br>52 | 53-<br>56 |  |  |  |  |  |
| MALES                |                |               |         |          |           |           |           |           |           |           |           |           |           |           |           |  |  |  |  |  |
| CONTROL<br>0 ppm     | 50             | 0             | 0       | 0        | 0         | 0         | 0         | 0         | 0         | 1         | 0         | 0         | 0         | 0         | 1         |  |  |  |  |  |
| HIGH DOSE<br>300 ppm | 50             | 0             | 0       | 0        | 0         | 1         | 0         | 1         | 0         | 0         | 0         | 0         | 0         | 0         | 0         |  |  |  |  |  |
| LOW DOSE<br>30 ppm   | 50             | 0             | 0       | 0        | 0         | 0         | 0         | 0         | 0         | 0         | 1         | 0         | 0         | 0         | 0         |  |  |  |  |  |
| FEMALES              |                |               |         |          |           |           |           |           |           |           |           |           |           |           |           |  |  |  |  |  |
| CONTROL<br>0 ppm     | 50             | 0             | 0       | 0        | 0         | 0         | 0         | 1         | 0         | 0         | 1         | 0         | 0         | 1         | 1         |  |  |  |  |  |
| HIGH DOSE<br>300 ppm | 50             | 0             | 0       | 0        | 0         | 0         | 0         | 0         | 0         | 0         | 0         | 0         | 0         | 1         | 1         |  |  |  |  |  |
| LOW DOSE<br>30 ppm   | 50             | 0             | 0       | 0        | 0         | 0         | 0         | 0         | 0         | 0         | 0         | 1         | 1         | 1         | 0         |  |  |  |  |  |

TABLE 9

140 YEAR ORAL(DIET) TOXICITY-ONCOGENICITY STUDY OF FLUOROCARBON FC-143 IN RATS  
MORTALITY DATA

| DOSE GROUP           | INITIAL NO. | WEEK OF STUDY |       |       |       |       |       |       |       |       |       |        |         |         |    |    |  | 1-108 WEEK TOTALS NO. |
|----------------------|-------------|---------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|---------|---------|----|----|--|-----------------------|
|                      |             | 57-60         | 61-64 | 65-68 | 69-72 | 73-76 | 77-80 | 81-84 | 85-88 | 89-92 | 93-96 | 97-100 | 101-104 | 105-108 |    |    |  |                       |
| MALES                |             |               |       |       |       |       |       |       |       |       |       |        |         |         |    |    |  |                       |
| CONTROL<br>0 ppm     | 50          | 0             | 1     | 0     | 0     | 1     | 0     | 1     | 4     | 1     | 2     | 1      | 2       | 1       | 16 | 32 |  |                       |
| HIGH DOSE<br>300 ppm | 50          | 0             | 0     | 0     | 2     | 0     | 0     | 0     | 0     | 1     | 0     | 1      | 0       | 0       | 6  | 12 |  |                       |
| LOW DOSE<br>30 ppm   | 50          | 0             | 0     | 2     | 2     | 0     | 0     | 0     | 1     | 1     | 4     | 1      | 2       | 0       | 14 | 28 |  |                       |
| FEMALES              |             |               |       |       |       |       |       |       |       |       |       |        |         |         |    |    |  |                       |
| CONTROL<br>0 ppm     | 50          | 0             | 3     | 0     | 0     | 1     | 3     | 2     | 2     | 1     | 3     | 5      | 1       | 0       | 25 | 50 |  |                       |
| HIGH DOSE<br>300 ppm | 50          | 1             | 1     | 0     | 0     | 1     | 2     | 1     | 3     | 1     | 4     | 2      | 3       | 0       | 21 | 42 |  |                       |
| LOW DOSE<br>30 ppm   | 50          | 0             | 0     | 0     | 1     | 1     | 0     | 5     | 1     | 1     | 6     | 7      | 1       | 0       | 26 | 52 |  |                       |

CHI-SQUARE TESTS FOR DOSE GROUP DIFFERENCES FROM CONTROL

| DOSE GROUP | MALES      |       | FEMALES    |       |
|------------|------------|-------|------------|-------|
|            | CHI-SQUARE | PROB. | CHI-SQUARE | PROB. |
| 300 ppm    | * 4.72     | 0.028 | 0.36       | 0.555 |
| 30 ppm     | 0.05       | 0.811 | 0.00       | 1.000 |

\* Significant difference from control at the 5% level

Table 10

Two Year Oral (Diet) Toxicity - Oncogenicity Study  
of Fluorocarbon FC-143 in Rats

## Summary of Clinical Observations

|                                                                             | Control    |           | 300 ppm   |           | 30 ppm   |           |
|-----------------------------------------------------------------------------|------------|-----------|-----------|-----------|----------|-----------|
|                                                                             | M          | F         | M         | F         | M        | F         |
| Initial number of rats                                                      | 65         | 65        | 65        | 65        | 50       | 50        |
| Survivors at end of study                                                   | 34         | 25        | 44        | 29        | 36       | 24        |
| Mass(es) <sup>b</sup> in various areas<br>(Mass[es] resolved prior to term) | 19<br>(11) | 38<br>(7) | 10<br>(8) | 40<br>(7) | 7<br>(4) | 41<br>(5) |
| Alopecia in various areas                                                   | 6          | 14        | 9         | 16        | 6        | 16        |
| Swollen throat <sup>c</sup>                                                 | 13         | 10        | 2         | 9         | 4        | 8         |
| Pale (blanched) eyes and/or<br>appears thin (emaciated)                     | 9          | 9         | 5         | 8         | 9        | 10        |
| Excessive lacrimation                                                       | 8          | 12        | 9         | 7         | 8        | 5         |
| Ataxia                                                                      | 4          | 2         | 2         | 15        | 5        | 9         |
| Convulsions (clonic)                                                        | 3          | 0         | 2         | 0         | 4        | 0         |
| Occasional urinary incontinence<br>and/or hematuria                         | 5          | 4         | 1         | 2         | 3        | 4         |
| Raised ulcerated lesion on<br>hind foot pad(s)                              | 7          | 0         | 1         | 1         | 5        | 0         |
| Occasional bloody nares                                                     | 3          | 1         | 0         | 6         | 0        | 1         |

<sup>a</sup> (Incidence in males + incidence in females) / total number of animals in the group x 100<sup>b</sup> To be detailed in the pathology report<sup>c</sup> Indication of Sialodacryoadenitis (SDA) viral infection

46.

Table 10

Two Year Oral (Diet) Toxicity - Oncogenicity Study  
of Fluorocarbon FC-143 in Rats

## Summary of Clinical Observations

|                                            | Control |   | 300 ppm |   | 30 ppm |   |
|--------------------------------------------|---------|---|---------|---|--------|---|
|                                            | M       | F | M       | F | M      | F |
| Occasional bloody feces<br>and/or diarrhea | 2       | 0 | 2       | 1 | 1      | 0 |
| Occasional episode of<br>dyspnea           | 1       | 0 | 1       | 0 | 0      | 0 |
| Listing of the head                        | 1       | 0 | 0       | 5 | 1      | 2 |
| Circular ulcerated<br>area on skin         | 4       | 3 | 1       | 0 | 1      | 0 |
| Swollen (distended) abdomen                | 0       | 2 | 2       | 0 | 0      | 2 |
| Swelling in inguinal area                  | 1       | 1 | 0       | 0 | 0      | 0 |
| Swollen leg and/or foot                    | 3       | 0 | 2       | 1 | 1      | 0 |
| Swollen ears                               | 0       | 0 | 0       | 1 | 0      | 1 |
| Swollen penis                              | 0       | - | 0       | - | 1      | - |
| Paresis of hind leg(s)/feet                | 1       | 0 | 1       | 0 | 2      | 0 |

Table 11

Two Year Oral (Diet) Toxicity - Oncogenicity Study  
of Fluorocarbon FC-143 in Rats

## Summary of Clinical Ophthalmologic Findings

| Observations                                                                                                              | Eye(s)    | Control - 0 ppm |   | 300 ppm |   | 30 ppm |   |
|---------------------------------------------------------------------------------------------------------------------------|-----------|-----------------|---|---------|---|--------|---|
|                                                                                                                           |           | M               | F | M       | F | M      | F |
| Phthisis Bulbi<br>(Atrophy)                                                                                               | Right     | 0               | 1 | 3       | 3 | 1      | 3 |
|                                                                                                                           | Left      | 0               | 1 | 0       | 0 | 0      | 0 |
| Posterior Subcapsular<br>Cataract(s)                                                                                      | Right     | 2               | 0 | 1       | 0 | 0      | 0 |
|                                                                                                                           | Left      | 2               | 1 | 1       | 0 | 0      | 0 |
|                                                                                                                           | Bilateral | 1               | 0 | 0       | 0 | 0      | 0 |
| Corneal (ocular) Opacity<br>(Diffused; ulcerated; focal<br>with iris staphyloma; with<br>pannus; partially<br>collapsed). | Right     | 0               | 2 | 0       | 0 | 2      | 0 |
|                                                                                                                           | Left      | 0               | 2 | 0       | 0 | 2      | 0 |
|                                                                                                                           | Bilateral | 0               | 1 | 0       | 0 | 0      | 0 |
| Chronic superficial<br>Keratitis                                                                                          | Right     | 0               | 1 | 2       | 0 | 0      | 0 |
|                                                                                                                           | Bilateral | 1               | 0 | 2       | 0 | 0      | 0 |

Note: Blood samples were taken via the retro-orbital venus plexus from almost all of the above animals with ophthalmologic abnormalities.

Table 11

**Two Year Oral (Diet) Toxicity - Oncogenicity Study  
of Fluorocarbon FC-143 in Rats**

Summary of Clinical Ophthalmologic Findings

| <u>(N) Group</u> | <u>Eye(s)</u> | <u>Description of Abnormality</u>                            |
|------------------|---------------|--------------------------------------------------------------|
| <u>Males</u>     |               |                                                              |
| (1) Control      | Right         | Chronic uveitis (secondary to blood sampling)                |
| (1) Control      | Right         | Diffused lens opacity and chronic iritis with microphthalmos |
| (1) Control      | Bilateral     | Posterior lens opacity                                       |
| (1) Control      | Bilateral     | Very pale choroidal circulation                              |
| (1) High dose    | Right         | Dacryadenitis                                                |
| (1) High dose    | Bilateral     | Chronic uveitis with anterior synechia in right eye          |
| (1) High dose    | Bilateral     | Diffused lens opacity                                        |
| (1) High dose    | Left          | Focal, posterior, capsul lens opacity                        |
| <u>Females</u>   |               |                                                              |
| (1) Control      | Left          | Chronic uveitis with secondary exophthalmia                  |
| (1) Control      | Right         | Dacryadenitis                                                |
| (1) Low dose     | Left          | Diffused lens opacity with pannus and microphthalmia         |

TABLE 12  
TWO YEAR ORAL (DIET) TOXICITY-UNCOGENICITY STUDY OF FLUOROCARBON FC-143 IN RATS  
MEAN ERYTHROCYTE VALUES WITH STANDARD DEVIATIONS

|          |             | ERYTHROCYTES<br>(CELLS X 10**6) |        | HEMOGLOBIN<br>(G/DL) |        | HEMATOCRIT<br>(% PACKED CELLS) |        | MCV<br>(MICRONS**3) |        | MCH<br>(PICOGRAMS) |        | MCHC<br>(%) |        |
|----------|-------------|---------------------------------|--------|----------------------|--------|--------------------------------|--------|---------------------|--------|--------------------|--------|-------------|--------|
| N        | MEAN S.DEV. | MEAN                            | S.DEV. | MEAN                 | S.DEV. | MEAN                           | S.DEV. | MEAN                | S.DEV. | MEAN               | S.DEV. | MEAN        | S.DEV. |
| MALE     |             |                                 |        |                      |        |                                |        |                     |        |                    |        |             |        |
| MONTH 3  |             |                                 |        |                      |        |                                |        |                     |        |                    |        |             |        |
| 15       | 8.29        | 0.322                           |        | 16.4                 | 0.39   | 45.9                           | 0.96   | 55                  | 1.9    | 19.8               | 0.80   | 35.6        | 0.47   |
| 15       | 7.91        | 0.743                           |        | 15.5*                | 0.50   | 43.3*                          | 1.10   | 56                  | 4.3    | 19.7               | 1.55   | 35.8        | 0.45   |
| 15       | 7.87        | 0.475                           |        | 16.1                 | 0.67   | 44.5*                          | 1.92   | 57                  | 2.5    | 20.5               | 0.83   | 36.2*       | 0.55   |
| MONTH 6  |             |                                 |        |                      |        |                                |        |                     |        |                    |        |             |        |
| 15       | 8.42        | 0.384                           |        | 15.1                 | 0.94   | 44.5                           | 2.70   | 58                  | 4.3    | 17.9               | 1.41   | 33.9        | 0.77   |
| 15       | 7.91*       | 0.350                           |        | 14.5                 | 1.01   | 43.1                           | 1.64   | 56                  | 3.0    | 18.4               | 1.34   | 33.7        | 1.93   |
| 15       | 7.58*       | 0.306                           |        | 14.8                 | 0.83   | 43.9                           | 2.39   | 58*                 | 1.9    | 19.6*              | 0.79   | 33.8        | 1.02   |
| MONTH 12 |             |                                 |        |                      |        |                                |        |                     |        |                    |        |             |        |
| 14       | 8.44        | 0.554                           |        | 15.9                 | 1.17   | 46.7                           | 3.69   | 55                  | 2.2    | 18.8               | 0.84   | 34.0        | 0.97   |
| 15       | 8.01*       | 0.473                           |        | 15.2                 | 0.70   | 42.7*                          | 1.98   | 53*                 | 1.7    | 19.0               | 0.54   | 35.7*       | 0.76   |
| 15       | 8.38        | 0.354                           |        | 15.5                 | 0.52   | 44.5                           | 1.88   | 53*                 | 1.2    | 18.5               | 0.72   | 34.8*       | 0.99   |
| MONTH 18 |             |                                 |        |                      |        |                                |        |                     |        |                    |        |             |        |
| 15       | 7.48        | 2.071                           |        | 15.1                 | 3.12   | 40.8                           | 9.14   | 56                  | 6.2    | 21.0               | 3.09   | 37.2        | 1.53   |
| 15       | 7.55*       | 0.635                           |        | 14.8*                | 1.15   | 40.6*                          | 3.00   | 54                  | 2.2    | 19.6               | 0.92   | 36.4        | 0.69   |
| 15       | 8.62        | 1.106                           |        | 15.8                 | 1.52   | 46.1*                          | 4.41   | 54                  | 4.6    | 18.4*              | 0.93   | 34.3*       | 1.40   |
| MONTH 24 |             |                                 |        |                      |        |                                |        |                     |        |                    |        |             |        |
| 15       | 7.84        | 1.083                           |        | 14.5                 | 1.59   | 42.3                           | 5.34   | 54                  | 3.4    | 18.6               | 1.27   | 34.4        | 0.89   |
| 15       | 7.92        | 0.670                           |        | 14.6                 | 1.42   | 43.3                           | 5.72   | 55                  | 5.6    | 18.4               | 1.10   | 33.8        | 1.70   |
| 14       | 7.95        | 0.869                           |        | 14.7                 | 1.23   | 42.5                           | 4.22   | 54                  | 2.0    | 18.5               | 0.91   | 34.6        | 0.78   |

\* : P <= .05; TWO TAILED DUNNETT T ON RAW DATA.  
# : P <= .05; TWO TAILED DUNNETT T ON RANKED DATA.

TABLE 12  
TWO YEAR ORAL (DIET) TOXICITY-ONCOGENICITY STUDY OF FLUOROCARBON FC-143 IN RATS  
MEAN LEUKOCYTE VALUES WITH STANDARD DEVIATIONS

|                   | N  | LEUKOCYTES<br>(CELLS X 10**3) |        | NEUTROPHILS<br>(CELLS X 10**3) |        | LYMPHOCYTES<br>(CELLS X 10**3) |        | MONOCYTES<br>(CELLS X 10**3) |        | EOSINOPHILS<br>(CELLS X 10**3) |        |
|-------------------|----|-------------------------------|--------|--------------------------------|--------|--------------------------------|--------|------------------------------|--------|--------------------------------|--------|
|                   |    | MEAN                          | S.DEV. | MEAN                           | S.DEV. | MEAN                           | S.DEV. | MEAN                         | S.DEV. | MEAN                           | S.DEV. |
| MALE<br>-----     |    |                               |        |                                |        |                                |        |                              |        |                                |        |
| MONTH 3<br>-----  |    |                               |        |                                |        |                                |        |                              |        |                                |        |
| 0 PPM             | 15 | 12.73                         | 2.074  | 1.65                           | 0.656  | 10.72                          | 1.803  | 0.18                         | 0.196  | 0.17                           | 0.136  |
| 300 PPM           | 15 | 14.93                         | 2.801  | 1.58                           | 0.936  | 13.08*                         | 2.206  | 0.10                         | 0.102  | 0.16                           | 0.178  |
| 30 PPM            | 15 | 15.22*                        | 3.052  | 2.14                           | 0.870  | 12.83*                         | 2.861  | 0.17                         | 0.173  | 0.11                           | 0.157  |
| MONTH 6<br>-----  |    |                               |        |                                |        |                                |        |                              |        |                                |        |
| 0 PPM             | 15 | 10.74                         | 2.423  | 1.43                           | 0.727  | 8.85                           | 2.416  | 0.29                         | 0.180  | 0.17                           | 0.121  |
| 300 PPM           | 15 | 12.72                         | 2.160  | 1.99                           | 0.989  | 10.06                          | 2.316  | 0.38                         | 0.154  | 0.20                           | 0.227  |
| 30 PPM            | 15 | 14.46*                        | 3.223  | 1.92                           | 1.146  | 11.81*                         | 2.978  | 0.33                         | 0.235  | 0.31                           | 0.362  |
| MONTH 12<br>----- |    |                               |        |                                |        |                                |        |                              |        |                                |        |
| 0 PPM             | 14 | 7.94                          | 1.572  | 1.10                           | 0.612  | 6.35                           | 1.256  | 0.40                         | 0.216  | 0.10                           | 0.107  |
| 300 PPM           | 15 | 8.14                          | 1.789  | 2.26*                          | 0.656  | 5.36                           | 1.246  | 0.39                         | 0.247  | 0.14                           | 0.105  |
| 30 PPM            | 15 | 10.38*                        | 1.747  | 2.21*                          | 1.396  | 7.56                           | 2.151  | 0.44                         | 0.233  | 0.18                           | 0.117  |
| MONTH 18<br>----- |    |                               |        |                                |        |                                |        |                              |        |                                |        |
| 0 PPM             | 15 | 11.41                         | 7.325  | 5.06                           | 6.402  | 5.61                           | 1.504  | 0.59                         | 0.405  | 0.16                           | 0.128  |
| 300 PPM           | 15 | 9.91                          | 1.479  | 2.78                           | 1.657  | 6.30                           | 1.070  | 0.63                         | 0.294  | 0.20                           | 0.156  |
| 30 PPM            | 15 | 11.16                         | 5.157  | 2.55*                          | 3.353  | 8.20*                          | 2.568  | 0.30*                        | 0.190  | 0.11                           | 0.163  |
| MONTH 24<br>----- |    |                               |        |                                |        |                                |        |                              |        |                                |        |
| 0 PPM             | 15 | 10.79                         | 7.529  | 3.72                           | 5.666  | 6.66                           | 2.140  | 0.34                         | 0.398  | 0.08                           | 0.083  |
| 300 PPM           | 15 | 9.09                          | 2.351  | 2.41                           | 1.488  | 6.34                           | 1.519  | 0.26                         | 0.176  | 0.08                           | 0.109  |
| 30 PPM            | 14 | 10.44                         | 3.464  | 3.24                           | 2.032  | 6.72                           | 2.171  | 0.39                         | 0.292  | 0.09                           | 0.106  |

\* : P <= .05, TWO TAILED DUNNETT T ON RAW DATA.  
# : P <= .05, TWO TAILED DUNNETT T ON RANKED DATA.

TABLE 12

TWO YEAR ORAL (DIET) TOXICITY-ONCOGENICITY  
STUDY OF FLUOROCARBON FC-143 IN MALE RATS  
INDIVIDUAL HEMOGRAM VALUES

MONTH=3

| DOSE    | ANIMAL   | ERYTH | HEMO | HEMAT | MCV     | MCH     | MCHC    | WBC   | PMNAB  | LYMAB   | MONOAB | EOSAB |
|---------|----------|-------|------|-------|---------|---------|---------|-------|--------|---------|--------|-------|
| 0 PPM   | AI R3518 | 8.10  | 16.1 | 45    | 55.5556 | 19.8765 | 35.7778 | 12.60 | 1.3860 | 10.9620 | 0.000  | 0.252 |
| 0 PPM   | AI R3527 | 7.77  | 15.5 | 44    | 56.6261 | 19.9485 | 35.2273 | 11.00 | 1.6500 | 9.0200  | 0.110  | 0.220 |
| 0 PPM   | AI R3532 | 8.69  | 16.5 | 46    | 52.9344 | 18.9873 | 35.8696 | 10.00 | 1.0000 | 8.9000  | 0.000  | 0.100 |
| 0 PPM   | AI R3534 | 8.15  | 16.3 | 45    | 55.2147 | 20.0000 | 36.2222 | 13.30 | 1.3300 | 11.5710 | 0.266  | 0.133 |
| 0 PPM   | AI R3537 | 7.71  | 16.3 | 45    | 58.3658 | 21.1414 | 36.2222 | 11.30 | 2.4860 | 8.8140  | 0.000  | 0.000 |
| 0 PPM   | AI R3540 | 8.04  | 16.7 | 46    | 57.2139 | 20.7711 | 36.3043 | 12.50 | 1.8750 | 9.8750  | 0.250  | 0.500 |
| 0 PPM   | AI R3542 | 8.70  | 16.8 | 47    | 54.0230 | 19.3103 | 35.7447 | 12.60 | 1.3860 | 10.9620 | 0.252  | 0.000 |
| 0 PPM   | AI R3548 | 8.13  | 16.5 | 47    | 57.0106 | 20.2452 | 35.1064 | 15.50 | 2.6350 | 12.0900 | 0.620  | 0.155 |
| 0 PPM   | AI R3552 | 8.20  | 16.6 | 46    | 56.0976 | 20.2439 | 36.0870 | 14.00 | 1.9600 | 11.4800 | 0.280  | 0.345 |
| 0 PPM   | AI R3559 | 8.63  | 16.4 | 46    | 53.3024 | 19.0035 | 35.6522 | 11.50 | 1.0350 | 10.1200 | 0.000  | 0.119 |
| 0 PPM   | AI R3562 | 8.73  | 15.6 | 45    | 51.5464 | 17.8694 | 34.6667 | 11.90 | 2.2610 | 9.4010  | 0.119  | 0.119 |
| 0 PPM   | AI R3564 | 8.37  | 16.6 | 47    | 56.1529 | 19.8327 | 35.3191 | 12.60 | 1.3860 | 10.8360 | 0.252  | 0.126 |
| 0 PPM   | AI R3565 | 8.41  | 16.3 | 46    | 54.6966 | 19.3817 | 35.4348 | 9.58  | 0.7664 | 8.8136  | 0.000  | 0.000 |
| 0 PPM   | AI R3567 | 8.24  | 16.8 | 47    | 57.0388 | 20.3883 | 35.7447 | 15.50 | 2.7900 | 12.5550 | 0.000  | 0.155 |
| 0 PPM   | AI R3569 | 8.46  | 16.6 | 47    | 55.5556 | 19.6217 | 35.3191 | 17.00 | 0.8500 | 15.4700 | 0.510  | 0.170 |
| 300 PPM | BI R3585 | 7.33  | 15.0 | 42    | 57.2988 | 20.4638 | 35.7143 | 14.20 | 1.1360 | 13.0640 | 0.000  | 0.000 |
| 300 PPM | BI R3587 | 7.83  | 16.0 | 44    | 56.1441 | 20.4342 | 36.3636 | 14.30 | 1.7160 | 12.4410 | 0.000  | 0.143 |
| 300 PPM | BI R3589 | 7.67  | 15.1 | 43    | 56.0626 | 19.6871 | 35.1163 | 13.40 | 1.0720 | 11.9260 | 0.268  | 0.134 |
| 300 PPM | BI R3592 | 7.73  | 15.0 | 43    | 55.6274 | 19.4049 | 34.8837 | 19.60 | 2.1560 | 17.2480 | 0.000  | 0.196 |
| 300 PPM | BI R3593 | 6.09  | 14.7 | 41    | 67.3235 | 24.1374 | 35.8537 | 10.70 | 0.5350 | 10.0580 | 0.107  | 0.000 |
| 300 PPM | BI R3595 | 7.81  | 15.5 | 43    | 55.0576 | 19.8464 | 36.0465 | 13.90 | 1.2510 | 12.3710 | 0.139  | 0.139 |
| 300 PPM | BI R3604 | 7.77  | 14.8 | 42    | 54.0561 | 19.0476 | 35.2381 | 14.00 | 0.4200 | 13.3000 | 0.000  | 0.280 |
| 300 PPM | BI R3605 | 7.64  | 15.4 | 43    | 56.2827 | 20.1571 | 35.8140 | 15.20 | 2.1280 | 12.9200 | 0.000  | 0.152 |
| 300 PPM | BI R3610 | 7.99  | 15.5 | 43    | 53.8173 | 19.3992 | 36.0465 | 21.70 | 3.6890 | 17.7940 | 0.217  | 0.000 |
| 300 PPM | BI R3611 | 8.27  | 15.9 | 44    | 53.2044 | 19.2261 | 36.1364 | 17.90 | 1.9690 | 15.3940 | 0.000  | 0.537 |
| 300 PPM | BI R3617 | 7.70  | 16.0 | 44    | 57.1429 | 20.7792 | 36.3636 | 14.40 | 3.0240 | 11.0880 | 0.288  | 0.000 |
| 300 PPM | BI R3623 | 9.02  | 16.0 | 45    | 49.8891 | 17.7384 | 35.5556 | 13.50 | 1.3500 | 11.6100 | 0.135  | 0.405 |
| 300 PPM | BI R3634 | 8.15  | 15.8 | 44    | 53.9877 | 19.3465 | 35.9091 | 14.70 | 0.5880 | 13.9650 | 0.147  | 0.000 |
| 300 PPM | BI R3640 | 8.17  | 15.5 | 43    | 52.6316 | 18.9718 | 36.0465 | 12.20 | 0.7320 | 11.3460 | 0.122  | 0.000 |
| 300 PPM | BI R3643 | 9.44  | 16.3 | 45    | 47.6695 | 17.2689 | 36.2222 | 14.30 | 2.0020 | 11.7260 | 0.143  | 0.429 |
| 300 PPM | CI R3654 | 7.10  | 15.6 | 43    | 60.5634 | 21.9718 | 36.2791 | 16.40 | 2.2960 | 13.9400 | 0.164  | 0.000 |
| 30 PPM  | CI R3655 | 7.85  | 15.7 | 42    | 53.5032 | 20.0000 | 37.3810 | 10.40 | 0.5200 | 9.8800  | 0.000  | 0.000 |
| 30 PPM  | CI R3665 | 7.77  | 15.8 | 43    | 55.3411 | 20.3346 | 36.7442 | 12.70 | 2.1590 | 10.5410 | 0.000  | 0.000 |
| 30 PPM  | CI R3667 | 7.88  | 16.5 | 45    | 57.1066 | 20.9391 | 36.6667 | 14.70 | 2.3520 | 11.7600 | 0.441  | 0.147 |
| 30 PPM  | CI R3668 | 8.31  | 17.0 | 46    | 55.3550 | 20.4573 | 36.9505 | 11.50 | 2.4150 | 8.7400  | 0.345  | 0.000 |
| 30 PPM  | CI R3673 | 8.27  | 16.0 | 44    | 53.2044 | 19.3470 | 36.3636 | 15.10 | 2.5670 | 12.3820 | 0.151  | 0.000 |
| 30 PPM  | CI R3675 | 7.30  | 15.0 | 42    | 57.5342 | 20.5479 | 35.7143 | 17.00 | 3.4000 | 12.7500 | 0.510  | 0.340 |
| 30 PPM  | CI R3677 | 8.58  | 16.5 | 46    | 53.6131 | 19.2308 | 35.8696 | 14.50 | 2.3200 | 12.0350 | 0.000  | 0.145 |
| 30 PPM  | CI R3679 | 8.41  | 16.6 | 46    | 54.6966 | 19.7384 | 36.0870 | 20.80 | 2.2880 | 18.5120 | 0.208  | 0.208 |
| 30 PPM  | CI R3683 | 7.83  | 16.5 | 46    | 58.7484 | 21.0728 | 35.8696 | 17.20 | 1.7200 | 15.4800 | 0.000  | 0.000 |
| 30 PPM  | CI R3687 | 8.37  | 17.6 | 49    | 54.5424 | 21.0275 | 35.9194 | 15.70 | 0.9420 | 14.6010 | 0.157  | 0.000 |
| 30 PPM  | CI R3690 | 7.03  | 15.5 | 43    | 61.1664 | 22.0484 | 36.0465 | 14.80 | 1.3320 | 13.0240 | 0.296  | 0.148 |
| 30 PPM  | CI R3691 | 7.90  | 15.8 | 45    | 56.4620 | 20.0000 | 35.1111 | 21.30 | 3.4080 | 17.8920 | 0.000  | 0.000 |
| 30 PPM  | CI R3692 | 7.91  | 16.0 | 44    | 55.6254 | 20.2276 | 36.3636 | 13.40 | 3.2160 | 9.6480  | 0.000  | 0.536 |
| 30 PPM  | CI R3695 | 7.52  | 15.6 | 43    | 57.1809 | 20.7447 | 36.2791 | 12.80 | 1.1520 | 11.2640 | 0.256  | 0.128 |

TABLE 12

TWO YEAR ORAL (DIET) TOXICITY-ONCOGENICITY  
STUDY OF FLUOROCARBON FC-143 IN MALE RATS  
INDIVIDUAL HEMOGRAM VALUES

| DOSE    | ANIMAL  | ERYTH | HEMO | HEMAT | MCV     | MCH     | MCHC    | WBC   | PMNB   | LYMB    | MONOAB | EOSAB  |
|---------|---------|-------|------|-------|---------|---------|---------|-------|--------|---------|--------|--------|
| 0 PPM   | AIR3519 | 8.24  | 15.0 | 46    | 55.8252 | 18.2039 | 32.6087 | 7.70  | 1.3090 | 6.0830  | 0.2310 | 0.0770 |
| 0 PPM   | AIR3524 | 8.51  | 14.4 | 42    | 49.3537 | 16.9213 | 34.2857 | 8.98  | 1.2572 | 7.6330  | 0.0000 | 0.0898 |
| 0 PPM   | AIR3529 | 8.23  | 14.6 | 44    | 53.4629 | 17.7400 | 33.1414 | 11.70 | 1.0530 | 10.4130 | 0.2340 | 0.0000 |
| 0 PPM   | AIR3533 | 8.30  | 15.7 | 45    | 54.2169 | 18.9157 | 34.8889 | 9.96  | 1.5936 | 7.9680  | 0.0996 | 0.2988 |
| 0 PPM   | AIR3537 | 8.13  | 15.9 | 47    | 57.8106 | 19.5572 | 33.8298 | 9.14  | 1.6452 | 7.0378  | 0.1828 | 0.2742 |
| 0 PPM   | AIR3541 | 8.42  | 15.9 | 46    | 54.6318 | 18.8436 | 34.5652 | 9.83  | 0.9830 | 8.3555  | 0.1966 | 0.2949 |
| 0 PPM   | AIR3547 | 7.40  | 14.8 | 44    | 54.5595 | 20.0000 | 33.6364 | 14.00 | 1.2600 | 12.0400 | 0.4200 | 0.2400 |
| 0 PPM   | AIR3550 | 8.38  | 15.4 | 45    | 53.6993 | 18.3771 | 34.2222 | 7.71  | 1.6962 | 5.6283  | 0.3855 | 0.0000 |
| 0 PPM   | AIR3553 | 8.30  | 15.6 | 46    | 55.4217 | 18.7952 | 33.9130 | 10.90 | 3.5970 | 6.6490  | 0.4360 | 0.2180 |
| 0 PPM   | AIR3557 | 8.95  | 13.0 | 37    | 51.3404 | 14.5251 | 35.1351 | 13.40 | 1.7420 | 11.1220 | 0.2680 | 0.2680 |
| 0 PPM   | AIR3559 | 9.03  | 16.2 | 47    | 52.0487 | 17.9402 | 34.4661 | 8.20  | 0.5740 | 7.0520  | 0.2460 | 0.3280 |
| 0 PPM   | AIR3562 | 8.58  | 14.8 | 45    | 52.4476 | 17.2444 | 32.8889 | 10.70 | 1.1770 | 8.8810  | 0.5350 | 0.1070 |
| 0 PPM   | AIR3567 | 8.69  | 16.2 | 47    | 54.0452 | 18.4421 | 34.4681 | 11.30 | 0.3390 | 10.7350 | 0.0000 | 0.2260 |
| 0 PPM   | AIR3573 | 8.70  | 15.0 | 45    | 51.7241 | 17.2414 | 33.3333 | 11.30 | 1.5820 | 9.0400  | 0.5650 | 0.1130 |
| 0 PPM   | AIR3575 | 8.44  | 13.5 | 41    | 48.5782 | 15.9953 | 32.9268 | 16.30 | 1.6300 | 14.1810 | 0.4890 | 0.0000 |
| 300 PPM | BIR3583 | 8.16  | 14.8 | 43    | 52.6961 | 18.1373 | 34.4186 | 13.40 | 1.0720 | 10.7200 | 0.1340 | 0.1340 |
| 300 PPM | BIR3584 | 7.93  | 14.5 | 42    | 52.9634 | 18.2850 | 34.5238 | 11.70 | 1.1700 | 10.0620 | 0.4680 | 0.0000 |
| 300 PPM | BIR3596 | 7.63  | 11.7 | 43    | 56.3565 | 15.3342 | 27.2043 | 12.70 | 1.6510 | 10.5410 | 0.5080 | 0.0000 |
| 300 PPM | BIR3598 | 7.71  | 15.1 | 43    | 55.7717 | 19.5850 | 35.1163 | 9.74  | 3.6038 | 5.8440  | 0.2922 | 0.0974 |
| 300 PPM | BIR3600 | 8.27  | 15.6 | 44    | 53.2044 | 18.8634 | 35.4545 | 15.30 | 1.9890 | 13.1580 | 0.1530 | 0.0000 |
| 300 PPM | BIR3604 | 7.79  | 13.8 | 41    | 52.6316 | 17.7150 | 33.6585 | 12.80 | 1.1520 | 10.7520 | 0.3840 | 0.5120 |
| 300 PPM | BIR3608 | 8.08  | 14.8 | 43    | 53.2178 | 18.3168 | 34.4186 | 10.60 | 3.2860 | 6.7840  | 0.4240 | 0.1060 |
| 300 PPM | BIR3609 | 8.00  | 15.7 | 46    | 57.5000 | 19.6250 | 34.1304 | 12.60 | 2.0160 | 10.2060 | 0.1260 | 0.2520 |
| 300 PPM | BIR3613 | 8.03  | 15.0 | 44    | 54.7945 | 18.6800 | 34.0909 | 13.80 | 4.0020 | 8.4180  | 0.5520 | 0.8280 |
| 300 PPM | BIR3617 | 7.01  | 15.1 | 45    | 64.1940 | 21.5407 | 33.5556 | 10.50 | 1.9950 | 8.0850  | 0.2100 | 0.2100 |
| 300 PPM | BIR3628 | 8.32  | 14.4 | 44    | 52.8846 | 17.3077 | 32.7273 | 12.70 | 0.6890 | 11.1760 | 0.3810 | 0.2540 |
| 300 PPM | BIR3629 | 8.07  | 14.2 | 43    | 53.2838 | 17.5960 | 33.0233 | 18.70 | 2.6180 | 15.3340 | 0.5610 | 0.1870 |
| 300 PPM | BIR3631 | 8.03  | 14.8 | 43    | 53.5492 | 18.4309 | 34.4186 | 11.50 | 0.9200 | 10.0050 | 0.4600 | 0.1150 |
| 300 PPM | BIR3633 | 7.42  | 13.3 | 39    | 52.5606 | 17.9245 | 34.1026 | 12.60 | 2.0160 | 9.7020  | 0.5040 | 0.3780 |
| 300 PPM | BIR3642 | 8.20  | 15.2 | 44    | 53.6585 | 18.5766 | 34.5455 | 12.10 | 1.4520 | 10.1640 | 0.4840 | 0.0000 |
| 30 PPM  | BIR3646 | 7.48  | 14.7 | 44    | 58.4235 | 19.6524 | 33.4091 | 14.40 | 1.6280 | 12.2840 | 0.7400 | 0.1480 |
| 30 PPM  | BIR3650 | 7.79  | 14.8 | 45    | 57.7664 | 18.9487 | 32.8889 | 15.30 | 0.4590 | 12.5460 | 0.6120 | 0.1530 |
| 30 PPM  | BIR3656 | 7.71  | 15.7 | 45    | 58.3658 | 20.3632 | 34.4884 | 16.50 | 4.2250 | 11.9990 | 0.1690 | 0.5070 |
| 30 PPM  | BIR3658 | 7.60  | 15.3 | 42    | 55.2632 | 20.1316 | 36.4286 | 9.05  | 3.1675 | 5.3395  | 0.1810 | 0.3620 |
| 30 PPM  | BIR3660 | 7.58  | 14.2 | 42    | 55.4090 | 18.7335 | 33.8095 | 14.10 | 2.9610 | 10.7160 | 0.4230 | 0.0000 |
| 30 PPM  | BIR3664 | 7.51  | 14.8 | 43    | 57.2570 | 19.7071 | 34.4186 | 13.40 | 2.5460 | 10.3140 | 0.1340 | 0.4020 |
| 30 PPM  | BIR3665 | 6.95  | 14.0 | 41    | 58.9428 | 20.1439 | 34.1463 | 11.20 | 1.7920 | 8.7360  | 0.5600 | 0.1120 |
| 30 PPM  | BIR3667 | 7.65  | 15.2 | 45    | 58.8235 | 19.8693 | 33.7778 | 14.00 | 2.2400 | 11.2000 | 0.5600 | 0.0000 |
| 30 PPM  | BIR3679 | 7.95  | 15.8 | 46    | 57.8616 | 19.8742 | 34.3478 | 20.50 | 1.6400 | 17.0150 | 0.4100 | 1.4350 |
| 30 PPM  | BIR3680 | 7.31  | 14.0 | 41    | 56.0876 | 19.1518 | 34.1463 | 14.00 | 1.8200 | 11.6200 | 0.2800 | 0.2800 |
| 30 PPM  | BIR3682 | 7.99  | 14.5 | 45    | 56.3204 | 18.1477 | 32.2222 | 19.00 | 3.2300 | 15.5800 | 0.1900 | 0.0000 |
| 30 PPM  | BIR3687 | 7.95  | 16.7 | 50    | 62.8931 | 21.0083 | 33.4000 | 9.11  | 0.0911 | 8.7456  | 0.0000 | 0.3644 |
| 30 PPM  | BIR3689 | 7.05  | 14.1 | 42    | 54.5745 | 20.0000 | 34.5714 | 13.10 | 0.7860 | 12.0520 | 0.1310 | 0.1310 |
| 30 PPM  | BIR3691 | 7.72  | 15.2 | 45    | 56.2402 | 19.6491 | 33.7778 | 17.50 | 1.0500 | 15.7500 | 0.5250 | 0.1750 |
| 30 PPM  | BIR3694 | 7.44  | 13.6 | 42    | 56.4516 | 18.2746 | 32.3610 | 15.00 | 1.2000 | 13.2000 | 0.0000 | 0.6000 |

TABLE 12

TWO YEAR ORAL (DIET) TOXICITY-ONCOGENICITY  
STUDY OF FLUOROCARBON FC-143 IN MALE RATS  
INDIVIDUAL HEMOGRAM VALUES

| MONTH=12 |         |       |      |       |         |         |         |      |       |        |
|----------|---------|-------|------|-------|---------|---------|---------|------|-------|--------|
| DOSE     | ANIMAL  | ERYTH | HEMO | HEMAT | MCV     | MCH     | MCHC    | WBC  | PMNAB | LYMAB  |
| 0 PPM    | AIK3516 | 8.33  | 15.6 | 48    | 57.6230 | 18.7275 | 32.5000 | 7.9  | 1.817 | 5.293  |
| 0 PPM    | AIK3517 | 8.07  | 15.7 | 45    | 55.7621 | 19.4548 | 34.8889 | 5.2  | 0.624 | 4.420  |
| 0 PPM    | AIK3520 | 8.49  | 15.7 | 45    | 53.0035 | 18.4923 | 34.8889 | 6.8  | 0.816 | 5.440  |
| 0 PPM    | AIK3522 | 8.47  | 16.4 | 47    | 55.4900 | 19.3625 | 34.8936 | 9.2  | 0.736 | 7.728  |
| 0 PPM    | AIK3527 | 8.84  | 15.7 | 46    | 52.0362 | 17.7602 | 34.1304 | 7.4  | 0.814 | 6.068  |
| 0 PPM    | AIK3535 | 8.47  | 15.6 | 45    | 53.1287 | 18.4179 | 34.6667 | 9.1  | 2.002 | 6.097  |
| 0 PPM    | AIK3543 | 8.97  | 16.4 | 48    | 53.5117 | 18.2832 | 34.1667 | 6.9  | 0.828 | 5.796  |
| 0 PPM    | AIK3546 | 9.47  | 18.1 | 55    | 58.0781 | 19.1130 | 32.9091 | 8.2  | 0.328 | 7.298  |
| 0 PPM    | AIK3550 | 9.12  | 16.4 | 51    | 55.9211 | 17.9825 | 32.1569 | 5.7  | 0.399 | 5.073  |
| 0 PPM    | AIK3551 | 8.48  | 15.8 | 47    | 55.4245 | 18.6321 | 33.6170 | 9.2  | 1.564 | 7.268  |
| 0 PPM    | AIK3554 | 7.88  | 15.8 | 46    | 58.3756 | 20.0508 | 34.3478 | 8.0  | 1.520 | 6.160  |
| 0 PPM    | AIK3568 | 8.29  | 16.4 | 47    | 56.6948 | 19.7824 | 34.8936 | 7.0  | 1.260 | 5.600  |
| 0 PPM    | AIK3570 | 7.27  | 12.5 | 38    | 52.2696 | 17.1939 | 32.8947 | 9.9  | 0.495 | 8.811  |
| 0 PPM    | AIK3575 | 8.04  | 15.9 | 46    | 57.2139 | 19.7761 | 34.5652 | 10.7 | 2.140 | 7.918  |
| 0 PPM    | AIK3580 | 7.78  | 15.0 | 42    | 53.9846 | 19.2802 | 35.7143 | 7.6  | 2.660 | 4.332  |
| 300 PPM  | BIK3584 | 8.06  | 15.6 | 44    | 54.5906 | 19.3548 | 35.4545 | 5.6  | 1.232 | 4.088  |
| 300 PPM  | BIK3589 | 8.15  | 14.9 | 41    | 50.3067 | 18.2822 | 36.3415 | 6.8  | 1.836 | 4.148  |
| 300 PPM  | BIK3592 | 6.60  | 13.4 | 38    | 57.5758 | 20.3030 | 35.2632 | 6.9  | 1.932 | 4.347  |
| 300 PPM  | BIK3598 | 7.68  | 14.8 | 41    | 53.3854 | 19.2708 | 36.0976 | 8.1  | 2.511 | 5.184  |
| 300 PPM  | BIK3604 | 8.04  | 14.7 | 44    | 54.7264 | 18.2836 | 33.4091 | 8.5  | 2.380 | 5.610  |
| 300 PPM  | BIK3613 | 8.07  | 15.5 | 43    | 53.2838 | 19.2069 | 36.0465 | 9.7  | 2.522 | 6.402  |
| 300 PPM  | BIK3617 | 8.83  | 16.6 | 47    | 53.2276 | 18.7995 | 35.3191 | 4.7  | 1.175 | 3.431  |
| 300 PPM  | BIK3620 | 7.89  | 14.9 | 42    | 53.2319 | 18.8847 | 35.4762 | 8.2  | 2.214 | 5.412  |
| 300 PPM  | BIK3622 | 8.16  | 15.6 | 43    | 52.6961 | 19.1176 | 36.2791 | 9.3  | 3.069 | 5.115  |
| 300 PPM  | BIK3626 | 8.13  | 15.5 | 42    | 51.6605 | 19.0652 | 36.9048 | 9.1  | 2.639 | 6.097  |
| 300 PPM  | BIK3627 | 8.01  | 15.7 | 44    | 54.9313 | 19.6005 | 35.6818 | 9.3  | 3.162 | 5.487  |
| 300 PPM  | BIK3638 | 8.12  | 15.3 | 43    | 52.9557 | 18.4424 | 35.5814 | 6.7  | 1.206 | 5.293  |
| 300 PPM  | BIK3642 | 8.30  | 15.7 | 44    | 53.0120 | 18.9157 | 35.6818 | 10.3 | 2.369 | 7.622  |
| 300 PPM  | BIK3643 | 8.38  | 15.3 | 43    | 51.3126 | 18.2574 | 35.5814 | 11.3 | 2.938 | 7.797  |
| 30 PPM   | CIK3649 | 8.57  | 16.2 | 46    | 53.6756 | 18.9032 | 35.2174 | 11.5 | 2.185 | 8.510  |
| 30 PPM   | CIK3650 | 8.69  | 15.7 | 47    | 54.0452 | 18.0667 | 33.4043 | 7.7  | 2.233 | 4.466  |
| 30 PPM   | CIK3652 | 8.29  | 14.8 | 43    | 51.8697 | 17.8528 | 34.4186 | 9.0  | 2.160 | 6.390  |
| 30 PPM   | CIK3663 | 8.87  | 15.6 | 47    | 52.9876 | 17.5874 | 33.1915 | 8.0  | 1.120 | 6.400  |
| 30 PPM   | CIK3668 | 8.19  | 15.7 | 45    | 54.9451 | 19.1697 | 34.8889 | 8.6  | 3.354 | 4.730  |
| 30 PPM   | CIK3670 | 8.05  | 15.3 | 43    | 53.4161 | 19.0062 | 35.5814 | 10.2 | 4.692 | 5.100  |
| 30 PPM   | CIK3672 | 8.00  | 14.9 | 42    | 52.5000 | 18.6250 | 35.4762 | 12.4 | 1.364 | 10.416 |
| 30 PPM   | CIK3676 | 9.02  | 16.1 | 47    | 51.7052 | 17.7118 | 34.2553 | 13.9 | 4.170 | 8.896  |
| 30 PPM   | CIK3679 | 8.59  | 16.2 | 45    | 52.3865 | 18.8541 | 36.0000 | 12.2 | 1.586 | 9.882  |
| 30 PPM   | CIK3680 | 7.97  | 14.6 | 42    | 52.6976 | 18.3187 | 34.7619 | 10.2 | 4.590 | 5.202  |
| 30 PPM   | CIK3681 | 7.89  | 15.3 | 42    | 53.2314 | 19.3916 | 36.4286 | 11.9 | 0.238 | 11.067 |
| 30 PPM   | CIK3683 | 8.10  | 16.1 | 45    | 55.5556 | 19.8765 | 35.7778 | 10.5 | 0.840 | 9.450  |
| 30 PPM   | CIK3685 | 8.76  | 15.3 | 46    | 52.5114 | 17.4658 | 33.2609 | 9.3  | 1.488 | 7.347  |
| 30 PPM   | CIK3691 | 8.33  | 15.6 | 45    | 54.0216 | 18.7275 | 34.6667 | 10.4 | 2.184 | 7.176  |
| 30 PPM   | CIK3694 | 8.41  | 15.1 | 43    | 51.1296 | 17.9548 | 35.1163 | 9.9  | 0.891 | 8.316  |
|          |         |       |      |       |         |         |         |      |       | 0.297  |
|          |         |       |      |       |         |         |         |      |       | 0.080  |
|          |         |       |      |       |         |         |         |      |       | 0.070  |
|          |         |       |      |       |         |         |         |      |       | 0.000  |
|          |         |       |      |       |         |         |         |      |       | 0.321  |
|          |         |       |      |       |         |         |         |      |       | 0.228  |
|          |         |       |      |       |         |         |         |      |       | 0.056  |
|          |         |       |      |       |         |         |         |      |       | 0.204  |
|          |         |       |      |       |         |         |         |      |       | 0.207  |
|          |         |       |      |       |         |         |         |      |       | 0.081  |
|          |         |       |      |       |         |         |         |      |       | 0.510  |
|          |         |       |      |       |         |         |         |      |       | 0.000  |
|          |         |       |      |       |         |         |         |      |       | 0.291  |
|          |         |       |      |       |         |         |         |      |       | 0.094  |
|          |         |       |      |       |         |         |         |      |       | 0.082  |
|          |         |       |      |       |         |         |         |      |       | 0.093  |
|          |         |       |      |       |         |         |         |      |       | 0.182  |
|          |         |       |      |       |         |         |         |      |       | 0.372  |
|          |         |       |      |       |         |         |         |      |       | 0.134  |
|          |         |       |      |       |         |         |         |      |       | 0.206  |
|          |         |       |      |       |         |         |         |      |       | 0.565  |
|          |         |       |      |       |         |         |         |      |       | 0.575  |
|          |         |       |      |       |         |         |         |      |       | 0.230  |
|          |         |       |      |       |         |         |         |      |       | 0.308  |
|          |         |       |      |       |         |         |         |      |       | 0.593  |
|          |         |       |      |       |         |         |         |      |       | 0.360  |
|          |         |       |      |       |         |         |         |      |       | 0.400  |
|          |         |       |      |       |         |         |         |      |       | 0.172  |
|          |         |       |      |       |         |         |         |      |       | 0.306  |
|          |         |       |      |       |         |         |         |      |       | 0.248  |
|          |         |       |      |       |         |         |         |      |       | 0.834  |
|          |         |       |      |       |         |         |         |      |       | 0.244  |
|          |         |       |      |       |         |         |         |      |       | 0.488  |
|          |         |       |      |       |         |         |         |      |       | 0.204  |
|          |         |       |      |       |         |         |         |      |       | 0.357  |
|          |         |       |      |       |         |         |         |      |       | 0.238  |
|          |         |       |      |       |         |         |         |      |       | 0.210  |
|          |         |       |      |       |         |         |         |      |       | 0.000  |
|          |         |       |      |       |         |         |         |      |       | 0.093  |
|          |         |       |      |       |         |         |         |      |       | 0.372  |
|          |         |       |      |       |         |         |         |      |       | 0.104  |
|          |         |       |      |       |         |         |         |      |       | 0.936  |
|          |         |       |      |       |         |         |         |      |       | 0.297  |

TABLE 12

TWO YEAR ORAL (DIET) TOXICITY-ONCOGENICITY  
STUDY OF FLUOROCARBON FC-143 IN MALE RATS  
INDIVIDUAL HEMOGRAM VALUES

| DOSE    | ANIMAL  | ERYTH | HEMO | HEMAT | MCV     | MCH     | MCHC    | WBC  | PMNAB  | LYMAB  | MONAB | EOSAB |
|---------|---------|-------|------|-------|---------|---------|---------|------|--------|--------|-------|-------|
| 0 PPM   | A1R3519 | 8.42  | 15.3 | 44    | 52.2565 | 18.1710 | 34.7727 | 10.0 | 4.400  | 4.600  | 1.000 | 0.000 |
| 0 PPM   | A1R3521 | 2.48  | 7.2  | 18    | 72.5806 | 29.0323 | 40.0000 | 35.4 | 26.196 | 7.080  | 1.770 | 0.354 |
| 0 PPM   | A1R3528 | 8.92  | 16.5 | 44    | 49.3274 | 18.4978 | 37.5000 | 8.7  | 4.176  | 4.176  | 0.261 | 0.087 |
| 0 PPM   | A1R3531 | 8.43  | 16.9 | 46    | 54.5670 | 20.0474 | 36.7391 | 9.1  | 1.729  | 6.734  | 0.546 | 0.091 |
| 0 PPM   | A1R3538 | 8.23  | 15.9 | 45    | 54.6780 | 19.3196 | 35.3333 | 6.1  | 1.769  | 3.904  | 0.244 | 0.183 |
| 0 PPM   | A1R3539 | 8.14  | 16.4 | 43    | 52.8256 | 20.1474 | 38.1395 | 7.3  | 3.139  | 3.577  | 0.438 | 0.146 |
| 0 PPM   | A1R3542 | 8.79  | 16.8 | 47    | 53.4699 | 19.1126 | 35.7447 | 7.8  | 2.418  | 4.836  | 0.468 | 0.078 |
| 0 PPM   | A1R3552 | 8.17  | 16.8 | 44    | 53.4856 | 20.5630 | 38.1818 | 9.9  | 2.574  | 4.836  | 0.594 | 0.396 |
| 0 PPM   | A1R3553 | 8.32  | 16.9 | 45    | 54.0865 | 20.3125 | 37.5556 | 6.7  | 2.211  | 3.953  | 0.402 | 0.134 |
| 0 PPM   | A1R3555 | 7.99  | 15.8 | 43    | 53.8173 | 19.7747 | 36.7442 | 8.7  | 1.218  | 6.960  | 0.435 | 0.087 |
| 0 PPM   | A1R3561 | 9.06  | 17.6 | 48    | 52.9801 | 19.4260 | 36.6667 | 9.7  | 3.977  | 4.850  | 0.485 | 0.388 |
| 0 PPM   | A1R3565 | 4.75  | 12.3 | 31    | 65.2632 | 25.4947 | 39.6774 | 10.5 | 4.725  | 4.725  | 0.945 | 0.105 |
| 0 PPM   | A1R3567 | 8.25  | 16.4 | 46    | 53.7576 | 19.8788 | 35.6522 | 12.1 | 3.872  | 8.107  | 0.121 | 0.000 |
| 0 PPM   | A1R3574 | 3.59  | 8.9  | 23    | 64.0664 | 24.7911 | 38.6957 | 19.4 | 12.028 | 6.790  | 0.388 | 0.194 |
| 0 PPM   | A1R3577 | 8.64  | 16.7 | 45    | 52.0433 | 19.3247 | 37.1111 | 9.7  | 1.455  | 7.469  | 0.679 | 0.097 |
| 0 PPM   | A1R3583 | 6.04  | 11.8 | 33    | 54.6358 | 19.5364 | 35.7576 | 9.6  | 1.440  | 7.584  | 0.480 | 0.096 |
| 300 PPM | A1R3593 | 6.88  | 13.8 | 39    | 56.2660 | 20.0541 | 35.3446 | 6.7  | 2.680  | 4.020  | 0.000 | 0.000 |
| 300 PPM | A1R3596 | 7.84  | 15.6 | 43    | 54.8464 | 19.8980 | 36.2791 | 9.0  | 2.070  | 6.300  | 0.450 | 0.180 |
| 300 PPM | A1R3600 | 7.28  | 13.9 | 38    | 52.1478 | 19.0434 | 36.5784 | 9.6  | 1.440  | 7.488  | 0.384 | 0.288 |
| 300 PPM | A1R3601 | 7.05  | 14.6 | 40    | 56.7376 | 20.7092 | 36.5000 | 9.8  | 2.352  | 5.064  | 0.490 | 0.294 |
| 300 PPM | A1R3605 | 7.82  | 16.0 | 44    | 56.2660 | 20.4604 | 36.3636 | 9.3  | 1.209  | 7.533  | 0.465 | 0.093 |
| 300 PPM | A1R3608 | 7.71  | 14.2 | 39    | 50.5837 | 18.4176 | 36.4103 | 11.4 | 5.700  | 4.788  | 0.684 | 0.228 |
| 300 PPM | A1R3610 | 7.11  | 15.5 | 41    | 57.6653 | 21.8003 | 37.8049 | 9.5  | 1.805  | 6.935  | 0.760 | 0.000 |
| 300 PPM | A1R3612 | 7.59  | 14.7 | 40    | 52.7084 | 19.3676 | 36.7500 | 13.6 | 7.208  | 4.896  | 0.952 | 0.544 |
| 300 PPM | A1R3615 | 8.03  | 15.6 | 42    | 52.3039 | 19.4271 | 37.1429 | 9.2  | 2.116  | 5.980  | 0.828 | 0.276 |
| 300 PPM | A1R3624 | 8.16  | 14.9 | 42    | 51.4706 | 18.2598 | 35.4762 | 10.5 | 3.360  | 5.985  | 1.155 | 0.000 |
| 300 PPM | A1R3632 | 8.55  | 16.6 | 45    | 52.6316 | 19.4152 | 36.8889 | 11.2 | 3.584  | 6.496  | 0.784 | 0.336 |
| 300 PPM | A1R3641 | 7.48  | 14.3 | 39    | 52.1390 | 19.1176 | 36.6667 | 9.3  | 2.046  | 5.859  | 1.023 | 0.372 |
| 300 PPM | A1R3644 | 8.31  | 15.5 | 44    | 52.9483 | 18.6522 | 35.2273 | 10.0 | 2.700  | 6.700  | 0.500 | 0.100 |
| 300 PPM | A1R3645 | 7.36  | 14.6 | 40    | 54.3474 | 19.8370 | 36.5000 | 9.9  | 1.980  | 7.227  | 0.495 | 0.198 |
| 30 PPM  | A1R3647 | 6.20  | 11.7 | 35    | 56.4516 | 18.8710 | 33.4286 | 21.9 | 11.826 | 9.198  | 0.657 | 0.219 |
| 30 PPM  | A1R3651 | 8.70  | 16.3 | 47    | 54.0230 | 18.7356 | 34.6809 | 10.5 | 1.260  | 8.715  | 0.420 | 0.105 |
| 30 PPM  | A1R3654 | 8.19  | 15.6 | 45    | 54.9451 | 19.0476 | 34.6667 | 9.5  | 0.570  | 8.740  | 0.095 | 0.095 |
| 30 PPM  | A1R3658 | 8.98  | 15.9 | 47    | 52.3385 | 17.7060 | 33.8298 | 6.5  | 1.560  | 4.680  | 0.130 | 0.130 |
| 30 PPM  | A1R3662 | 11.48 | 19.1 | 53    | 46.1672 | 16.6376 | 36.0377 | 21.5 | 7.955  | 12.900 | 0.645 | 0.000 |
| 30 PPM  | A1R3663 | 9.21  | 16.1 | 47    | 51.0315 | 17.4810 | 34.2553 | 9.3  | 1.953  | 6.975  | 0.372 | 0.000 |
| 30 PPM  | A1R3664 | 9.26  | 16.5 | 48    | 51.8359 | 17.8186 | 34.3750 | 8.7  | 0.609  | 7.830  | 0.261 | 0.000 |
| 30 PPM  | A1R3667 | 7.95  | 16.5 | 54    | 67.9245 | 20.7547 | 30.5556 | 7.6  | 0.608  | 6.916  | 0.076 | 0.000 |
| 30 PPM  | A1R3668 | 8.79  | 16.2 | 47    | 53.4699 | 18.4300 | 34.4681 | 6.7  | 0.402  | 5.963  | 0.335 | 0.000 |
| 30 PPM  | A1R3676 | 8.90  | 16.2 | 46    | 51.6854 | 18.2022 | 35.2174 | 14.1 | 5.474  | 9.660  | 0.322 | 0.644 |
| 30 PPM  | A1R3679 | 8.90  | 16.5 | 46    | 51.6854 | 18.5393 | 35.8696 | 12.5 | 0.375  | 11.750 | 0.250 | 0.125 |
| 30 PPM  | A1R3681 | 7.65  | 14.8 | 41    | 53.5948 | 19.3464 | 36.0976 | 14.5 | 1.740  | 12.180 | 0.435 | 0.145 |
| 30 PPM  | A1R3685 | 8.74  | 15.9 | 46    | 52.6316 | 18.1422 | 34.5652 | 8.6  | 3.010  | 5.332  | 0.254 | 0.000 |
| 30 PPM  | A1R3689 | 8.37  | 15.2 | 46    | 54.9582 | 18.1601 | 33.0435 | 7.1  | 0.426  | 6.319  | 0.264 | 0.071 |
| 30 PPM  | A1R3695 | 8.02  | 14.7 | 44    | 54.8628 | 18.3242 | 33.4091 | 6.4  | 0.448  | 5.624  | 0.000 | 0.128 |

TABLE 12

TWO YEAR ORAL (DIET) TOXICITY-ONCOGENICITY  
STUDY OF FLUOROCARBON FC-143 IN MALE RATS  
INDIVIDUAL HEMOGRAM VALUES

MONTH=24

| DOSE    | ANIMAL  | ERYTH | HEMO | HEMAT | MCV     | MCH     | MCHC    | WBC  | PMNAB  | LYMAB  | MONOAB | EOSAB |
|---------|---------|-------|------|-------|---------|---------|---------|------|--------|--------|--------|-------|
| 0 PPM   | A1R351A | 7.44  | 13.1 | 37    | 49.7312 | 17.6075 | 35.4054 | 13.2 | 3.036  | 9.108  | 0.924  | 0.132 |
| 0 PPM   | A1R352A | 8.08  | 14.4 | 43    | 53.2178 | 17.8218 | 33.4884 | 6.8  | 1.632  | 4.760  | 0.340  | 0.068 |
| 0 PPM   | A1R352B | 8.70  | 15.5 | 45    | 51.7241 | 17.8161 | 34.4444 | 7.2  | 0.432  | 6.624  | 0.000  | 0.144 |
| 0 PPM   | A1R3531 | 8.33  | 16.0 | 47    | 56.4226 | 19.2077 | 34.0426 | 8.4  | 1.092  | 6.972  | 0.336  | 0.000 |
| 0 PPM   | A1R3534 | 7.96  | 15.3 | 46    | 57.7884 | 19.2211 | 33.2604 | 36.3 | 22.506 | 12.342 | 1.452  | 0.000 |
| 0 PPM   | A1R353A | 8.54  | 15.1 | 45    | 52.6932 | 17.6815 | 33.5556 | 7.2  | 1.584  | 5.256  | 0.288  | 0.072 |
| 0 PPM   | A1R353B | 8.46  | 16.0 | 46    | 51.9187 | 18.0587 | 34.7826 | 7.1  | 0.710  | 6.248  | 0.071  | 0.071 |
| 0 PPM   | A1R354B | 8.09  | 15.6 | 46    | 56.8603 | 19.2831 | 33.9130 | 8.5  | 1.445  | 6.885  | 0.170  | 0.000 |
| 0 PPM   | A1R3554 | 6.08  | 11.8 | 34    | 55.9211 | 19.4079 | 34.7059 | 4.4  | 0.264  | 4.136  | 0.000  | 0.000 |
| 0 PPM   | A1R3557 | 9.47  | 16.7 | 50    | 52.7983 | 17.6346 | 33.4000 | 8.0  | 1.840  | 6.000  | 0.080  | 0.080 |
| 0 PPM   | A1R3562 | 7.74  | 13.2 | 37    | 47.8036 | 17.0543 | 35.6757 | 12.6 | 5.922  | 6.300  | 0.378  | 0.000 |
| 0 PPM   | A1R3564 | 7.68  | 14.4 | 42    | 54.6875 | 18.7500 | 34.2457 | 12.4 | 4.712  | 6.820  | 0.620  | 0.248 |
| 0 PPM   | A1R3569 | 5.38  | 12.0 | 33    | 61.3383 | 22.3048 | 36.3636 | 9.7  | 0.776  | 8.924  | 0.000  | 0.000 |
| 0 PPM   | A1R3573 | 8.52  | 16.1 | 47    | 55.1643 | 18.8967 | 34.2553 | 7.4  | 1.554  | 5.328  | 0.296  | 0.222 |
| 0 PPM   | A1R3578 | 6.70  | 12.7 | 37    | 55.2239 | 18.9552 | 34.3243 | 12.7 | 8.255  | 4.191  | 0.127  | 0.127 |
| 300 PPM | A1R3581 | 8.42  | 15.5 | 46    | 54.6318 | 18.4086 | 33.6957 | 6.2  | 0.868  | 4.960  | 0.372  | 0.000 |
| 300 PPM | A1R3585 | 7.94  | 14.8 | 43    | 54.1562 | 18.8398 | 34.4186 | 10.5 | 2.100  | 8.085  | 0.210  | 0.105 |
| 300 PPM | A1R3591 | 7.98  | 16.0 | 48    | 60.1504 | 20.0501 | 33.3333 | 8.4  | 3.528  | 4.620  | 0.252  | 0.000 |
| 300 PPM | A1R3594 | 8.17  | 14.4 | 43    | 52.6316 | 17.8255 | 33.4884 | 5.7  | 0.741  | 4.845  | 0.114  | 0.000 |
| 300 PPM | A1R3597 | 8.03  | 15.3 | 44    | 54.7945 | 19.0535 | 34.7727 | 8.7  | 2.697  | 5.855  | 0.261  | 0.087 |
| 300 PPM | A1R3601 | 6.21  | 12.0 | 35    | 56.3607 | 19.3237 | 34.2497 | 9.6  | 4.608  | 4.416  | 0.384  | 0.192 |
| 300 PPM | A1R3605 | 8.02  | 15.8 | 53    | 66.0848 | 19.7007 | 29.8113 | 6.3  | 1.197  | 5.040  | 0.000  | 0.063 |
| 300 PPM | A1R3608 | 8.21  | 13.6 | 39    | 47.5030 | 16.5652 | 34.8718 | 9.8  | 1.862  | 7.742  | 0.196  | 0.000 |
| 300 PPM | A1R3611 | 8.04  | 15.2 | 43    | 53.4426 | 18.9055 | 35.3488 | 11.0 | 1.540  | 8.910  | 0.330  | 0.220 |
| 300 PPM | A1R3618 | 8.58  | 15.3 | 45    | 52.4476 | 17.8322 | 34.0000 | 8.2  | 1.722  | 6.232  | 0.246  | 0.000 |
| 300 PPM | A1R3623 | 8.00  | 15.6 | 52    | 65.0000 | 19.5000 | 33.0000 | 9.5  | 1.805  | 7.410  | 0.190  | 0.095 |
| 300 PPM | A1R3630 | 8.59  | 16.3 | 48    | 55.8789 | 18.9756 | 33.9483 | 7.5  | 1.050  | 6.300  | 0.075  | 0.075 |
| 300 PPM | A1R3633 | 6.51  | 11.6 | 33    | 50.6412 | 17.8187 | 35.1515 | 14.2 | 4.544  | 9.514  | 0.142  | 0.000 |
| 300 PPM | A1R3636 | 8.15  | 13.4 | 38    | 46.6254 | 16.4417 | 35.2632 | 12.6 | 5.544  | 5.922  | 0.756  | 0.378 |
| 300 PPM | A1R3641 | 7.92  | 13.8 | 40    | 50.5051 | 17.4242 | 34.5000 | 8.2  | 2.378  | 5.494  | 0.328  | 0.000 |
| 30 PPM  | C1R3646 | 8.35  | 15.0 | 45    | 53.8922 | 17.9641 | 33.3333 | 9.3  | 5.208  | 3.813  | 0.279  | 0.000 |
| 30 PPM  | C1R3650 | 7.90  | 14.2 | 41    | 51.8987 | 17.9747 | 34.6341 | 13.1 | 3.537  | 6.908  | 0.655  | 0.000 |
| 30 PPM  | C1R3654 | 8.96  | 16.0 | 47    | 52.4554 | 17.4571 | 34.0426 | 5.0  | 1.400  | 3.450  | 0.100  | 0.050 |
| 30 PPM  | C1R3658 | 8.34  | 15.2 | 44    | 52.7578 | 18.2254 | 34.5455 | 8.7  | 2.349  | 5.829  | 0.435  | 0.087 |
| 30 PPM  | C1R3663 | 7.34  | 15.2 | 43    | 54.5431 | 20.7044 | 35.3488 | 7.4  | 1.776  | 5.254  | 0.222  | 0.148 |
| 30 PPM  | C1R3667 | 7.21  | 13.7 | 39    | 54.0915 | 14.0014 | 35.1282 | 12.8 | 4.096  | 7.808  | 0.768  | 0.128 |
| 30 PPM  | C1R3670 | 8.87  | 15.4 | 46    | 51.8602 | 17.3619 | 33.4783 | 14.7 | 7.644  | 7.644  | 0.588  | 0.000 |
| 30 PPM  | C1R3672 | 5.93  | 11.2 | 31    | 52.2766 | 18.4870 | 36.1240 | 18.0 | 6.120  | 10.800 | 1.080  | 0.000 |
| 30 PPM  | C1R3676 | 9.14  | 15.7 | 46    | 50.3282 | 17.1772 | 34.1304 | 12.5 | 2.375  | 9.750  | 0.125  | 0.250 |
| 30 PPM  | C1R3679 | 8.37  | 15.1 | 44    | 52.5687 | 18.0406 | 34.3182 | 10.2 | 4.590  | 5.202  | 0.306  | 0.102 |
| 30 PPM  | C1R3682 | 7.73  | 14.7 | 42    | 54.3338 | 14.0168 | 35.0000 | 9.5  | 1.900  | 7.410  | 0.190  | 0.000 |
| 30 PPM  | C1R3684 | 6.14  | 15.2 | 45    | 55.2826 | 18.6732 | 33.7778 | 7.4  | 1.850  | 4.958  | 0.370  | 0.222 |
| 30 PPM  | C1R3689 | 6.97  | 13.4 | 38    | 54.5194 | 19.2253 | 35.2632 | 10.4 | 1.976  | 7.904  | 0.208  | 0.312 |
| 30 PPM  | C1R3691 | 8.02  | 15.3 | 44    | 54.8628 | 19.0773 | 34.7727 | 7.2  | 0.576  | 6.552  | 0.072  | 0.000 |

TABLE 13

TWO YEAR ORAL (DIET) TOXICITY-ONCOGENICITY STUDY OF FLUOROCARBON FC-143 IN RATS  
MEAN ERYTHROCYTE VALUES WITH STANDARD DEVIATIONS

|                   | N  | ERYTHROCYTES<br>(CELLS X 10**6) |        | HEMOGLOBIN<br>(G/DL) |        | HEMATOCRIT<br>(% PACKED CELLS) |        | MCV<br>(MICRONS**3) |        | MCH<br>(PICOGRAMS) |        | MCHC<br>(%) |        |
|-------------------|----|---------------------------------|--------|----------------------|--------|--------------------------------|--------|---------------------|--------|--------------------|--------|-------------|--------|
|                   |    | MEAN                            | S.DEV. | MEAN                 | S.DEV. | MEAN                           | S.DEV. | MEAN                | S.DEV. | MEAN               | S.DEV. | MEAN        | S.DEV. |
| FEMALE<br>-----   |    |                                 |        |                      |        |                                |        |                     |        |                    |        |             |        |
| MONTH 3<br>-----  |    |                                 |        |                      |        |                                |        |                     |        |                    |        |             |        |
| 0 PPM             | 15 | 6.91                            | 0.319  | 15.8                 | 0.48   | 43.7                           | 1.11   | 63                  | 2.2    | 22.9               | 0.75   | 36.2        | 0.44   |
| 300 PPM           | 15 | 6.67                            | 0.266  | 15.4                 | 0.56   | 42.0*                          | 1.85   | 63                  | 2.3    | 23.0               | 0.63   | 36.6        | 0.58   |
| 30 PPM            | 15 | 7.26*                           | 0.505  | 16.0                 | 0.70   | 43.9                           | 1.75   | 61*                 | 3.5    | 22.1*              | 1.37   | 36.3        | 0.49   |
| MONTH 6<br>-----  |    |                                 |        |                      |        |                                |        |                     |        |                    |        |             |        |
| 0 PPM             | 15 | 7.32                            | 0.413  | 15.0                 | 0.55   | 42.3                           | 1.84   | 58                  | 2.2    | 20.5               | 0.95   | 35.4        | 1.01   |
| 300 PPM           | 15 | 7.37                            | 0.327  | 15.4                 | 0.64   | 42.5                           | 1.60   | 58                  | 2.2    | 21.0               | 0.93   | 36.3        | 0.83   |
| 30 PPM            | 15 | 6.92*                           | 0.475  | 13.7*                | 0.95   | 38.7*                          | 3.20   | 56                  | 4.9    | 19.9               | 1.93   | 35.5        | 1.65   |
| MONTH 12<br>----- |    |                                 |        |                      |        |                                |        |                     |        |                    |        |             |        |
| 0 PPM             | 15 | 7.60                            | 0.300  | 15.6                 | 0.40   | 44.3                           | 1.39   | 58                  | 2.1    | 20.6               | 0.71   | 35.3        | 0.48   |
| 300 PPM           | 15 | 6.92*                           | 1.193  | 14.6*                | 1.74   | 40.5*                          | 4.73   | 60                  | 8.1    | 21.5               | 3.19   | 36.0        | 1.20   |
| 30 PPM            | 15 | 7.29                            | 1.212  | 15.1                 | 1.70   | 42.5                           | 4.76   | 59                  | 6.8    | 21.0               | 2.47   | 35.5        | 0.64   |
| MONTH 18<br>----- |    |                                 |        |                      |        |                                |        |                     |        |                    |        |             |        |
| 0 PPM             | 15 | 7.37                            | 0.668  | 15.4                 | 1.43   | 42.9                           | 4.13   | 58                  | 1.7    | 21.0               | 0.68   | 36.0        | 0.85   |
| 300 PPM           | 15 | 7.24                            | 0.809  | 14.9                 | 1.33   | 41.9                           | 3.86   | 58                  | 2.6    | 20.7               | 0.96   | 35.6        | 0.52   |
| 30 PPM            | 15 | 7.01                            | 0.763  | 14.8                 | 1.32   | 41.5                           | 3.85   | 59                  | 3.0    | 21.2               | 1.09   | 35.8        | 0.65   |
| MONTH 24<br>----- |    |                                 |        |                      |        |                                |        |                     |        |                    |        |             |        |
| 0 PPM             | 15 | 7.06                            | 1.129  | 14.8                 | 1.80   | 42.3                           | 5.40   | 68                  | 3.5    | 21.2               | 1.45   | 35.1        | 0.87   |
| 300 PPM           | 15 | 7.14                            | 0.744  | 14.4                 | 1.26   | 40.4                           | 2.66   | 57*                 | 2.1    | 20.3*              | 0.74   | 35.8        | 0.99   |
| 30 PPM            | 15 | 7.06                            | 1.097  | 14.6                 | 2.03   | 41.7                           | 5.97   | 59                  | 2.5    | 20.7               | 0.91   | 35.0        | 0.61   |

\* : P <= .05, TWO TAILED DUNNETT T ON RAW DATA.  
# : P <= .05, TWO TAILED DUNNETT T ON RANKED DATA.

TABLE 13

TWO YEAR ORAL (DIET) TOXICITY-ONCOGENICITY STUDY OF FLUOROCARBON FC-143 IN RATS  
MEAN LEUKOCYTE VALUES WITH STANDARD DEVIATIONS

|                   | N  | LEUKOCYTES<br>(CELLS X 10**3) |        | NEUTROPHILS<br>(CELLS X 10**3) |        | LYMPHOCYTES<br>(CELLS X 10**3) |        | MONOCYTES<br>(CELLS X 10**3) |        | EOSINOPHILS<br>(CELLS X 10**3) |        |
|-------------------|----|-------------------------------|--------|--------------------------------|--------|--------------------------------|--------|------------------------------|--------|--------------------------------|--------|
|                   |    | MEAN                          | S.DEV. | MEAN                           | S.DEV. | MEAN                           | S.DEV. | MEAN                         | S.DEV. | MEAN                           | S.DEV. |
| FEMALE<br>-----   |    |                               |        |                                |        |                                |        |                              |        |                                |        |
| MONTH 3<br>-----  |    |                               |        |                                |        |                                |        |                              |        |                                |        |
| 0 PPM             | 15 | 18.98                         | 2.698  | 2.57                           | 1.406  | 15.73                          | 2.970  | 0.37                         | 0.217  | 0.31                           | 0.262  |
| 300 PPM           | 15 | 18.51                         | 3.778  | 3.24                           | 1.728  | 14.78                          | 2.834  | 0.28                         | 0.312  | 0.22                           | 0.258  |
| 30 PPM            | 15 | 18.06                         | 3.470  | 3.33                           | 1.347  | 14.23                          | 3.105  | 0.22                         | 0.250  | 0.30                           | 0.258  |
| MONTH 6<br>-----  |    |                               |        |                                |        |                                |        |                              |        |                                |        |
| 0 PPM             | 15 | 7.52                          | 2.559  | 1.44                           | 1.586  | 5.87                           | 2.160  | 0.18                         | 0.096  | 0.08                           | 0.067  |
| 300 PPM           | 15 | 8.60                          | 1.953  | 1.55                           | 0.705  | 6.73                           | 1.784  | 0.20                         | 0.122  | 0.11                           | 0.102  |
| 30 PPM            | 15 | 7.18                          | 1.723  | 1.76                           | 1.023  | 5.06                           | 1.607  | 0.28                         | 0.142  | 0.15                           | 0.119  |
| MONTH 12<br>----- |    |                               |        |                                |        |                                |        |                              |        |                                |        |
| 0 PPM             | 15 | 5.73                          | 2.120  | 1.27                           | 1.562  | 4.13                           | 1.049  | 0.21                         | 0.108  | 0.12                           | 0.125  |
| 300 PPM           | 15 | 5.72                          | 1.818  | 1.45                           | 1.281  | 3.95                           | 1.061  | 0.22                         | 0.165  | 0.09                           | 0.094  |
| 30 PPM            | 15 | 5.83                          | 1.135  | 1.34                           | 0.679  | 4.13                           | 0.792  | 0.25                         | 0.098  | 0.10                           | 0.091  |
| MONTH 18<br>----- |    |                               |        |                                |        |                                |        |                              |        |                                |        |
| 0 PPM             | 15 | 5.75                          | 2.230  | 1.01                           | 1.631  | 4.48                           | 0.973  | 0.29                         | 0.249  | 0.03                           | 0.057  |
| 300 PPM           | 15 | 6.30                          | 2.368  | 2.21                           | 1.950  | 3.62                           | 1.305  | 0.36                         | 0.226  | 0.10*                          | 0.108  |
| 30 PPM            | 15 | 6.83                          | 2.608  | 2.69*                          | 2.240  | 3.51*                          | 1.061  | 0.36                         | 0.148  | 0.07                           | 0.074  |
| MONTH 24<br>----- |    |                               |        |                                |        |                                |        |                              |        |                                |        |
| 0 PPM             | 15 | 6.73                          | 4.064  | 2.87                           | 2.959  | 3.67                           | 1.329  | 0.11                         | 0.151  | 0.07                           | 0.074  |
| 300 PPM           | 15 | 6.39                          | 1.691  | 2.15                           | 0.962  | 4.04                           | 1.190  | 0.10                         | 0.062  | 0.06                           | 0.057  |
| 30 PPM            | 15 | 8.57                          | 3.434  | 3.44                           | 2.915  | 4.81                           | 1.641  | 0.24                         | 0.241  | 0.08                           | 0.094  |

\* : P <= .05, TWO TAILED DUNNETT T ON RAW DATA.  
# : P <= .05, TWO TAILED DUNNETT T ON RANKED DATA.

TABLE 13

TWO YEAR OMAL (DIET) TOXICITY-ONCOGENICITY  
STUDY OF FLUOROCARBON FC-143 IN FEMALE RATS  
INDIVIDUAL HEMOGRAM VALUES

| DOSE    | ANIMAL  | ERYTH | HEMO | HEMAT | MCV     | MCH     | MCHC    | WBC  | PMNAB | LYMAB  | MONOAB | EOSAB |
|---------|---------|-------|------|-------|---------|---------|---------|------|-------|--------|--------|-------|
| 0 PPM   | N1R4576 | 6.98  | 15.6 | 43    | 61.6046 | 22.3496 | 36.2791 | 17.5 | 1.925 | 14.525 | 0.700  | 0.350 |
| 0 PPM   | N1R4578 | 7.72  | 16.1 | 44    | 58.9948 | 20.8549 | 36.5909 | 20.1 | 3.417 | 16.080 | 0.402  | 0.201 |
| 0 PPM   | N1R4582 | 6.79  | 15.7 | 43    | 63.3284 | 23.1222 | 36.5116 | 17.0 | 2.040 | 14.280 | 0.510  | 0.170 |
| 0 PPM   | N1R4583 | 6.74  | 15.6 | 43    | 63.7982 | 23.1454 | 36.2791 | 19.4 | 2.134 | 17.072 | 0.000  | 0.194 |
| 0 PPM   | N1R4584 | 6.31  | 14.9 | 42    | 66.5610 | 23.6133 | 35.4762 | 20.5 | 4.715 | 14.555 | 0.000  | 0.820 |
| 0 PPM   | N1R4592 | 7.03  | 16.2 | 45    | 64.0114 | 23.0441 | 36.0000 | 17.3 | 5.882 | 11.072 | 0.173  | 0.173 |
| 0 PPM   | N1R4610 | 6.94  | 15.6 | 44    | 63.4006 | 22.4784 | 35.4545 | 15.4 | 2.156 | 12.782 | 0.154  | 0.308 |
| 0 PPM   | N1R4612 | 6.88  | 15.7 | 44    | 63.9535 | 22.8198 | 35.6818 | 21.0 | 2.310 | 18.480 | 0.210  | 0.000 |
| 0 PPM   | N1R4613 | 6.73  | 15.0 | 42    | 62.4071 | 22.2883 | 35.7143 | 16.1 | 2.898 | 12.397 | 0.322  | 0.483 |
| 0 PPM   | N1R4619 | 7.35  | 16.5 | 45    | 61.2245 | 22.4490 | 36.6667 | 21.0 | 0.630 | 19.320 | 0.420  | 0.630 |
| 0 PPM   | N1R4621 | 6.60  | 15.5 | 42    | 63.6364 | 23.4848 | 36.9048 | 24.3 | 1.944 | 21.384 | 0.243  | 0.729 |
| 0 PPM   | N1R4626 | 6.98  | 16.0 | 44    | 63.0372 | 22.9226 | 36.3636 | 21.1 | 4.009 | 16.458 | 0.211  | 0.422 |
| 0 PPM   | N1R4627 | 6.84  | 16.4 | 45    | 65.7895 | 23.9766 | 36.4444 | 19.6 | 1.176 | 18.032 | 0.592  | 0.000 |
| 0 PPM   | N1R4633 | 6.84  | 16.0 | 44    | 64.3275 | 23.3918 | 36.3636 | 20.4 | 2.040 | 17.544 | 0.816  | 0.000 |
| 0 PPM   | N1R4640 | 6.99  | 16.4 | 45    | 64.3777 | 23.4621 | 36.4444 | 14.0 | 1.260 | 12.040 | 0.560  | 0.140 |
| 0 PPM   | N1R4645 | 6.51  | 15.3 | 42    | 64.5161 | 23.5023 | 36.4286 | 12.4 | 1.860 | 10.168 | 0.124  | 0.248 |
| 300 PPM | N1R4654 | 6.77  | 16.2 | 45    | 66.4697 | 23.9291 | 36.0000 | 16.7 | 2.171 | 14.028 | 0.167  | 0.334 |
| 300 PPM | N1R4660 | 6.34  | 14.6 | 40    | 63.0915 | 23.0284 | 36.5000 | 19.2 | 1.728 | 17.088 | 0.384  | 0.000 |
| 300 PPM | N1R4664 | 6.36  | 14.8 | 40    | 62.8931 | 23.2704 | 37.0000 | 18.3 | 6.771 | 11.163 | 0.366  | 0.000 |
| 300 PPM | N1R4668 | 7.02  | 15.8 | 43    | 61.2536 | 22.5071 | 36.7442 | 18.6 | 2.046 | 15.624 | 0.372  | 0.558 |
| 300 PPM | N1R4669 | 6.99  | 15.5 | 42    | 60.0858 | 22.1745 | 36.9048 | 15.3 | 1.224 | 13.923 | 0.153  | 0.000 |
| 300 PPM | N1R4672 | 6.35  | 14.8 | 40    | 62.9921 | 23.3071 | 37.0000 | 17.8 | 3.204 | 13.706 | 0.712  | 0.178 |
| 300 PPM | N1R4673 | 6.42  | 14.8 | 40    | 62.3053 | 23.0530 | 37.0000 | 28.4 | 6.532 | 21.016 | 0.284  | 0.852 |
| 300 PPM | N1R4674 | 6.88  | 16.1 | 44    | 63.9535 | 23.4012 | 36.5909 | 16.3 | 2.282 | 13.855 | 0.163  | 0.000 |
| 300 PPM | N1R4679 | 6.72  | 14.7 | 39    | 58.0357 | 21.8750 | 37.6923 | 18.0 | 2.340 | 15.480 | 0.000  | 0.180 |
| 300 PPM | N1R4680 | 6.46  | 15.4 | 42    | 65.0155 | 23.8390 | 36.6667 | 23.7 | 4.977 | 17.301 | 1.185  | 0.237 |
| 300 PPM | N1R4693 | 6.88  | 15.2 | 42    | 61.0465 | 22.0930 | 36.1905 | 18.3 | 3.660 | 14.091 | 0.000  | 0.549 |
| 300 PPM | N1R4698 | 6.99  | 15.9 | 44    | 62.9471 | 22.7468 | 36.1364 | 21.6 | 3.456 | 18.144 | 0.000  | 0.000 |
| 300 PPM | N1R4700 | 6.92  | 16.1 | 44    | 63.5838 | 23.2654 | 36.5909 | 16.9 | 2.028 | 14.703 | 0.169  | 0.000 |
| 300 PPM | N1R4701 | 6.42  | 15.1 | 43    | 66.9782 | 23.5202 | 35.1163 | 16.1 | 4.347 | 11.431 | 0.161  | 0.161 |
| 30 PPM  | N1R4708 | 7.79  | 16.7 | 45    | 57.7664 | 21.4377 | 37.1111 | 15.3 | 2.448 | 12.546 | 0.153  | 0.459 |
| 30 PPM  | N1R4710 | 6.95  | 15.5 | 43    | 61.8705 | 22.3022 | 36.0465 | 20.4 | 2.040 | 18.156 | 0.204  | 0.000 |
| 30 PPM  | N1R4720 | 6.83  | 15.7 | 43    | 62.9575 | 22.9868 | 36.5116 | 15.5 | 2.170 | 12.710 | 0.155  | 0.465 |
| 30 PPM  | N1R4721 | 6.71  | 15.7 | 44    | 65.5738 | 23.3979 | 35.6818 | 22.0 | 4.400 | 16.940 | 0.000  | 0.000 |
| 30 PPM  | N1R4730 | 7.44  | 16.4 | 45    | 60.4839 | 22.0430 | 36.4444 | 16.6 | 1.992 | 14.110 | 0.166  | 0.332 |
| 30 PPM  | N1R4731 | 6.80  | 15.9 | 44    | 64.7059 | 23.3824 | 36.1364 | 18.1 | 3.077 | 14.842 | 0.181  | 0.000 |
| 30 PPM  | N1R4734 | 6.41  | 16.0 | 43    | 67.0827 | 24.9610 | 37.2093 | 13.2 | 1.320 | 11.616 | 0.000  | 0.264 |
| 30 PPM  | N1R4735 | 7.65  | 15.8 | 43    | 56.2092 | 20.6536 | 36.7442 | 26.8 | 3.752 | 21.976 | 0.804  | 0.268 |
| 30 PPM  | N1R4736 | 7.88  | 17.1 | 47    | 59.6447 | 21.7005 | 36.3889 | 19.4 | 3.880 | 15.326 | 0.000  | 0.194 |
| 30 PPM  | N1R4737 | 7.12  | 16.6 | 45    | 63.2022 | 23.3146 | 36.8889 | 20.6 | 3.708 | 16.068 | 0.618  | 0.206 |
| 30 PPM  | N1R4738 | 7.40  | 15.8 | 44    | 59.4595 | 21.3514 | 35.9091 | 16.0 | 4.960 | 10.720 | 0.160  | 0.160 |
| 30 PPM  | N1R4744 | 7.14  | 15.8 | 44    | 61.6246 | 22.1249 | 35.9091 | 18.0 | 5.220 | 11.700 | 0.360  | 0.720 |
| 30 PPM  | N1R4749 | 7.05  | 14.9 | 41    | 58.1560 | 21.1348 | 36.3415 | 17.3 | 3.287 | 14.013 | 0.000  | 0.000 |
| 30 PPM  | N1R4752 | 8.30  | 17.0 | 47    | 56.6265 | 20.4819 | 36.1702 | 17.9 | 5.728 | 10.919 | 0.537  | 0.716 |
| 30 PPM  | N1R4753 | 7.39  | 14.6 | 41    | 55.4804 | 19.7564 | 35.6098 | 13.8 | 1.932 | 11.868 | 0.000  | 0.000 |

TABLE 13

TWO YEAR ORAL (DIET) TOXICITY-ONCOGENICITY  
STUDY OF FLUOROCARBON FC-143 IN FEMALE RATS  
INDIVIDUAL HEMOGRAM VALUES

| MONTH=6 |         |       |      |       |         |         |         |       |        |        |        |        |
|---------|---------|-------|------|-------|---------|---------|---------|-------|--------|--------|--------|--------|
| DOSE    | ANIMAL  | ERYTH | HEMO | HEMAT | MCV     | MCH     | MCHC    | WBC   | PMNAB  | LYMAB  | MONOAB | EOSAB  |
| 0 PPM   | N1R4582 | 7.32  | 15.0 | 43    | 58.7432 | 20.4918 | 34.8837 | 8.59  | 0.6872 | 7.5592 | 0.2577 | 0.0859 |
| 0 PPM   | N1R4584 | 7.85  | 15.8 | 46    | 58.5987 | 20.1274 | 34.3478 | 6.45  | 0.5160 | 5.8695 | 0.0000 | 0.0645 |
| 0 PPM   | N1R4586 | 6.81  | 13.8 | 39    | 57.2687 | 20.2643 | 35.3846 | 6.24  | 1.9344 | 4.0560 | 0.0624 | 0.1872 |
| 0 PPM   | N1R4590 | 7.19  | 15.3 | 43    | 59.8053 | 21.2796 | 35.5814 | 7.95  | 1.1925 | 6.5190 | 0.2385 | 0.0000 |
| 0 PPM   | N1R4598 | 7.31  | 15.1 | 42    | 57.4555 | 20.6566 | 35.9524 | 7.43  | 0.9659 | 6.3155 | 0.0000 | 0.1486 |
| 0 PPM   | N1R4603 | 6.60  | 14.7 | 40    | 60.6061 | 22.2727 | 36.7500 | 7.69  | 0.4614 | 7.0748 | 0.0769 | 0.0769 |
| 0 PPM   | N1R4607 | 7.88  | 15.8 | 44    | 55.8376 | 20.0508 | 35.9091 | 6.43  | 0.5787 | 5.7227 | 0.1286 | 0.0000 |
| 0 PPM   | N1R4616 | 8.03  | 14.6 | 44    | 54.7945 | 18.1818 | 33.1818 | 6.95  | 0.4170 | 6.3940 | 0.1390 | 0.0000 |
| 0 PPM   | N1R4619 | 7.70  | 15.3 | 44    | 57.1429 | 19.8701 | 34.7727 | 5.98  | 0.5382 | 5.3222 | 0.0598 | 0.0598 |
| 0 PPM   | N1R4621 | 6.80  | 14.3 | 42    | 61.7647 | 21.0294 | 34.0476 | 6.61  | 1.2559 | 5.2219 | 0.0661 | 0.0661 |
| 0 PPM   | N1R4622 | 7.23  | 14.4 | 41    | 56.7082 | 19.9170 | 35.1220 | 4.59  | 0.4131 | 4.0392 | 0.0918 | 0.0459 |
| 0 PPM   | N1R4629 | 7.32  | 15.1 | 42    | 57.3770 | 20.6284 | 35.9524 | 14.90 | 4.7680 | 9.8340 | 0.1490 | 0.1490 |
| 0 PPM   | N1R4631 | 7.36  | 14.8 | 40    | 54.3478 | 20.1087 | 37.0000 | 11.00 | 1.2100 | 9.2400 | 0.3300 | 0.2200 |
| 0 PPM   | N1R4632 | 7.28  | 15.1 | 42    | 57.6923 | 20.7418 | 35.9524 | 4.76  | 1.0948 | 3.5224 | 0.0952 | 0.0476 |
| 0 PPM   | N1R4639 | 7.05  | 15.4 | 43    | 60.9929 | 21.8440 | 35.8140 | 7.28  | 5.6056 | 1.3832 | 0.2184 | 0.0728 |
| 0 PPM   | N1R4650 | 6.91  | 15.1 | 42    | 60.7815 | 21.8524 | 35.9524 | 7.98  | 2.1546 | 5.7456 | 0.0000 | 0.0798 |
| 0 PPM   | N1R4653 | 7.47  | 16.6 | 43    | 57.5636 | 22.2222 | 38.6047 | 6.80  | 2.3120 | 4.1480 | 0.1360 | 0.2040 |
| 300 PPM | N1R4657 | 7.32  | 15.1 | 41    | 56.0109 | 20.6284 | 36.8293 | 12.70 | 2.9210 | 9.2710 | 0.3810 | 0.1270 |
| 300 PPM | N1R4660 | 7.49  | 15.3 | 43    | 57.4099 | 20.8272 | 35.5814 | 11.30 | 1.4690 | 9.6050 | 0.2260 | 0.0000 |
| 300 PPM | N1R4663 | 7.72  | 15.0 | 42    | 54.4041 | 19.4301 | 35.7143 | 7.86  | 1.8078 | 5.8950 | 0.1572 | 0.0000 |
| 300 PPM | N1R4670 | 7.38  | 16.0 | 43    | 58.2656 | 21.6802 | 37.2093 | 8.77  | 1.4032 | 7.1914 | 0.1754 | 0.0000 |
| 300 PPM | N1R4673 | 6.71  | 14.6 | 40    | 59.6125 | 21.7366 | 36.5000 | 9.73  | 1.5568 | 7.4921 | 0.3492 | 0.2919 |
| 300 PPM | N1R4681 | 6.87  | 14.8 | 41    | 59.6798 | 21.5429 | 36.976  | 9.50  | 0.8550 | 8.2650 | 0.2850 | 0.0950 |
| 300 PPM | N1R4682 | 7.44  | 15.8 | 44    | 59.1398 | 21.2366 | 35.9091 | 9.18  | 0.5508 | 8.3538 | 0.1836 | 0.0918 |
| 300 PPM | N1R4692 | 7.75  | 15.0 | 42    | 54.1935 | 19.3548 | 35.7143 | 7.29  | 2.3328 | 4.7385 | 0.2187 | 0.0000 |
| 300 PPM | N1R4693 | 7.65  | 15.0 | 42    | 54.9020 | 19.6078 | 35.7143 | 9.41  | 2.1643 | 6.7752 | 0.1882 | 0.2823 |
| 300 PPM | N1R4694 | 7.64  | 16.5 | 45    | 58.9005 | 21.5969 | 36.6667 | 9.99  | 1.0989 | 8.3916 | 0.3996 | 0.0999 |
| 300 PPM | N1R4698 | 7.07  | 14.9 | 41    | 57.9915 | 21.0750 | 36.3415 | 6.55  | 1.0480 | 5.2400 | 0.0000 | 0.2620 |
| 300 PPM | N1R4699 | 7.56  | 15.5 | 43    | 56.8783 | 20.5026 | 36.0465 | 6.39  | 0.8946 | 5.3037 | 0.1278 | 0.0639 |
| 30 PPM  | N1R4700 | 7.53  | 16.2 | 46    | 61.0490 | 21.5139 | 35.2174 | 5.55  | 0.7215 | 4.5510 | 0.1665 | 0.1110 |
| 30 PPM  | N1R4710 | 6.66  | 13.8 | 39    | 58.5586 | 20.7207 | 35.3846 | 10.80 | 1.6200 | 8.9640 | 0.2160 | 0.0000 |
| 30 PPM  | N1R4711 | 6.85  | 12.2 | 35    | 51.0949 | 17.8102 | 34.8571 | 5.65  | 1.8080 | 3.5030 | 0.1695 | 0.1695 |
| 30 PPM  | N1R4717 | 6.98  | 13.2 | 37    | 53.0086 | 18.9112 | 35.6757 | 8.13  | 3.4146 | 4.2276 | 0.2439 | 0.2439 |
| 30 PPM  | N1R4719 | 7.03  | 14.8 | 43    | 61.1664 | 21.0526 | 34.4186 | 6.99  | 2.0271 | 4.6134 | 0.2097 | 0.1398 |
| 30 PPM  | N1R4729 | 7.00  | 12.4 | 35    | 50.0000 | 17.7143 | 35.4286 | 5.16  | 1.3932 | 3.1476 | 0.4644 | 0.1548 |
| 30 PPM  | N1R4731 | 6.74  | 12.8 | 36    | 53.0973 | 18.8791 | 35.5556 | 7.23  | 1.3014 | 5.3502 | 0.5061 | 0.0723 |
| 30 PPM  | N1R4732 | 6.35  | 15.0 | 41    | 64.5669 | 23.6220 | 36.5854 | 9.28  | 1.0208 | 7.7024 | 0.0928 | 0.0680 |
| 30 PPM  | N1R4733 | 7.30  | 14.7 | 42    | 57.5342 | 20.1370 | 35.0000 | 5.49  | 0.6588 | 4.7214 | 0.0549 | 0.0549 |
| 30 PPM  | N1R4737 | 5.95  | 14.1 | 35    | 58.8235 | 23.6775 | 40.2857 | 6.83  | 1.2977 | 4.9859 | 0.2732 | 0.2732 |
| 30 PPM  | N1R4740 | 7.02  | 12.6 | 35    | 49.8575 | 17.9487 | 36.0000 | 4.06  | 0.5278 | 3.3292 | 0.0812 | 0.1218 |
| 30 PPM  | N1R4743 | 6.80  | 13.0 | 36    | 52.9412 | 19.1176 | 36.1111 | 8.41  | 4.3169 | 4.0526 | 0.4405 | 0.0000 |
| 30 PPM  | N1R4745 | 7.18  | 14.8 | 43    | 59.8886 | 20.8128 | 34.4186 | 6.64  | 2.0584 | 4.3160 | 0.1992 | 0.0664 |
| 30 PPM  | N1R4746 | 7.12  | 14.1 | 40    | 56.1798 | 19.8034 | 35.2508 | 7.07  | 0.7777 | 5.8681 | 0.2121 | 0.2121 |
| 30 PPM  | N1R4749 | 8.13  | 14.3 | 41    | 50.4305 | 17.5892 | 34.8788 | 8.14  | 1.7094 | 6.2678 | 0.0814 | 0.0814 |
| 30 PPM  | N1R4750 | 6.71  | 13.6 | 42    | 62.5931 | 20.2683 | 32.3810 | 7.48  | 2.3936 | 4.7872 | 0.1496 | 0.1496 |

TABLE 13

TWO YEAR ORAL (DIET) TOXICITY-ONCOGENICITY  
STUDY OF FLUOROCARBON FC-143 IN FEMALE RATS  
INDIVIDUAL HEMOGRAM VALUES

| MONTH=12 |         |       |      |       |         |         |         |      |       |       |        |       |
|----------|---------|-------|------|-------|---------|---------|---------|------|-------|-------|--------|-------|
| DOSE     | ANIMAL  | ERYTH | HEMO | HEMAT | MCV     | MCH     | MCHC    | WBC  | PMNAB | LYMAB | MONOAB | EOSAB |
| 0 PPM    | N1R4578 | 7.55  | 15.7 | 44    | 58.2781 | 20.7947 | 35.6818 | 3.5  | 0.840 | 2.450 | 0.140  | 0.070 |
| 0 PPM    | N1R4582 | 7.57  | 15.7 | 44    | 58.1242 | 20.7398 | 35.6818 | 6.9  | 0.621 | 5.865 | 0.207  | 0.207 |
| 0 PPM    | N1R4585 | 7.84  | 15.9 | 45    | 57.3980 | 20.2806 | 35.3333 | 4.1  | 0.451 | 3.280 | 0.287  | 0.082 |
| 0 PPM    | N1R4588 | 7.23  | 15.2 | 43    | 59.4744 | 21.0235 | 35.3488 | 3.9  | 0.390 | 3.276 | 0.156  | 0.078 |
| 0 PPM    | N1R4589 | 7.94  | 15.1 | 43    | 54.1562 | 19.0176 | 35.1163 | 6.8  | 3.264 | 3.468 | 0.068  | 0.000 |
| 0 PPM    | N1R4590 | 7.44  | 15.8 | 44    | 59.1398 | 21.2366 | 35.9091 | 5.4  | 0.648 | 4.482 | 0.162  | 0.108 |
| 0 PPM    | N1R4601 | 7.17  | 15.2 | 43    | 59.9721 | 21.1994 | 35.3488 | 4.6  | 0.598 | 3.542 | 0.276  | 0.184 |
| 0 PPM    | N1R4608 | 8.26  | 16.3 | 46    | 55.6901 | 19.7337 | 35.4348 | 7.1  | 0.710 | 5.822 | 0.355  | 0.213 |
| 0 PPM    | N1R4610 | 7.32  | 15.1 | 42    | 57.3770 | 20.6284 | 35.9524 | 3.8  | 0.152 | 3.534 | 0.038  | 0.076 |
| 0 PPM    | N1R4620 | 7.80  | 15.3 | 43    | 55.1282 | 19.6154 | 35.5814 | 5.2  | 0.156 | 4.888 | 0.156  | 0.000 |
| 0 PPM    | N1R4629 | 7.84  | 16.0 | 47    | 59.9490 | 20.4082 | 34.0426 | 12.1 | 6.171 | 5.324 | 0.121  | 0.484 |
| 0 PPM    | N1R4630 | 7.44  | 15.6 | 44    | 59.1398 | 20.9677 | 35.4545 | 6.5  | 1.365 | 4.810 | 0.325  | 0.000 |
| 0 PPM    | N1R4631 | 7.68  | 15.8 | 45    | 58.5938 | 20.5729 | 35.1111 | 5.9  | 1.239 | 4.189 | 0.413  | 0.059 |
| 0 PPM    | N1R4632 | 7.55  | 16.3 | 46    | 60.9272 | 21.5894 | 35.4948 | 4.9  | 1.666 | 2.891 | 0.294  | 0.049 |
| 0 PPM    | N1R4640 | 7.30  | 15.6 | 45    | 61.6438 | 21.3699 | 34.6667 | 5.2  | 0.728 | 4.056 | 0.208  | 0.208 |
| 0 PPM    | N1R4642 | 7.22  | 14.2 | 40    | 55.4017 | 19.6676 | 35.5000 | 7.0  | 0.560 | 6.230 | 0.140  | 0.070 |
| 0 PPM    | N1R4652 | 7.31  | 14.8 | 40    | 54.7196 | 20.2462 | 37.0000 | 5.1  | 1.530 | 3.264 | 0.153  | 0.153 |
| 0 PPM    | N1R4655 | 6.96  | 15.3 | 41    | 58.9080 | 21.9828 | 37.3171 | 5.3  | 1.378 | 3.657 | 0.159  | 0.106 |
| 0 PPM    | N1R4656 | 7.81  | 15.4 | 44    | 56.3380 | 19.7183 | 35.0000 | 8.1  | 2.187 | 5.508 | 0.162  | 0.243 |
| 0 PPM    | N1R4664 | 7.11  | 15.0 | 42    | 59.0717 | 21.0970 | 35.7143 | 8.1  | 2.349 | 4.941 | 0.486  | 0.324 |
| 0 PPM    | N1R4666 | 6.90  | 13.9 | 39    | 56.5217 | 20.1449 | 35.6410 | 9.2  | 5.428 | 3.036 | 0.092  | 0.092 |
| 0 PPM    | N1R4669 | 7.16  | 15.3 | 43    | 60.0559 | 21.3687 | 35.5814 | 4.4  | 0.660 | 3.608 | 0.088  | 0.044 |
| 0 PPM    | N1R4671 | 6.95  | 15.0 | 40    | 57.5540 | 21.5827 | 37.5000 | 4.9  | 1.421 | 3.087 | 0.294  | 0.098 |
| 0 PPM    | N1R4674 | 7.92  | 16.0 | 44    | 55.5556 | 20.2020 | 36.3636 | 4.8  | 0.960 | 3.552 | 0.240  | 0.048 |
| 0 PPM    | N1R4676 | 6.76  | 14.8 | 40    | 59.1716 | 21.8935 | 37.0000 | 2.4  | 0.024 | 2.352 | 0.024  | 0.000 |
| 0 PPM    | N1R4687 | 6.54  | 12.4 | 38    | 58.1042 | 18.9602 | 32.6316 | 7.1  | 1.562 | 5.325 | 0.213  | 0.000 |
| 0 PPM    | N1R4689 | 2.83  | 9.2  | 25    | 88.3392 | 32.5088 | 36.8000 | 4.4  | 0.440 | 3.784 | 0.132  | 0.044 |
| 0 PPM    | N1R4692 | 7.45  | 15.3 | 43    | 57.7181 | 20.5369 | 35.5814 | 4.3  | 0.688 | 3.569 | 0.043  | 0.000 |
| 0 PPM    | N1R4699 | 7.18  | 16.0 | 44    | 61.2813 | 22.2841 | 36.3636 | 4.9  | 0.833 | 3.626 | 0.294  | 0.147 |
| 0 PPM    | N1R4704 | 7.67  | 15.7 | 44    | 57.3664 | 20.4694 | 35.6818 | 5.8  | 1.740 | 3.770 | 0.290  | 0.000 |
| 30 PPM   | N1R4711 | 8.03  | 15.5 | 44    | 54.7945 | 19.3026 | 35.2273 | 4.9  | 1.666 | 2.744 | 0.343  | 0.147 |
| 30 PPM   | N1R4714 | 7.69  | 15.3 | 43    | 55.9168 | 19.8960 | 35.5814 | 6.0  | 1.380 | 4.380 | 0.120  | 0.120 |
| 30 PPM   | N1R4715 | 7.74  | 15.6 | 45    | 58.1395 | 20.1550 | 34.6667 | 6.9  | 2.277 | 4.416 | 0.207  | 0.000 |
| 30 PPM   | N1R4716 | 7.18  | 15.2 | 44    | 61.2813 | 21.1699 | 34.5455 | 5.2  | 0.416 | 4.524 | 0.104  | 0.156 |
| 30 PPM   | N1R4717 | 8.56  | 16.7 | 48    | 56.0748 | 19.5093 | 34.7917 | 6.7  | 2.613 | 3.618 | 0.335  | 0.134 |
| 30 PPM   | N1R4721 | 7.74  | 16.1 | 46    | 59.4315 | 20.8010 | 35.0000 | 3.3  | 0.132 | 2.937 | 0.198  | 0.033 |
| 30 PPM   | N1R4725 | 3.15  | 9.3  | 27    | 82.5397 | 29.5238 | 35.7692 | 4.3  | 0.258 | 3.913 | 0.129  | 0.000 |
| 30 PPM   | N1R4727 | 7.45  | 15.0 | 42    | 56.3756 | 20.1342 | 35.7143 | 6.0  | 1.680 | 3.540 | 0.420  | 0.360 |
| 30 PPM   | N1R4729 | 7.89  | 15.8 | 45    | 57.0342 | 20.0253 | 35.1111 | 6.2  | 1.302 | 4.464 | 0.372  | 0.062 |
| 30 PPM   | N1R4734 | 7.13  | 16.0 | 44    | 61.7111 | 22.4404 | 36.3636 | 6.7  | 1.541 | 4.623 | 0.335  | 0.201 |
| 30 PPM   | N1R4742 | 6.97  | 14.0 | 39    | 55.9541 | 20.0861 | 35.8974 | 7.2  | 1.440 | 5.400 | 0.288  | 0.072 |
| 30 PPM   | N1R4743 | 7.46  | 15.2 | 43    | 57.6408 | 20.3753 | 35.3488 | 6.8  | 1.700 | 4.760 | 0.272  | 0.068 |
| 30 PPM   | N1R4749 | 7.27  | 15.0 | 41    | 56.3961 | 20.6327 | 36.5854 | 4.5  | 1.170 | 3.060 | 0.180  | 0.090 |
| 30 PPM   | N1R4750 | 7.52  | 15.5 | 43    | 57.1809 | 20.6117 | 36.0465 | 6.5  | 1.170 | 5.005 | 0.260  | 0.065 |
| 30 PPM   | N1R4755 | 7.57  | 15.6 | 43    | 56.8032 | 20.6077 | 36.2791 | 6.2  | 1.364 | 4.588 | 0.260  | 0.062 |

TABLE 13

TWO YEAR OHAL 4DIET) TOXICITY-ONCOGENICITY  
STUDY OF FLUOROCARBON FC-143 IN FEMALE RATS  
INDIVIDUAL HEMOGRAM VALUES

| DOSE    | ANIMAL  | ERYTH | HEMO | HEMAT | MCV     | MCH     | MCHC    | WBC  | PMNAB | LYMAB | MONAB | EOSAB |
|---------|---------|-------|------|-------|---------|---------|---------|------|-------|-------|-------|-------|
| 0 PPM   | N1R4581 | 6.16  | 12.3 | 34    | 55.1948 | 19.9675 | 36.1765 | 13.2 | 6.600 | 5.544 | 1.056 | 0.000 |
| 0 PPM   | N1R4583 | 7.52  | 15.6 | 44    | 58.5106 | 20.7447 | 35.4545 | 5.2  | 0.208 | 4.836 | 0.156 | 0.000 |
| 0 PPM   | N1R4586 | 7.08  | 14.5 | 41    | 57.9096 | 20.4802 | 35.3659 | 4.7  | 0.517 | 3.854 | 0.188 | 0.141 |
| 0 PPM   | N1R4592 | 8.04  | 16.8 | 46    | 57.2139 | 20.8955 | 36.5217 | 6.5  | 1.690 | 4.680 | 0.130 | 0.000 |
| 0 PPM   | N1R4595 | 7.52  | 15.3 | 44    | 58.5106 | 20.3457 | 34.7727 | 4.3  | 1.075 | 2.967 | 0.129 | 0.000 |
| 0 PPM   | N1R4598 | 7.44  | 16.4 | 45    | 60.4839 | 22.0430 | 36.4444 | 5.0  | 0.200 | 4.650 | 0.150 | 0.000 |
| 0 PPM   | N1R4599 | 7.80  | 16.1 | 44    | 56.4103 | 20.6410 | 36.5909 | 4.8  | 0.384 | 4.128 | 0.144 | 0.144 |
| 0 PPM   | N1R4602 | 7.72  | 16.6 | 45    | 58.2902 | 21.5026 | 36.8889 | 6.5  | 0.195 | 6.305 | 0.065 | 0.000 |
| 0 PPM   | N1R4604 | 7.97  | 16.4 | 47    | 58.9711 | 20.5772 | 36.8936 | 4.9  | 0.441 | 4.410 | 0.049 | 0.000 |
| 0 PPM   | N1R4606 | 5.85  | 12.4 | 34    | 58.1197 | 21.1966 | 36.4706 | 5.1  | 1.632 | 3.060 | 0.408 | 0.000 |
| 0 PPM   | N1R4609 | 7.07  | 15.5 | 41    | 57.9915 | 21.9236 | 37.8049 | 4.9  | 0.931 | 3.675 | 0.294 | 0.000 |
| 0 PPM   | N1R4611 | 6.95  | 14.7 | 41    | 58.9928 | 21.1511 | 35.8537 | 5.3  | 0.371 | 4.664 | 0.265 | 0.000 |
| 0 PPM   | N1R4612 | 8.27  | 16.5 | 47    | 56.8319 | 19.9516 | 35.1064 | 7.0  | 0.840 | 5.950 | 0.210 | 0.000 |
| 0 PPM   | N1R4627 | 7.36  | 16.2 | 46    | 62.5000 | 22.0109 | 35.2174 | 5.0  | 0.050 | 4.900 | 0.050 | 0.000 |
| 0 PPM   | N1R4638 | 7.76  | 16.4 | 45    | 57.9897 | 21.1340 | 36.4444 | 3.8  | 0.076 | 3.610 | 0.114 | 0.000 |
| 300 PPM | N1R4645 | 7.49  | 15.4 | 44    | 58.7450 | 20.5607 | 35.0000 | 4.5  | 2.475 | 1.485 | 0.405 | 0.135 |
| 300 PPM | N1R4647 | 7.57  | 15.2 | 43    | 56.8032 | 20.0793 | 35.3488 | 4.5  | 1.215 | 2.880 | 0.315 | 0.090 |
| 300 PPM | N1R4648 | 5.54  | 12.0 | 34    | 61.3718 | 21.6606 | 35.2941 | 12.6 | 8.568 | 3.024 | 0.882 | 0.126 |
| 300 PPM | N1R4651 | 7.60  | 15.3 | 43    | 56.5789 | 20.1316 | 35.5814 | 5.3  | 1.378 | 3.498 | 0.371 | 0.053 |
| 300 PPM | N1R4663 | 7.84  | 15.7 | 44    | 56.1224 | 20.0255 | 35.6818 | 3.7  | 1.184 | 2.109 | 0.370 | 0.037 |
| 300 PPM | N1R4667 | 5.84  | 12.2 | 34    | 58.2192 | 20.8904 | 35.8824 | 10.1 | 3.131 | 6.161 | 0.808 | 0.000 |
| 300 PPM | N1R4675 | 8.83  | 16.8 | 48    | 54.3601 | 19.0260 | 35.0000 | 7.8  | 2.652 | 4.680 | 0.390 | 0.078 |
| 300 PPM | N1R4679 | 7.31  | 14.4 | 41    | 56.0876 | 19.6990 | 35.1220 | 6.3  | 2.016 | 4.095 | 0.189 | 0.000 |
| 300 PPM | N1R4684 | 6.57  | 14.3 | 40    | 60.8828 | 21.7656 | 35.7800 | 6.3  | 3.213 | 2.709 | 0.315 | 0.063 |
| 300 PPM | N1R4688 | 7.45  | 15.7 | 45    | 60.4027 | 21.0738 | 34.8889 | 7.1  | 1.917 | 4.615 | 0.426 | 0.142 |
| 300 PPM | N1R4690 | 7.21  | 15.3 | 42    | 58.2524 | 21.2205 | 36.4286 | 4.2  | 2.142 | 1.806 | 0.168 | 0.084 |
| 300 PPM | N1R4693 | 7.97  | 15.4 | 43    | 53.9523 | 19.3225 | 35.8140 | 6.1  | 0.610 | 4.941 | 0.183 | 0.366 |
| 300 PPM | N1R4694 | 7.30  | 16.4 | 46    | 63.0137 | 22.4658 | 35.6522 | 5.4  | 0.864 | 4.158 | 0.324 | 0.054 |
| 300 PPM | N1R4696 | 6.95  | 14.4 | 40    | 57.5540 | 20.7194 | 36.0000 | 5.3  | 1.219 | 3.445 | 0.318 | 0.318 |
| 300 PPM | N1R4698 | 7.20  | 15.4 | 42    | 58.3333 | 21.3889 | 36.6667 | 5.3  | 0.636 | 4.664 | 0.000 | 0.000 |
| 30 PPM  | N1R4707 | 6.67  | 13.5 | 38    | 56.9715 | 20.2399 | 35.5263 | 7.7  | 3.080 | 4.158 | 0.462 | 0.000 |
| 30 PPM  | N1R4709 | 6.05  | 14.4 | 40    | 66.1157 | 23.8017 | 36.0000 | 3.7  | 0.740 | 2.701 | 0.259 | 0.000 |
| 30 PPM  | N1R4714 | 7.46  | 15.3 | 43    | 57.6408 | 20.5094 | 35.5814 | 4.9  | 0.490 | 4.116 | 0.245 | 0.049 |
| 30 PPM  | N1R4718 | 6.65  | 14.7 | 39    | 58.6466 | 22.1053 | 37.6923 | 4.9  | 1.176 | 3.332 | 0.343 | 0.049 |
| 30 PPM  | N1R4720 | 6.46  | 14.1 | 39    | 60.3715 | 21.8266 | 36.1538 | 10.3 | 5.459 | 4.120 | 0.618 | 0.103 |
| 30 PPM  | N1R4722 | 5.47  | 11.8 | 33    | 60.3291 | 21.5722 | 35.7576 | 9.2  | 5.428 | 3.312 | 0.460 | 0.000 |
| 30 PPM  | N1R4725 | 7.54  | 16.8 | 48    | 63.6605 | 22.2412 | 35.0000 | 3.9  | 1.014 | 2.535 | 0.195 | 0.156 |
| 30 PPM  | N1R4729 | 7.31  | 15.2 | 42    | 57.4555 | 20.7934 | 36.1905 | 5.1  | 2.601 | 2.193 | 0.306 | 0.000 |
| 30 PPM  | N1R4732 | 6.42  | 13.7 | 38    | 59.1900 | 21.3396 | 36.0526 | 10.8 | 4.212 | 6.156 | 0.216 | 0.216 |
| 30 PPM  | N1R4733 | 8.08  | 15.7 | 44    | 54.4554 | 19.4307 | 36.6818 | 4.1  | 1.312 | 2.542 | 0.205 | 0.041 |
| 30 PPM  | N1R4737 | 6.91  | 15.2 | 43    | 62.2287 | 21.9971 | 35.3488 | 5.8  | 1.624 | 3.654 | 0.348 | 0.174 |
| 30 PPM  | N1R4748 | 7.32  | 14.7 | 42    | 57.3770 | 20.0420 | 35.0000 | 6.6  | 3.366 | 2.970 | 0.198 | 0.066 |
| 30 PPM  | N1R4749 | 7.88  | 16.2 | 45    | 57.1066 | 20.5584 | 36.0000 | 8.2  | 2.870 | 4.592 | 0.574 | 0.164 |
| 30 PPM  | N1R4752 | 8.17  | 16.9 | 47    | 57.5275 | 20.6854 | 35.9574 | 5.9  | 1.416 | 4.012 | 0.413 | 0.059 |
| 30 PPM  | N1R4754 | 6.81  | 14.5 | 41    | 60.2056 | 21.2922 | 35.3659 | 11.4 | 8.550 | 2.280 | 0.570 | 0.000 |

TABLE 13

TWO YEAR ORAL (DIET) TOXICITY-ONCOGENICITY  
STUDY OF FLUOROCARBON FC-143 IN FEMALE RATS  
INDIVIDUAL HEMUGRAM VALUES

| DOSE    | ANIMAL  | ERYTH | HEMO | HEMAT | MCV     | MCH     | MCHC    | WBC  | PMNAB  | LYMAB | MONAB | EOSAB |
|---------|---------|-------|------|-------|---------|---------|---------|------|--------|-------|-------|-------|
| 0 PPM   | N1R4583 | 7.48  | 15.3 | 42    | 56.1497 | 20.4545 | 36.4286 | 18.7 | 12.529 | 5.984 | 0.187 | 0.000 |
| 0 PPM   | N1R4586 | 7.22  | 14.3 | 42    | 58.1717 | 19.8061 | 34.0476 | 4.1  | 1.148  | 2.952 | 0.000 | 0.000 |
| 0 PPM   | N1R4591 | 7.91  | 15.7 | 45    | 56.8900 | 19.8483 | 34.8889 | 4.9  | 0.735  | 4.018 | 0.000 | 0.147 |
| 0 PPM   | N1R4595 | 7.97  | 15.9 | 46    | 57.7164 | 19.9498 | 34.5652 | 4.6  | 2.714  | 1.702 | 0.092 | 0.138 |
| 0 PPM   | N1R4598 | 7.43  | 16.4 | 47    | 63.2571 | 22.0727 | 34.8936 | 6.2  | 2.232  | 3.844 | 0.062 | 0.062 |
| 0 PPM   | N1R4603 | 7.07  | 14.9 | 44    | 62.2348 | 21.0750 | 33.8636 | 4.2  | 1.092  | 3.066 | 0.000 | 0.042 |
| 0 PPM   | N1R4606 | 7.78  | 15.9 | 46    | 59.1260 | 20.4370 | 34.5652 | 4.7  | 1.081  | 3.525 | 0.094 | 0.000 |
| 0 PPM   | N1R4611 | 4.21  | 10.3 | 29    | 68.8836 | 24.4656 | 35.5172 | 9.2  | 3.496  | 5.428 | 0.184 | 0.092 |
| 0 PPM   | N1R4614 | 7.34  | 16.0 | 44    | 59.9455 | 21.7984 | 36.3636 | 5.1  | 1.989  | 3.060 | 0.051 | 0.000 |
| 0 PPM   | N1R4616 | 7.24  | 15.2 | 43    | 59.3923 | 20.9445 | 35.3488 | 4.5  | 2.115  | 2.340 | 0.000 | 0.045 |
| 0 PPM   | N1R4626 | 7.31  | 14.5 | 42    | 57.4555 | 19.8358 | 34.5234 | 5.4  | 2.592  | 2.646 | 0.108 | 0.054 |
| 0 PPM   | N1R4628 | 6.21  | 13.4 | 34    | 61.1916 | 21.5741 | 35.2632 | 8.6  | 3.870  | 4.386 | 0.086 | 0.258 |
| 0 PPM   | N1R4634 | 4.86  | 11.7 | 32    | 65.8436 | 24.0741 | 36.5625 | 12.2 | 5.246  | 6.222 | 0.610 | 0.122 |
| 0 PPM   | N1R4636 | 7.90  | 16.1 | 47    | 59.5937 | 20.3797 | 34.2553 | 5.0  | 1.650  | 3.250 | 0.100 | 0.000 |
| 0 PPM   | N1R4638 | 7.99  | 16.8 | 47    | 58.8235 | 21.0263 | 35.7447 | 3.5  | 0.630  | 2.695 | 0.140 | 0.035 |
| 300 PPM | 01R4644 | 7.07  | 14.0 | 41    | 57.9915 | 19.8020 | 34.1463 | 4.8  | 1.056  | 3.600 | 0.096 | 0.048 |
| 300 PPM | 01R4646 | 6.84  | 14.2 | 41    | 59.9415 | 20.7602 | 34.6341 | 7.9  | 2.607  | 5.293 | 0.000 | 0.000 |
| 300 PPM | 01R4649 | 7.12  | 14.6 | 42    | 58.9888 | 20.5056 | 34.7619 | 8.3  | 3.652  | 4.399 | 0.083 | 0.166 |
| 300 PPM | 01R4657 | 6.55  | 14.0 | 37    | 56.4885 | 21.3740 | 37.8378 | 6.0  | 1.920  | 3.840 | 0.180 | 0.060 |
| 300 PPM | 01R4659 | 5.06  | 11.0 | 30    | 59.2885 | 21.7391 | 36.6667 | 8.6  | 3.956  | 4.386 | 0.172 | 0.086 |
| 300 PPM | 01R4661 | 7.42  | 15.0 | 42    | 56.6038 | 20.2156 | 35.7143 | 6.5  | 1.365  | 5.070 | 0.065 | 0.000 |
| 300 PPM | 01R4663 | 8.35  | 16.6 | 45    | 53.8922 | 19.4802 | 36.8469 | 3.8  | 1.216  | 2.508 | 0.000 | 0.076 |
| 300 PPM | 01R4672 | 6.80  | 13.9 | 40    | 58.8235 | 20.4412 | 34.7500 | 6.5  | 2.600  | 2.990 | 0.130 | 0.130 |
| 300 PPM | 01R4679 | 7.14  | 14.6 | 40    | 56.0224 | 20.4482 | 36.5000 | 5.9  | 3.363  | 2.419 | 0.118 | 0.000 |
| 300 PPM | 01R4683 | 7.67  | 15.1 | 42    | 54.7588 | 19.6871 | 35.9524 | 8.0  | 2.080  | 5.760 | 0.160 | 0.000 |
| 300 PPM | 01R4688 | 7.24  | 15.2 | 42    | 58.0110 | 20.9445 | 36.1905 | 5.4  | 1.134  | 4.212 | 0.054 | 0.000 |
| 300 PPM | 01R4693 | 7.66  | 15.1 | 42    | 54.8303 | 19.7128 | 35.9524 | 4.6  | 1.794  | 2.622 | 0.046 | 0.138 |
| 300 PPM | 01R4695 | 6.82  | 13.0 | 36    | 52.7854 | 19.0616 | 36.1111 | 9.3  | 2.790  | 6.231 | 0.186 | 0.093 |
| 300 PPM | 01R4697 | 7.80  | 15.1 | 43    | 55.1282 | 19.3590 | 35.1163 | 5.8  | 1.508  | 4.118 | 0.116 | 0.058 |
| 300 PPM | 01R4701 | 7.62  | 15.2 | 43    | 56.4304 | 19.9475 | 35.3488 | 4.4  | 1.232  | 3.124 | 0.044 | 0.000 |
| 30 PPM  | 01R4708 | 7.26  | 15.1 | 44    | 60.6061 | 20.7949 | 34.3182 | 7.8  | 3.588  | 3.900 | 0.078 | 0.234 |
| 30 PPM  | 01R4711 | 6.89  | 13.7 | 38    | 55.1524 | 19.8839 | 36.0526 | 13.7 | 7.672  | 5.343 | 0.548 | 0.137 |
| 30 PPM  | 01R4714 | 7.11  | 15.0 | 42    | 59.0717 | 20.0970 | 35.7143 | 5.8  | 1.914  | 3.828 | 0.058 | 0.000 |
| 30 PPM  | 01R4716 | 7.34  | 15.0 | 45    | 61.3079 | 20.4360 | 33.3333 | 4.4  | 1.936  | 2.288 | 0.132 | 0.044 |
| 30 PPM  | 01R4720 | 6.91  | 14.9 | 43    | 62.2287 | 21.5630 | 34.6512 | 8.6  | 3.698  | 4.472 | 0.172 | 0.000 |
| 30 PPM  | 01R4723 | 6.36  | 12.8 | 37    | 58.1761 | 20.1258 | 34.5946 | 9.9  | 2.574  | 7.128 | 0.198 | 0.000 |
| 30 PPM  | 01R4726 | 7.64  | 16.3 | 46    | 60.2094 | 21.3351 | 35.4348 | 6.4  | 0.640  | 5.696 | 0.064 | 0.000 |
| 30 PPM  | 01R4729 | 7.53  | 15.2 | 44    | 58.4329 | 20.1859 | 34.5455 | 7.4  | 2.146  | 4.884 | 0.074 | 0.296 |
| 30 PPM  | 01R4733 | 8.81  | 17.0 | 49    | 55.6186 | 19.2963 | 34.6939 | 5.2  | 2.340  | 2.704 | 0.156 | 0.000 |
| 30 PPM  | 01R4736 | 7.97  | 16.4 | 47    | 58.9711 | 20.5772 | 34.8436 | 6.2  | 1.736  | 4.340 | 0.062 | 0.062 |
| 30 PPM  | 01R4739 | 4.01  | 8.9  | 25    | 62.3441 | 22.1945 | 35.6000 | 12.0 | 2.760  | 8.400 | 0.720 | 0.120 |
| 30 PPM  | 01R4745 | 7.45  | 15.4 | 45    | 60.4027 | 20.6711 | 34.2222 | 6.2  | 0.642  | 5.332 | 0.124 | 0.062 |
| 30 PPM  | 01R4747 | 7.05  | 13.5 | 39    | 55.3191 | 19.1489 | 34.6154 | 12.6 | 5.418  | 6.426 | 0.000 | 0.000 |
| 30 PPM  | 01R4752 | 7.82  | 16.4 | 45    | 57.5448 | 20.9719 | 36.4444 | 6.6  | 2.706  | 3.762 | 0.066 | 0.066 |
| 30 PPM  | 01R4754 | 5.76  | 12.8 | 36    | 62.5000 | 22.2222 | 35.5556 | 15.7 | 11.775 | 3.611 | 0.314 | 0.000 |

TABLE 14

TWO YEAR ORAL (DIET) TOXICITY-ONCOGENICITY STUDY OF FLUOROCARBON FC-143 IN RATS  
MEAN BLOOD CHEMISTRY VALUES WITH STANDARD DEVIATIONS

|          | N  | GLUCOSE<br>(MG/DL) |        | BLOOD UREA NITROGEN<br>(MG/DL) |        | ALT<br>(IU/L) |        | AST<br>(IU/L) |        |
|----------|----|--------------------|--------|--------------------------------|--------|---------------|--------|---------------|--------|
|          |    | MEAN               | S.DEV. | MEAN                           | S.DEV. | MEAN          | S.DEV. | MEAN          | S.DEV. |
| MALE     |    |                    |        |                                |        |               |        |               |        |
| -----    |    |                    |        |                                |        |               |        |               |        |
| MONTH 3  |    |                    |        |                                |        |               |        |               |        |
| -----    |    |                    |        |                                |        |               |        |               |        |
| 0 PPM    | 15 | 120.6              | 13.74  | 16.3                           | 1.84   | 21.4          | 2.67   | 45.3          | 7.26   |
| 300 PPM  | 15 | 129.5*             | 8.38   | 19.4*                          | 2.06   | 31.9*         | 21.94  | 58.2          | 27.23  |
| 30 PPM   | 15 | 134.6*             | 8.83   | 17.1                           | 1.46   | 34.5*         | 15.33  | 59.7          | 22.47  |
| MONTH 6  |    |                    |        |                                |        |               |        |               |        |
| -----    |    |                    |        |                                |        |               |        |               |        |
| 0 PPM    | 15 | 119.0              | 13.29  | 17.5                           | 1.36   | 24.1          | 3.75   | 49.7          | 14.98  |
| 300 PPM  | 15 | 123.7              | 11.17  | 20.7*                          | 1.40   | 54.8*         | 29.26  | 97.8*         | 34.83  |
| 30 PPM   | 15 | 134.9*             | 10.33  | 15.9*                          | 1.44   | 53.3*         | 29.34  | 92.1*         | 45.60  |
| MONTH 12 |    |                    |        |                                |        |               |        |               |        |
| -----    |    |                    |        |                                |        |               |        |               |        |
| 0 PPM    | 14 | 154.3              | 26.17  | 16.4                           | 2.50   | 83.5          | 19.45  | 79.1          | 44.61  |
| 300 PPM  | 15 | 138.7              | 8.85   | 17.5                           | 1.73   | 106.1*        | 70.00  | 132.7         | 76.84  |
| 30 PPM   | 15 | 131.1*             | 8.70   | 16.2                           | 1.15   | 77.6*         | 56.59  | 124.4         | 94.04  |
| MONTH 18 |    |                    |        |                                |        |               |        |               |        |
| -----    |    |                    |        |                                |        |               |        |               |        |
| 0 PPM    | 15 | 123.4              | 26.39  | 18.1                           | 3.38   | 84.1          | 10.68  | 99.1          | 68.14  |
| 300 PPM  | 15 | 139.3              | 16.14  | 17.6                           | 1.88   | 84.3*         | 55.95  | 123.3         | 62.98  |
| 30 PPM   | 15 | 120.6              | 27.62  | 16.5*                          | 6.48   | 69.7*         | 33.41  | 116.4         | 57.99  |
| MONTH 24 |    |                    |        |                                |        |               |        |               |        |
| -----    |    |                    |        |                                |        |               |        |               |        |
| 0 PPM    | 15 | 122.5              | 23.07  | 16.5                           | 3.16   | 83.4          | 8.10   | 64.9          | 25.76  |
| 300 PPM  | 15 | 147.1*             | 13.26  | 17.2                           | 5.03   | 61.8*         | 20.13  | 95.7*         | 29.76  |
| 30 PPM   | 14 | 121.3              | 13.72  | 16.6                           | 6.70   | 42.5          | 10.00  | 68.0          | 17.64  |

\* : P <= .05. TWO TAILED DUNNETT T ON RAW DATA.  
 # : P <= .05. TWO TAILED DUNNETT T ON RANKED DATA.

TABLE 14

TWO YEAR ORAL (DIET) TOXICITY-ONCOGENICITY STUDY OF FLUOROCARBON FC-143 IN RATS  
MEAN BLOOD CHEMISTRY VALUES (TBILI, ALB, TPROT, ALKPPOS, CPK, CA) WITH STANDARD DEVIATIONS

| MALE     |                         |       |                 |       |                       |       |                             |       |                               |       |                 |                   |  |
|----------|-------------------------|-------|-----------------|-------|-----------------------|-------|-----------------------------|-------|-------------------------------|-------|-----------------|-------------------|--|
| MONTH 3  |                         |       |                 |       |                       |       |                             |       |                               |       |                 |                   |  |
| N        | TOTAL BILIRUBIN (MG/DL) |       | ALBUMIN (GM/DL) |       | TOTAL PROTEIN (GM/DL) |       | ALKALINE PHOSPHATASE (IU/L) |       | CREATINE PHOSPHOKINASE (IU/L) |       | CALCIUM (MG/DL) |                   |  |
|          | MEAN                    | S.DEV | MEAN            | S.DEV | MEAN                  | S.DEV | MEAN                        | S.DEV | MEAN                          | S.DEV | MEAN            | S.DEV             |  |
| 15       | 0.6                     | 0.16  | 4.4             | 0.34  | 6.8                   | 0.34  | 91.1                        | 26.22 | 100.7                         | 26.46 | 11.1            | 0.68              |  |
| 15       | 0.8                     | 0.40  | 5.1*            | 0.29  | 6.5                   | 0.31  | 153.5*                      | 91.8* | 67.0*                         | 24.24 | 10.8            | 0.50              |  |
| 15       | 0.7                     | 0.09  | 4.7*            | 0.37  | 6.6                   | 0.34  | 138.7*                      | 93.1* | 60.5*                         | 12.65 | 11.0            | 0.78              |  |
| MONTH 6  |                         |       |                 |       |                       |       |                             |       |                               |       |                 |                   |  |
| 15       | 0.8                     | 0.19  | 4.6             | 0.20  | 7.0                   | 0.36  | 97.1                        | 40.41 | 89.9                          | 41.32 | 11.5            | 0.40              |  |
| 15       | 0.7                     | 0.22  | 5.4*            | 0.31  | 6.6*                  | 0.28  | 147.3*                      | 94.85 | 81.4                          | 26.66 | 11.1*           | 0.22              |  |
| 15       | 0.5*                    | 0.14  | 5.0*            | 0.40  | 6.7*                  | 0.33  | 146.9*                      | 97.18 | 58.3*                         | 31.23 | 10.9*           | 0.33              |  |
| MONTH 12 |                         |       |                 |       |                       |       |                             |       |                               |       |                 |                   |  |
| 14       | 0.7                     | 0.20  | 3.7             | 0.20  | 6.8                   | 0.27  | 105.8                       | 43.94 | 79.7                          | 47.61 | 10.5            | 0.30              |  |
| 15       | 0.6                     | 0.12  | 4.4*            | 0.34  | 6.8                   | 0.31  | 166.5*                      | 99.28 | 68.3                          | 23.65 | 10.6            | 0.24              |  |
| 15       | 0.8                     | 0.22  | 3.9             | 0.26  | 6.9                   | 0.33  | 128.3                       | 41.75 | 67.6                          | 19.45 | 10.6            | 0.29              |  |
| MONTH 18 |                         |       |                 |       |                       |       |                             |       |                               |       |                 |                   |  |
| 15       | 0.9                     | 0.35  | 3.2             | 0.38  | 7.1                   | 0.61  | 85.2                        | 93.76 | 79.9                          | 74.52 | 11.1            | 0.93              |  |
| 15       | 0.7                     | 0.31  | 3.7*            | 0.34  | 6.9                   | 0.42  | 184.4*                      | 73.37 | 82.5                          | 45.87 | 10.8            | 1.10 <sup>a</sup> |  |
| 15       | 0.7                     | 0.25  | 3.2             | 0.29  | 7.2                   | 0.45  | 112.5                       | 92.61 | 106.5                         | 69.23 | 10.4            | 0.80 <sup>a</sup> |  |
| MONTH 24 |                         |       |                 |       |                       |       |                             |       |                               |       |                 |                   |  |
| 15       | 0.4                     | 0.25  | 2.8             | 0.23  | 6.9                   | 0.44  | 70.1                        | 25.58 | 111.1                         | 68.04 | 10.9            | 0.43              |  |
| 15       | 0.2*                    | 0.06  | 3.1*            | 0.27  | 6.9                   | 0.50  | 113.5*                      | 22.8* | 88.3                          | 37.33 | 10.8            | 0.25              |  |
| 14       | 0.4                     | 0.12  | 2.8             | 0.30  | 6.8                   | 0.39  | 81.2                        | 26.20 | 71.1*                         | 20.55 | 10.5*           | 0.31              |  |

\* : P &lt;= .05, TWO TAILED DUNNETT T ON RAW DATA.

# : P &lt;= .05, TWO TAILED DUNNETT T ON RANKED DATA.

<sub>a</sub> N NUMBER IS 14 FOR THIS MEAN.

TABLE 14

TWO YEAR ORAL (DIET) TOXICITY-ONCOGENICITY  
STUDY OF FLUOROCARBON FC-143 IN MALE RATS  
INDIVIDUAL SERUM CHEMISTRY VALUES

| DOSE    | ANIMAL   | GLU | HUN | ALT | AST | THILI | ALB | TPROT | ALKPHOS | CPK | CA   |
|---------|----------|-----|-----|-----|-----|-------|-----|-------|---------|-----|------|
| 0 PPM   | AI R3518 | 112 | 17  | 20  | 36  | 0.6   | 4.2 | 6.8   | 107     | 115 | 11.5 |
| 0 PPM   | AI R3527 | 140 | 21  | 22  | 42  | 0.5   | 4.4 | 6.6   | 106     | 104 | 11.3 |
| 0 PPM   | AI R3532 | 138 | 17  | 20  | 36  | 0.9   | 4.4 | 7.1   | 58      | 69  | 11.2 |
| 0 PPM   | AI R3534 | 112 | 17  | 22  | 50  | 0.8   | 5.1 | 7.8   | 105     | 140 | 12.4 |
| 0 PPM   | AI R3537 | 129 | 15  | 28  | 59  | 0.8   | 4.4 | 6.6   | 100     | 144 | 10.8 |
| 0 PPM   | AI R3540 | 102 | 17  | 21  | 42  | 0.5   | 4.1 | 6.5   | 80      | 120 | 10.8 |
| 0 PPM   | AI R3542 | 111 | 14  | 22  | 43  | 0.7   | 4.4 | 6.7   | 60      | 80  | 10.8 |
| 0 PPM   | AI R3548 | 98  | 14  | 21  | 46  | 0.5   | 3.9 | 6.5   | 125     | 80  | 11.2 |
| 0 PPM   | AI R3552 | 141 | 16  | 18  | 38  | 0.5   | 4.2 | 6.8   | 71      | 74  | 11.1 |
| 0 PPM   | AI R3559 | 108 | 17  | 18  | 44  | 0.5   | 4.4 | 6.6   | 52      | 109 | 11.6 |
| 0 PPM   | AI R3562 | 130 | 16  | 21  | 51  | 0.4   | 4.1 | 6.5   | 73      | 85  | 9.3  |
| 0 PPM   | AI R3564 | 125 | 18  | 24  | 50  | 0.8   | 5.1 | 6.6   | 125     | 72  | 12.0 |
| 0 PPM   | AI R3565 | 129 | 17  | 20  | 47  | 0.9   | 4.6 | 6.8   | 128     | 113 | 11.0 |
| 0 PPM   | AI R3567 | 114 | 15  | 19  | 36  | 0.6   | 4.2 | 6.5   | 69      | 72  | 11.2 |
| 0 PPM   | AI R3569 | 120 | 14  | 25  | 58  | 0.7   | 4.3 | 7.0   | 108     | 134 | 11.0 |
| 300 PPM | AI R3585 | 135 | 22  | 24  | 48  | 0.5   | 4.8 | 6.3   | 140     | 41  | 11.4 |
| 300 PPM | AI R3587 | 128 | 20  | 28  | 75  | 0.5   | 4.6 | 6.4   | 124     | 80  | 10.3 |
| 300 PPM | AI R3589 | 139 | 17  | 23  | 37  | 0.5   | 5.1 | 6.3   | 114     | 47  | 11.0 |
| 300 PPM | AI R3592 | 128 | 17  | 28  | 48  | 1.9   | 4.7 | 6.5   | 162     | 97  | 11.2 |
| 300 PPM | AI R3593 | 121 | 18  | 24  | 50  | 0.5   | 4.9 | 6.4   | 183     | 82  | 10.9 |
| 300 PPM | AI R3595 | 131 | 21  | 25  | 44  | 0.7   | 5.0 | 6.2   | 124     | 60  | 11.2 |
| 300 PPM | AI R3604 | 141 | 19  | 23  | 42  | 0.5   | 5.2 | 6.8   | 142     | 43  | 11.4 |
| 300 PPM | AI R3605 | 145 | 19  | 25  | 45  | 0.7   | 5.0 | 6.3   | 143     | 54  | 11.1 |
| 300 PPM | AI R3610 | 124 | 14  | 110 | 148 | 0.6   | 4.9 | 6.6   | 212     | 72  | 10.8 |
| 300 PPM | AI R3611 | 120 | 17  | 34  | 65  | 0.9   | 5.3 | 6.5   | 181     | 53  | 10.8 |
| 300 PPM | AI R3617 | 136 | 24  | 21  | 44  | 0.7   | 5.0 | 6.6   | 160     | 45  | 9.8  |
| 300 PPM | AI R3623 | 115 | 18  | 33  | 51  | 0.9   | 5.3 | 6.8   | 128     | 72  | 11.3 |
| 300 PPM | AI R3634 | 124 | 22  | 23  | 47  | 0.6   | 5.4 | 6.2   | 134     | 117 | 10.3 |
| 300 PPM | AI R3640 | 128 | 19  | 27  | 49  | 0.5   | 5.3 | 6.4   | 138     | 41  | 11.1 |
| 300 PPM | AI R3643 | 127 | 19  | 30  | 75  | 1.4   | 5.7 | 7.4   | 217     | 101 | 10.1 |
| 30 PPM  | AI R3654 | 120 | 16  | 21  | 43  | 0.6   | 4.2 | 6.3   | 86      | 71  | 10.2 |
| 30 PPM  | AI R3655 | 152 | 20  | 39  | 62  | 0.7   | 4.6 | 6.2   | 148     | 69  | 10.0 |
| 30 PPM  | AI R3665 | 130 | 16  | 30  | 50  | 0.7   | 4.9 | 6.8   | 147     | 73  | 12.0 |
| 30 PPM  | AI R3667 | 136 | 16  | 26  | 56  | 0.7   | 4.7 | 6.4   | 192     | 79  | 11.0 |
| 30 PPM  | AI R3668 | 138 | 16  | 74  | 120 | 0.6   | 4.6 | 6.3   | 156     | 59  | 10.4 |
| 30 PPM  | AI R3673 | 119 | 17  | 28  | 51  | 0.6   | 4.4 | 6.3   | 108     | 67  | 10.9 |
| 30 PPM  | AI R3675 | 139 | 18  | 43  | 82  | 0.7   | 4.7 | 6.9   | 163     | 76  | 12.1 |
| 30 PPM  | AI R3677 | 135 | 15  | 25  | 45  | 0.7   | 5.1 | 7.0   | 188     | 40  | 11.1 |
| 30 PPM  | AI R3679 | 142 | 15  | 23  | 37  | 0.8   | 5.3 | 7.2   | 97      | 53  | 11.9 |
| 30 PPM  | AI R3683 | 144 | 18  | 21  | 40  | 0.7   | 5.0 | 6.7   | 96      | 47  | 12.2 |
| 30 PPM  | AI R3687 | 132 | 19  | 26  | 38  | 0.8   | 5.3 | 7.0   | 168     | 38  | 10.0 |
| 30 PPM  | AI R3690 | 138 | 19  | 56  | 82  | 0.5   | 4.9 | 6.5   | 139     | 66  | 11.0 |
| 30 PPM  | AI R3691 | 125 | 16  | 51  | 78  | 0.7   | 4.3 | 6.1   | 145     | 59  | 10.8 |
| 30 PPM  | AI R3692 | 138 | 18  | 30  | 58  | 0.8   | 4.1 | 6.3   | 109     | 52  | 10.1 |
| 30 PPM  | AI R3695 | 131 | 17  | 25  | 53  | 0.6   | 4.7 | 6.5   | 138     | 58  | 11.5 |

TABLE 14

TWO YEAR UMAL (DIET) TOXICITY-ONCOGENICITY  
STUDY OF FLUOROCARBON FC-143 IN MALE RATS  
INDIVIDUAL SERUM CHEMISTRY VALUES

| MONTH=6 |         |     |     |     |     |      |     |       |         |     |      |
|---------|---------|-----|-----|-----|-----|------|-----|-------|---------|-----|------|
| DOSE    | ANIMAL  | GLU | BUN | ALT | AST | TBLI | ALB | TPROT | ALKPHOS | CPK | CA   |
| 0 PPM   | AIR3519 | 133 | 19  | 18  | 39  | 0.6  | 4.3 | 6.4   | 123     | 70  | 10.6 |
| 0 PPM   | AIR3524 | 139 | 17  | 21  | 54  | 0.8  | 4.4 | 7.3   | 109     | 82  | 11.6 |
| 0 PPM   | AIR3529 | 130 | 16  | 20  | 25  | 0.6  | 4.7 | 6.7   | 72      | 51  | 11.3 |
| 0 PPM   | AIR3533 | 124 | 19  | 28  | 41  | 0.8  | 4.8 | 7.5   | 85      | 119 | 11.7 |
| 0 PPM   | AIR3537 | 109 | 16  | 27  | 58  | 1.1  | 4.9 | 7.0   | 110     | 204 | 11.6 |
| 0 PPM   | AIR3541 | 124 | 18  | 19  | 35  | 0.7  | 4.5 | 7.2   | 65      | 58  | 11.3 |
| 0 PPM   | AIR3547 | 115 | 19  | 29  | 28  | 1.1  | 4.8 | 7.5   | 114     | 62  | 12.2 |
| 0 PPM   | AIR3550 | 128 | 15  | 25  | 43  | 0.6  | 4.7 | 7.0   | 213     | 57  | 11.6 |
| 0 PPM   | AIR3553 | 99  | 20  | 29  | 53  | 0.7  | 4.6 | 7.1   | 62      | 57  | 11.9 |
| 0 PPM   | AIR3557 | 109 | 17  | 22  | 74  | 1.1  | 4.7 | 7.3   | 120     | 119 | 11.6 |
| 0 PPM   | AIR3559 | 100 | 17  | 21  | 51  | 0.9  | 4.5 | 6.7   | 50      | 85  | 11.4 |
| 0 PPM   | AIR3562 | 133 | 18  | 28  | 55  | 0.6  | 4.7 | 6.6   | 69      | 79  | 10.9 |
| 0 PPM   | AIR3567 | 124 | 18  | 23  | 49  | 0.8  | 4.6 | 6.8   | 69      | 85  | 11.4 |
| 0 PPM   | AIR3573 | 102 | 17  | 26  | 74  | 1.0  | 5.0 | 7.5   | 118     | 144 | 11.7 |
| 0 PPM   | AIR3575 | 111 | 17  | 25  | 67  | 0.7  | 4.4 | 6.7   | 78      | 77  | 11.0 |
| 0 PPM   | AIR3583 | 119 | 21  | 29  | 57  | 0.7  | 5.7 | 6.4   | 162     | 77  | 11.0 |
| 300 PPM | AIR3584 | 152 | 23  | 84  | 112 | 1.2  | 5.1 | 6.7   | 178     | 76  | 11.2 |
| 300 PPM | AIR3596 | 119 | 21  | 21  | 47  | 0.9  | 5.3 | 6.6   | 156     | 80  | 11.4 |
| 300 PPM | AIR3598 | 121 | 21  | 92  | 122 | 0.8  | 6.0 | 7.2   | 183     | 106 | 11.5 |
| 300 PPM | AIR3600 | 110 | 22  | 27  | 47  | 1.1  | 5.1 | 7.0   | 97      | 75  | 10.9 |
| 300 PPM | AIR3604 | 144 | 21  | 60  | 86  | 0.5  | 5.4 | 6.3   | 123     | 46  | 11.4 |
| 300 PPM | AIR3608 | 117 | 19  | 73  | 80  | 0.7  | 5.3 | 6.3   | 160     | 61  | 11.2 |
| 300 PPM | AIR3609 | 123 | 21  | 37  | 89  | 1.0  | 5.5 | 6.7   | 127     | 142 | 11.1 |
| 300 PPM | AIR3613 | 112 | 20  | 85  | 174 | 0.6  | 5.0 | 6.5   | 109     | 55  | 11.0 |
| 300 PPM | AIR3617 | 122 | 23  | 35  | 73  | 0.6  | 5.5 | 7.0   | 162     | 58  | 11.2 |
| 300 PPM | AIR3628 | 120 | 21  | 73  | 95  | 0.6  | 5.8 | 6.9   | 172     | 110 | 11.3 |
| 300 PPM | AIR3629 | 122 | 20  | 37  | 79  | 0.6  | 4.9 | 6.3   | 102     | 63  | 10.7 |
| 300 PPM | AIR3631 | 117 | 19  | 34  | 70  | 0.5  | 5.5 | 6.6   | 166     | 65  | 10.9 |
| 300 PPM | AIR3633 | 129 | 20  | 111 | 130 | 0.6  | 5.2 | 6.5   | 211     | 115 | 11.0 |
| 300 PPM | AIR3642 | 128 | 18  | 24  | 56  | 0.6  | 5.7 | 6.6   | 102     | 92  | 11.1 |
| 30 PPM  | CIR3646 | 146 | 19  | 35  | 64  | 0.6  | 5.0 | 6.5   | 94      | 50  | 11.0 |
| 30 PPM  | CIR3650 | 151 | 16  | 53  | 83  | 0.4  | 4.9 | 6.5   | 163     | 91  | 10.6 |
| 30 PPM  | CIR3656 | 149 | 15  | 131 | 212 | 0.5  | 4.8 | 6.5   | 188     | 64  | 10.6 |
| 30 PPM  | CIR3658 | 137 | 15  | 48  | 65  | 0.4  | 4.7 | 6.4   | 165     | 42  | 10.9 |
| 30 PPM  | CIR3660 | 138 | 15  | 25  | 49  | 0.4  | 4.9 | 6.7   | 79      | 43  | 10.6 |
| 30 PPM  | CIR3664 | 138 | 16  | 81  | 118 | 0.4  | 4.5 | 6.5   | 121     | 28  | 10.9 |
| 30 PPM  | CIR3665 | 133 | 16  | 87  | 148 | 0.4  | 4.9 | 6.8   | 185     | 40  | 11.2 |
| 30 PPM  | CIR3667 | 133 | 17  | 39  | 72  | 0.4  | 5.0 | 6.7   | 172     | 41  | 10.8 |
| 30 PPM  | CIR3679 | 144 | 16  | 39  | 77  | 0.6  | 5.8 | 7.6   | 97      | 157 | 11.4 |
| 30 PPM  | CIR3680 | 130 | 15  | 49  | 77  | 0.4  | 5.6 | 7.1   | 135     | 38  | 11.3 |
| 30 PPM  | CIR3682 | 122 | 16  | 75  | 139 | 0.4  | 4.4 | 6.9   | 209     | 58  | 11.0 |
| 30 PPM  | CIR3687 | 112 | 18  | 30  | 74  | 0.9  | 5.3 | 7.1   | 158     | 63  | 11.5 |
| 30 PPM  | CIR3689 | 128 | 13  | 20  | 34  | 0.4  | 5.2 | 6.6   | 156     | 51  | 10.7 |
| 30 PPM  | CIR3691 | 134 | 15  | 53  | 105 | 0.3  | 4.4 | 6.4   | 134     | 45  | 10.4 |
| 30 PPM  | CIR3694 | 129 | 17  | 28  | 59  | 0.5  | 5.1 | 6.7   | 148     | 63  | 10.7 |

TABLE 14

TWO YEAR ORAL (DIET) TOXICITY-ONCOGENICITY  
STUDY OF FLUOROCARBON FC-143 IN MALE RATS  
INDIVIDUAL SERUM CHEMISTRY VALUES

| MONTH=12 |         |     |     |     |     |       |     |       |         |     |      |
|----------|---------|-----|-----|-----|-----|-------|-----|-------|---------|-----|------|
| DOSE     | ANIMAL  | GLU | BUN | ALT | AST | TRILL | ALB | TPROT | ALKPHOS | CPK | CA   |
| 0 PPM    | AIR3516 | 147 | 18  | 22  | 56  | 0.9   | 3.6 | 6.9   | 139     | 72  | 11.0 |
| 0 PPM    | AIR3517 | 150 | 16  | 16  | 40  | 0.5   | 3.8 | 7.1   | 104     | 43  | 10.8 |
| 0 PPM    | AIR3520 | 124 | 16  | 15  | 43  | 0.4   | 3.8 | 6.6   | 49      | 42  | 10.5 |
| 0 PPM    | AIR3522 | 134 | 15  | 65  | 123 | 0.6   | 3.7 | 6.7   | 108     | 61  | 10.4 |
| 0 PPM    | AIR3527 | 155 | 18  | 37  | 67  | 0.6   | 3.9 | 6.8   | 102     | 80  | 10.8 |
| 0 PPM    | AIR3535 | 141 | 17  | 23  | 56  | 0.6   | 3.8 | 6.8   | 113     | 103 | 10.6 |
| 0 PPM    | AIR3543 | 183 | 17  | 33  | 85  | 1.0   | 3.9 | 7.0   | 115     | 88  | 10.7 |
| 0 PPM    | AIR3546 | 178 | 17  | 37  | 118 | 0.9   | 4.0 | 6.9   | 107     | 234 | 10.4 |
| 0 PPM    | AIR3550 | 185 | 18  | 32  | 79  | 1.0   | 3.9 | 6.9   | 225     | 89  | 10.5 |
| 0 PPM    | AIR3551 | 165 | 20  | 41  | 88  | 0.6   | 3.9 | 6.7   | 95      | 65  | 10.2 |
| 0 PPM    | AIR3554 | 214 | 18  | 87  | 212 | 0.6   | 3.5 | 6.3   | 88      | 105 | 10.3 |
| 0 PPM    | AIR3568 | 123 | 14  | 18  | 43  | 0.7   | 3.3 | 6.2   | 48      | 50  | 10.4 |
| 0 PPM    | AIR3570 | 125 | 9   | 23  | 54  | 0.5   | 3.6 | 6.5   | 72      | 39  | 9.8  |
| 0 PPM    | AIR3575 | 143 | 16  | 23  | 63  | 0.4   | 3.5 | 6.9   | 70      | 58  | 10.4 |
| 0 PPM    | AIR3580 | 148 | 17  | 31  | 59  | 0.7   | 3.9 | 7.1   | 152     | 66  | 10.9 |
| 300 PPM  | BIR3584 | 151 | 17  | 133 | 168 | 0.6   | 3.7 | 6.3   | 205     | 50  | 10.4 |
| 300 PPM  | BIR3588 | 130 | 17  | 35  | 69  | 0.7   | 4.7 | 6.9   | 145     | 108 | 10.8 |
| 300 PPM  | BIR3589 | 144 | 18  | 105 | 116 | 0.4   | 4.7 | 6.8   | 153     | 84  | 10.7 |
| 300 PPM  | BIR3592 | 127 | 16  | 30  | 59  | 0.5   | 4.1 | 6.5   | 118     | 67  | 10.5 |
| 300 PPM  | BIR3599 | 142 | 17  | 162 | 171 | 0.5   | 4.3 | 6.8   | 212     | 84  | 10.4 |
| 300 PPM  | BIR3604 | 153 | 15  | 185 | 202 | 0.6   | 3.9 | 6.9   | 208     | 67  | 10.5 |
| 300 PPM  | BIR3613 | 145 | 18  | 64  | 137 | 0.7   | 3.9 | 6.4   | 103     | 78  | 10.2 |
| 300 PPM  | BIR3617 | 127 | 16  | 208 | 236 | 0.7   | 4.4 | 7.2   | 235     | 107 | 10.6 |
| 300 PPM  | BIR3620 | 150 | 19  | 105 | 108 | 0.4   | 4.5 | 6.5   | 117     | 39  | 10.3 |
| 300 PPM  | BIR3622 | 131 | 22  | 76  | 126 | 0.7   | 4.7 | 7.3   | 190     | 56  | 10.9 |
| 300 PPM  | BIR3626 | 136 | 17  | 50  | 53  | 0.8   | 4.3 | 7.0   | 158     | 57  | 10.8 |
| 300 PPM  | BIR3627 | 135 | 17  | 46  | 66  | 0.7   | 4.2 | 7.1   | 101     | 40  | 10.7 |
| 300 PPM  | BIR3638 | 134 | 20  | 48  | 75  | 0.7   | 4.5 | 6.6   | 105     | 38  | 10.8 |
| 300 PPM  | BIR3642 | 142 | 17  | 84  | 82  | 0.7   | 4.7 | 7.1   | 139     | 54  | 10.9 |
| 300 PPM  | BIR3643 | 129 | 17  | 261 | 326 | 0.7   | 4.7 | 7.1   | 309     | 96  | 11.0 |
| 30 PPM   | CIR3649 | 139 | 16  | 39  | 76  | 0.8   | 4.1 | 7.0   | 89      | 91  | 10.9 |
| 30 PPM   | CIR3650 | 132 | 17  | 46  | 93  | 0.6   | 4.3 | 7.1   | 168     | 56  | 10.5 |
| 30 PPM   | CIR3652 | 128 | 16  | 54  | 75  | 0.6   | 3.7 | 7.1   | 177     | 78  | 10.8 |
| 30 PPM   | CIR3663 | 147 | 17  | 75  | 103 | 0.6   | 3.8 | 6.9   | 82      | 54  | 10.4 |
| 30 PPM   | CIR3668 | 123 | 15  | 241 | 436 | 0.6   | 3.9 | 7.0   | 215     | 66  | 10.3 |
| 30 PPM   | CIR3670 | 139 | 17  | 94  | 127 | 0.8   | 3.8 | 6.8   | 154     | 41  | 10.6 |
| 30 PPM   | CIR3672 | 120 | 16  | 105 | 158 | 0.7   | 3.8 | 6.7   | 84      | 110 | 10.4 |
| 30 PPM   | CIR3676 | 130 | 16  | 37  | 64  | 0.9   | 3.6 | 7.4   | 128     | 66  | 11.3 |
| 30 PPM   | CIR3679 | 137 | 16  | 52  | 94  | 0.6   | 4.6 | 7.6   | 93      | 73  | 10.6 |
| 30 PPM   | CIR3680 | 132 | 17  | 159 | 193 | 0.6   | 4.1 | 6.9   | 145     | 49  | 10.6 |
| 30 PPM   | CIR3681 | 129 | 18  | 62  | 121 | 1.4   | 4.0 | 7.2   | 124     | 98  | 10.7 |
| 30 PPM   | CIR3683 | 141 | 16  | 25  | 65  | 1.1   | 4.0 | 6.9   | 67      | 67  | 10.7 |
| 30 PPM   | CIR3685 | 122 | 17  | 53  | 73  | 0.7   | 4.0 | 6.5   | 159     | 55  | 10.5 |
| 30 PPM   | CIR3691 | 132 | 13  | 43  | 126 | 0.7   | 3.7 | 6.4   | 131     | 59  | 10.1 |
| 30 PPM   | CIR3694 | 115 | 16  | 39  | 62  | 0.7   | 3.7 | 6.5   | 109     | 51  | 10.3 |

TABLE 14

TWO YEAR ORAL (DIET) TOXICITY-ONCOGENICITY  
STUDY OF FLUOROCARBON FC-143 IN MALE RATS  
INDIVIDUAL SERUM CHEMISTRY VALUES

| DOSE    | ANIMAL  | GLU | HUN | ALT | AST | TRILL | ALB | TPROT | ALKPHOS | CPK | CA   |
|---------|---------|-----|-----|-----|-----|-------|-----|-------|---------|-----|------|
| 0 PPM   | AIR3519 | 151 | 19  | 41  | 94  | 0.7   | 3.2 | 6.8   | 128     | 37  | 10.6 |
| 0 PPM   | AIR3521 | 125 | 29  | 59  | 317 | 0.2   | 2.1 | 5.5   | 164     | 79  | 10.5 |
| 0 PPM   | AIR3528 | 148 | 19  | 24  | 55  | 0.6   | 3.2 | 7.0   | 57      | 39  | 11.9 |
| 0 PPM   | AIR3531 | 143 | 18  | 42  | 98  | 1.0   | 3.4 | 7.4   | 56      | 34  | 12.0 |
| 0 PPM   | AIR3538 | 129 | 15  | 38  | 93  | 0.7   | 3.3 | 6.8   | 113     | 96  | 10.9 |
| 0 PPM   | AIR3539 | 132 | 16  | 24  | 54  | 0.9   | 3.7 | 8.1   | 82      | 35  | 11.8 |
| 0 PPM   | AIR3542 | 107 | 18  | 30  | 61  | 1.1   | 3.4 | 7.2   | 41      | 49  | 11.5 |
| 0 PPM   | AIR3552 | 117 | 21  | 23  | 54  | 1.1   | 3.3 | 7.4   | 55      | 41  | 12.0 |
| 0 PPM   | AIR3553 | 127 | 17  | 44  | 74  | 0.9   | 3.4 | 7.5   | 65      | 83  | 11.9 |
| 0 PPM   | AIR3555 | 140 | 17  | 35  | 84  | 1.1   | 3.3 | 7.3   | 124     | 108 | 11.1 |
| 0 PPM   | AIR3561 | 135 | 17  | 26  | 61  | 0.9   | 3.4 | 7.6   | 90      | 59  | 10.2 |
| 0 PPM   | AIR3565 | 126 | 15  | 23  | 62  | 0.9   | 3.3 | 6.6   | 87      | 41  | 9.0  |
| 0 PPM   | AIR3567 | 134 | 17  | 34  | 133 | 0.9   | 3.2 | 7.7   | 66      | 77  | 10.9 |
| 0 PPM   | AIR3574 | 91  | 17  | 24  | 79  | 0.2   | 2.6 | 6.7   | 82      | 87  | 10.1 |
| 0 PPM   | AIR3577 | 46  | 17  | 45  | 168 | 1.6   | 3.4 | 7.3   | 68      | 334 | 12.4 |
| 300 PPM | AIR3583 | 135 | 19  | 31  | 42  | 0.4   | 3.8 | 5.8   | 148     | 59  | 11.3 |
| 300 PPM | AIR3593 | 124 | 17  | 85  | 109 | 0.9   | 3.8 | 7.5   | 214     | 45  | 10.9 |
| 300 PPM | AIR3596 | 137 | 19  | 39  | 68  | 1.0   | 3.4 | 7.4   | 113     | 67  | 11.5 |
| 300 PPM | AIR3600 | 140 | 19  | 92  | 139 | 0.4   | 4.0 | 6.9   | 142     | 54  | 11.3 |
| 300 PPM | AIR3601 | 134 | 14  | 96  | 132 | 0.6   | 3.8 | 7.0   | 213     | 83  | 11.5 |
| 300 PPM | AIR3605 | 136 | 20  | 51  | 68  | 0.6   | 3.9 | 7.0   | 172     | 57  | 10.3 |
| 300 PPM | AIR3608 | 124 | 14  | 124 | 163 | 0.4   | 3.2 | 6.5   | 177     | 64  | 7.8  |
| 300 PPM | AIR3610 | 150 | 19  | 75  | 117 | 0.7   | 3.9 | 7.0   | 202     | 55  | 11.7 |
| 300 PPM | AIR3612 | 148 | 19  | 118 | 205 | 0.8   | 3.4 | 6.6   | 168     | 212 | 11.7 |
| 300 PPM | AIR3615 | 117 | 17  | 63  | 101 | 0.8   | 4.1 | 7.4   | 129     | 104 | 11.4 |
| 300 PPM | AIR3624 | 118 | 18  | 42  | 95  | 0.4   | 2.9 | 7.0   | 106     | 152 | 9.9  |
| 300 PPM | AIR3632 | 168 | 19  | 91  | 142 | 1.1   | 4.0 | 7.3   | 233     | 53  | 12.0 |
| 300 PPM | AIR3641 | 145 | 16  | 47  | 78  | 0.9   | 3.6 | 6.9   | 156     | 52  | 9.9  |
| 300 PPM | AIR3644 | 173 | 18  | 258 | 295 | 1.5   | 3.7 | 7.0   | 413     | 109 | 9.8  |
| 300 PPM | AIR3645 | 136 | 16  | 53  | 95  | 0.7   | 4.0 | 6.8   | 180     | 71  | 11.1 |
| 30 PPM  | CIR3647 | 116 | 12  | 40  | 117 | 0.3   | 2.4 | 7.8   | 105     | 73  | 10.4 |
| 30 PPM  | CIR3651 | 142 | 13  | 37  | 60  | 0.6   | 3.4 | 7.0   | 138     | 46  | 9.3  |
| 30 PPM  | CIR3654 | 134 | 16  | 43  | 100 | 0.8   | 3.2 | 7.1   | 92      | 86  | 10.7 |
| 30 PPM  | CIR3658 | 156 | 16  | 71  | 104 | 0.6   | 3.3 | 6.7   | 134     | 71  | 9.8  |
| 30 PPM  | CIR3662 | 31  | 39  | 53  | 161 | 0.1   | 2.9 | 8.3   | 100     | 327 | 12.5 |
| 30 PPM  | CIR3663 | 121 | 18  | 58  | 120 | 0.7   | 3.1 | 7.1   | 69      | 186 | 10.8 |
| 30 PPM  | CIR3664 | 125 | 16  | 97  | 153 | 0.8   | 3.4 | 6.9   | 133     | 71  | 9.8  |
| 30 PPM  | CIR3667 | 134 | 15  | 82  | 156 | 0.8   | 3.4 | 7.2   | 124     | 79  | 10.6 |
| 30 PPM  | CIR3668 | 128 | 15  | 160 | 289 | 0.7   | 3.5 | 7.1   | 186     | 115 | 11.0 |
| 30 PPM  | CIR3676 | 110 | 17  | 34  | 60  | 1.1   | 3.0 | 7.6   | 105     | 80  | 9.8  |
| 30 PPM  | CIR3679 | 123 | 13  | 41  | 89  | 1.0   | 3.5 | 7.5   | 68      | 110 | 10.5 |
| 30 PPM  | CIR3681 | 136 | 12  | 45  | 87  | 0.7   | 3.2 | 7.2   | 82      | 89  | 9.8  |
| 30 PPM  | CIR3685 | 113 | 16  | 34  | 64  | 0.8   | 3.2 | 6.9   | 95      | 108 | .    |
| 30 PPM  | CIR3689 | 126 | 15  | 62  | 95  | 0.7   | 3.4 | 6.7   | 156     | 56  | 10.5 |
| 30 PPM  | CIR3695 | 114 | 14  | 39  | 87  | 0.5   | 3.4 | 6.7   | 101     | 100 | 9.6  |

TABLE 14

TWO YEAR ORAL (DIET) TOXICITY-ONCOGENICITY  
STUDY OF FLUOROCARBON FC-143 IN MALE RATS  
INDIVIDUAL SERUM CHEMISTRY VALUES

| DOSE    | ANIMAL  | GLU | RUN | ALT | AST | THILI | ALB | TPROT | ALPKPHOS | CPK | CA   |
|---------|---------|-----|-----|-----|-----|-------|-----|-------|----------|-----|------|
| 0 PPM   | A1R3518 | 130 | 14  | 20  | 52  | 0.2   | 2.6 | 6.6   | 118      | 87  | 10.5 |
| 0 PPM   | A1R3524 | 138 | 23  | 29  | 42  | 0.6   | 2.7 | 7.1   | 74       | 51  | 11.5 |
| 0 PPM   | A1R3528 | 141 | 15  | 28  | 47  | 0.2   | 3.0 | 6.8   | 39       | 63  | 10.8 |
| 0 PPM   | A1R3531 | 109 | 14  | 36  | 60  | 0.3   | 3.1 | 7.1   | 55       | 72  | 11.0 |
| 0 PPM   | A1R3534 | 67  | 20  | 21  | 142 | 0.3   | 2.7 | 5.9   | 61       | 190 | 11.1 |
| 0 PPM   | A1R3538 | 147 | 12  | 38  | 69  | 0.2   | 2.8 | 6.4   | 66       | 69  | 10.5 |
| 0 PPM   | A1R3542 | 96  | 15  | 35  | 50  | 0.6   | 3.0 | 7.0   | 37       | 54  | 11.6 |
| 0 PPM   | A1R3548 | 122 | 15  | 32  | 48  | 0.4   | 2.9 | 7.0   | 97       | 108 | 10.9 |
| 0 PPM   | A1R3554 | 158 | 17  | 43  | 74  | 0.2   | 3.0 | 6.6   | 29       | 73  | 11.0 |
| 0 PPM   | A1R3557 | 117 | 16  | 42  | 66  | 0.6   | 3.0 | 7.3   | 109      | 90  | 11.2 |
| 0 PPM   | A1R3562 | 134 | 17  | 33  | 53  | 0.1   | 2.4 | 6.8   | 68       | 76  | 10.1 |
| 0 PPM   | A1R3564 | 116 | 19  | 27  | 50  | 0.5   | 2.5 | 6.9   | 77       | 187 | 10.5 |
| 0 PPM   | A1R3569 | 143 | 22  | 29  | 74  | 1.0   | 2.7 | 7.4   | 58       | 299 | 10.3 |
| 0 PPM   | A1R3573 | 105 | 14  | 29  | 50  | 0.7   | 3.1 | 7.7   | 86       | 101 | 11.3 |
| 0 PPM   | A1R3578 | 115 | 15  | 53  | 97  | 0.4   | 2.6 | 7.3   | 77       | 146 | 10.9 |
| 0 PPM   | A1R3581 | 120 | 15  | 41  | 57  | 0.2   | 3.4 | 6.6   | 97       | 82  | 10.8 |
| 300 PPM | A1R3585 | 155 | 17  | 111 | 133 | 0.2   | 3.2 | 6.8   | 122      | 57  | 10.5 |
| 300 PPM | A1R3591 | 147 | 17  | 88  | 130 | 0.3   | 2.9 | 7.9   | 132      | 79  | 10.5 |
| 300 PPM | A1R3594 | 159 | 16  | 75  | 109 | 0.3   | 3.4 | 7.1   | 162      | 176 | 10.8 |
| 300 PPM | A1R3597 | 143 | 15  | 64  | 117 | 0.2   | 2.9 | 6.4   | 74       | 95  | 10.6 |
| 300 PPM | A1R3601 | 146 | 16  | 47  | 68  | 0.2   | 3.0 | 6.2   | 127      | 85  | 10.7 |
| 300 PPM | A1R3605 | 157 | 14  | 43  | 59  | 0.1   | 3.3 | 7.4   | 99       | 83  | 10.5 |
| 300 PPM | A1R3608 | 136 | 14  | 41  | 75  | 0.2   | 2.8 | 6.5   | 108      | 86  | 10.7 |
| 300 PPM | A1R3611 | 128 | 19  | 41  | 56  | 0.3   | 3.5 | 6.8   | 133      | 57  | 11.2 |
| 300 PPM | A1R3618 | 169 | 17  | 82  | 152 | 0.2   | 3.1 | 6.9   | 105      | 54  | 10.8 |
| 300 PPM | A1R3623 | 142 | 14  | 60  | 95  | 0.3   | 3.6 | 7.3   | 107      | 162 | 10.9 |
| 300 PPM | A1R3630 | 137 | 17  | 61  | 101 | 0.3   | 3.4 | 7.8   | 111      | 114 | 11.3 |
| 300 PPM | A1R3633 | 163 | 34  | 62  | 110 | 0.2   | 2.7 | 6.7   | 121      | 51  | 11.0 |
| 300 PPM | A1R3636 | 153 | 13  | 52  | 91  | 0.2   | 3.0 | 6.4   | 75       | 86  | 10.6 |
| 300 PPM | A1R3641 | 152 | 20  | 59  | 83  | 0.3   | 3.0 | 6.9   | 129      | 57  | 11.0 |
| 30 PPM  | A1R3646 | 144 | 17  | 47  | 70  | 0.4   | 3.1 | 6.6   | 62       | 64  | 11.4 |
| 30 PPM  | A1R3650 | 147 | 14  | 35  | 51  | 0.3   | 2.8 | 7.1   | 100      | 71  | 10.4 |
| 30 PPM  | A1R3654 | 133 | 13  | 64  | 89  | 0.3   | 2.8 | 6.7   | 102      | 74  | 10.2 |
| 30 PPM  | A1R3658 | 123 | 15  | 43  | 66  | 0.3   | 3.2 | 6.8   | 102      | 47  | 10.8 |
| 30 PPM  | A1R3663 | 115 | 14  | 27  | 43  | 0.6   | 2.6 | 6.8   | 47       | 51  | 10.5 |
| 30 PPM  | A1R3667 | 107 | 15  | 45  | 72  | 0.4   | 3.0 | 6.8   | 75       | 76  | 10.6 |
| 30 PPM  | A1R3670 | 110 | 21  | 46  | 105 | 0.3   | 2.3 | 6.4   | 75       | 44  | 10.6 |
| 30 PPM  | A1R3672 | 107 | 10  | 29  | 44  | 0.2   | 2.6 | 7.7   | 20       | 47  | 10.1 |
| 30 PPM  | A1R3676 | 125 | 39  | 33  | 52  | 0.6   | 2.2 | 6.6   | 91       | 77  | 10.7 |
| 30 PPM  | A1R3679 | 122 | 16  | 41  | 59  | 0.4   | 2.9 | 7.1   | 64       | 57  | 10.5 |
| 30 PPM  | A1R3682 | 116 | 18  | 39  | 64  | 0.3   | 3.0 | 7.0   | 104      | 105 | 10.7 |
| 30 PPM  | A1R3684 | 132 | 12  | 60  | 92  | 0.4   | 3.1 | 6.5   | 77       | 86  | 10.4 |
| 30 PPM  | A1R3689 | 126 | 15  | 43  | 64  | 0.2   | 2.9 | 6.3   | 118      | 114 | 10.2 |
| 30 PPM  | A1R3691 | 99  | 15  | 41  | 74  | 0.3   | 3.0 | 6.3   | 65       | 73  | 10.4 |
| 30 PPM  | A1R3694 | 113 | 15  | 45  | 75  | 0.4   | 3.1 | 7.3   | 88       | 80  | 10.6 |

TABLE 15

TWO YEAR ORAL (DIET) TOXICITY-UNCOGENICITY STUDY OF FLUOROCARBON FC-143 IN RATS  
 MEAN BLOOD CHEMISTRY VALUES WITH STANDARD DEVIATIONS

|          |    | GLUCOSE<br>(MG/DL) | BLOOD UREA NITROGEN<br>(MG/DL) | ALT<br>(IU/L) | AST<br>(IU/L) |
|----------|----|--------------------|--------------------------------|---------------|---------------|
|          | N  | MEAN               | S.DEV.                         | MEAN          | S.DEV.        |
| FEMALE   |    |                    |                                |               |               |
| -----    |    |                    |                                |               |               |
| MONTH 3  |    |                    |                                |               |               |
| -----    |    |                    |                                |               |               |
| 0 PPM    | 15 | 138.9              | 9.79                           | 19.7          | 1.62          |
| 300 PPM  | 15 | 132.9              | 10.96                          | 24.5*         | 3.91          |
| 30 PPM   | 15 | 132.1              | 12.06                          | 18.5          | 2.07          |
| -----    |    |                    |                                |               |               |
| MONTH 6  |    |                    |                                |               |               |
| -----    |    |                    |                                |               |               |
| 0 PPM    | 15 | 154.8              | 14.98                          | 21.6          | 3.22          |
| 300 PPM  | 15 | 133.6*             | 9.61                           | 20.7          | 2.96          |
| 30 PPM   | 15 | 128.6*             | 13.41                          | 19.1*         | 2.00          |
| -----    |    |                    |                                |               |               |
| MONTH 12 |    |                    |                                |               |               |
| -----    |    |                    |                                |               |               |
| 0 PPM    | 15 | 134.9              | 10.51                          | 19.8          | 2.14          |
| 300 PPM  | 15 | 135.3              | 8.18                           | 21.2          | 5.21          |
| 30 PPM   | 15 | 135.4              | 10.35                          | 19.9          | 2.83          |
| -----    |    |                    |                                |               |               |
| MONTH 18 |    |                    |                                |               |               |
| -----    |    |                    |                                |               |               |
| 0 PPM    | 15 | 123.5              | 15.51                          | 18.1          | 2.49          |
| 300 PPM  | 15 | 120.0              | 9.39                           | 18.7          | 3.37          |
| 30 PPM   | 15 | 122.2              | 15.39                          | 20.1          | 4.02          |
| -----    |    |                    |                                |               |               |
| MONTH 24 |    |                    |                                |               |               |
| -----    |    |                    |                                |               |               |
| 0 PPM    | 15 | 122.2              | 13.75                          | 17.9          | 4.10          |
| 300 PPM  | 15 | 115.3              | 18.72                          | 16.2          | 3.76          |
| 30 PPM   | 15 | 119.4              | 15.23                          | 15.3          | 3.35          |

\* : P <= .05, TWO TAILED DUNNETT T ON RAW DATA.  
 \* : P <= .05, TWO TAILED DUNNETT T ON RANKED DATA.

TABLE 15

TWO YEAR ORAL (DIET) TOXICITY-ONCOGENICITY STUDY OF FLUOROCARBON FC-143 IN RATS  
MEAN BLOOD CHEMISTRY VALUES (TBILI, ALB, TPROT, ALPHOS, CPK, CA) WITH STANDARD DEVIATIONS

|          | N  | TOTAL BILIRUBIN (MG/DL) |       | ALBUMIN (GM/DL) |       | TOTAL PROTEIN (GM/DL) |       | ALKALINE PHOSPHATASE (IU/L) |       | CREATINE PHOSPHOKINASE (IU/L) |       | CALCIUM (MG/DL) |       |
|----------|----|-------------------------|-------|-----------------|-------|-----------------------|-------|-----------------------------|-------|-------------------------------|-------|-----------------|-------|
|          |    | MEAN                    | S.DEV | MEAN            | S.DEV | MEAN                  | S.DEV | MEAN                        | S.DEV | MEAN                          | S.DEV | MEAN            | S.DEV |
| FEMALE   |    |                         |       |                 |       |                       |       |                             |       |                               |       |                 |       |
| MONTH 3  |    |                         |       |                 |       |                       |       |                             |       |                               |       |                 |       |
| 0 PPM    | 15 | 0.6                     | 0.18  | 5.3             | 0.45  | 7.2                   | 0.41  | 83.7                        | 32.29 | 93.9                          | 51.44 | 11.0            | 0.55  |
| 300 PPM  | 15 | 0.5*                    | 0.11  | 5.0             | 0.52  | 6.9*                  | 0.41  | 89.1                        | 25.36 | 87.7                          | 37.12 | 11.1            | 0.52  |
| 30 PPM   | 15 | 0.6                     | 0.09  | 5.0             | 0.41  | 7.0                   | 0.32  | 69.9                        | 25.98 | 86.7                          | 21.06 | 10.5*           | 0.69  |
| MONTH 6  |    |                         |       |                 |       |                       |       |                             |       |                               |       |                 |       |
| 0 PPM    | 15 | 0.6                     | 0.14  | 5.9             | 0.65  | 7.4                   | 0.64  | 77.8                        | 30.58 | 56.5                          | 14.79 | 11.7            | 0.53  |
| 300 PPM  | 15 | 0.5                     | 0.09  | 5.6             | 0.46  | 7.4                   | 0.34  | 82.1                        | 22.06 | 66.7                          | 21.17 | 11.7            | 0.43  |
| 30 PPM   | 15 | 0.6                     | 0.10  | 5.5             | 0.66  | 7.3                   | 0.57  | 80.9                        | 25.76 | 89.2                          | 45.03 | 11.8            | 0.45  |
| MONTH 12 |    |                         |       |                 |       |                       |       |                             |       |                               |       |                 |       |
| 0 PPM    | 15 | 0.8                     | 0.38  | 4.3             | 0.26  | 7.3                   | 0.52  | 76.5                        | 30.01 | 54.6                          | 20.02 | 11.2            | 0.60  |
| 300 PPM  | 15 | 0.6                     | 0.21  | 4.2             | 0.32  | 7.1                   | 0.46  | 91.1                        | 42.86 | 41.3                          | 11.52 | 11.1            | 0.33  |
| 30 PPM   | 15 | 0.8                     | 0.21  | 4.4             | 0.26  | 7.5                   | 0.46  | 89.4                        | 29.87 | 78.7                          | 78.42 | 11.0            | 0.43  |
| MONTH 1A |    |                         |       |                 |       |                       |       |                             |       |                               |       |                 |       |
| 0 PPM    | 15 | 0.6                     | 0.26  | 3.9             | 0.23  | 7.9                   | 0.57  | 65.5                        | 32.18 | 37.3                          | 9.81  | 11.4            | 0.53  |
| 300 PPM  | 15 | 0.6                     | 0.23  | 3.9             | 0.28  | 7.8                   | 0.47  | 76.1                        | 28.36 | 35.1                          | 9.64  | 11.1            | 0.43  |
| 30 PPM   | 15 | 0.6                     | 0.24  | 3.8             | 0.26  | 8.3                   | 0.73  | 39.7*                       | 13.47 | 27.6                          | 19.18 | 10.6*           | 1.01  |
| MONTH 24 |    |                         |       |                 |       |                       |       |                             |       |                               |       |                 |       |
| 0 PPM    | 15 | 0.6                     | 0.31  | 3.4             | 0.21  | 7.6                   | 0.69  | 68.7                        | 33.39 | 68.4                          | 32.23 | 11.5            | 0.64  |
| 300 PPM  | 15 | 0.4                     | 0.17  | 3.4             | 0.28  | 7.4                   | 0.56  | 63.1                        | 19.69 | 67.7                          | 27.06 | 11.2            | 0.46  |
| 30 PPM   | 15 | 0.5                     | 0.21  | 3.3             | 0.38  | 7.2                   | 0.75  | 56.7                        | 19.98 | 71.3                          | 35.73 | 11.3            | 0.45  |

\* : P &lt;= .05, TWO TAILED DUNNETT T ON RAW DATA.

# : P &lt;= .05, TWO TAILED DUNNETT T ON RANKED DATA.

TABLE 15

TWO YEAR ORAL (DIET) TOXICITY-ONCOGENICITY  
STUDY OF FLUOROCARBON FC-143 IN FEMALE RATS  
INDIVIDUAL SERUM CHEMISTRY VALUES

| DOSE    | ANIMAL  | GLU | BUN | ALT | AST | THILI | ALB | TPROT | ALKPHOS | CPK | CA   |
|---------|---------|-----|-----|-----|-----|-------|-----|-------|---------|-----|------|
|         |         |     |     |     |     |       |     |       |         |     |      |
| 0 PPM   | NIR4576 | 143 | 22  | 20  | 47  | 0.5   | 4.8 | 6.8   | 120     | 71  | 10.1 |
| 0 PPM   | NIR4578 | 150 | 22  | 18  | 49  | 0.8   | 5.1 | 7.0   | 61      | 95  | 10.7 |
| 0 PPM   | NIR4582 | 129 | 20  | 17  | 55  | 0.8   | 5.9 | 7.8   | 152     | 150 | 11.7 |
| 0 PPM   | NIR4583 | 147 | 18  | 19  | 41  | 0.5   | 4.9 | 7.1   | 61      | 58  | 10.6 |
| 0 PPM   | NIR4584 | 129 | 19  | 29  | 66  | 0.5   | 4.8 | 7.1   | 95      | 234 | 11.2 |
| 0 PPM   | NIR4592 | 134 | 17  | 25  | 62  | 0.6   | 5.2 | 7.0   | 128     | 168 | 11.3 |
| 0 PPM   | NIR4610 | 143 | 21  | 32  | 57  | 0.7   | 5.9 | 7.8   | 68      | 60  | 12.2 |
| 0 PPM   | NIR4612 | 147 | 20  | 19  | 39  | 0.5   | 4.8 | 6.6   | 89      | 58  | 10.8 |
| 0 PPM   | NIR4613 | 129 | 19  | 19  | 41  | 0.5   | 4.9 | 7.0   | 61      | 50  | 10.6 |
| 0 PPM   | NIR4619 | 139 | 18  | 22  | 51  | 1.0   | 5.3 | 6.9   | 65      | 94  | 11.2 |
| 0 PPM   | NIR4621 | 131 | 19  | 23  | 49  | 0.5   | 4.9 | 7.1   | 67      | 80  | 10.7 |
| 0 PPM   | NIR4626 | 163 | 20  | 28  | 48  | 0.4   | 5.3 | 7.1   | 120     | 58  | 10.6 |
| 0 PPM   | NIR4627 | 133 | 18  | 16  | 43  | 0.5   | 5.7 | 7.0   | 40      | 66  | 10.9 |
| 0 PPM   | NIR4633 | 134 | 22  | 25  | 32  | 0.8   | 5.4 | 8.0   | 70      | 90  | 11.4 |
| 0 PPM   | NIR4640 | 133 | 21  | 27  | 40  | 0.9   | 5.9 | 7.6   | 58      | 76  | 11.7 |
| 300 PPM | NIR4645 | 126 | 28  | 29  | 37  | 0.4   | 4.7 | 6.2   | 51      | 72  | 10.1 |
| 300 PPM | NIR4654 | 129 | 19  | 35  | 47  | 0.5   | 5.3 | 7.2   | 65      | 63  | 10.8 |
| 300 PPM | NIR4660 | 119 | 29  | 32  | 45  | 0.5   | 3.6 | 6.2   | 73      | 57  | 10.5 |
| 300 PPM | NIR4664 | 122 | 26  | 25  | 59  | 0.4   | 5.1 | 7.1   | 125     | 90  | 10.9 |
| 300 PPM | NIR4668 | 130 | 20  | 32  | 70  | 0.6   | 5.5 | 7.3   | 54      | 136 | 11.2 |
| 300 PPM | NIR4669 | 138 | 27  | 20  | 39  | 0.5   | 5.1 | 7.0   | 86      | 84  | 10.6 |
| 300 PPM | NIR4672 | 136 | 19  | 21  | 40  | 0.5   | 5.3 | 7.1   | 118     | 46  | 11.3 |
| 300 PPM | NIR4673 | 129 | 26  | 38  | 77  | 0.3   | 5.0 | 6.8   | 106     | 123 | 11.1 |
| 300 PPM | NIR4674 | 124 | 25  | 31  | 72  | 0.4   | 5.0 | 7.1   | 111     | 186 | 11.9 |
| 300 PPM | NIR4679 | 154 | 23  | 26  | 49  | 0.3   | 5.0 | 7.0   | 82      | 90  | 11.5 |
| 300 PPM | NIR4680 | 139 | 25  | 15  | 33  | 0.4   | 4.8 | 6.8   | 55      | 56  | 11.6 |
| 300 PPM | NIR4693 | 145 | 28  | 19  | 49  | 0.6   | 5.1 | 6.8   | 95      | 100 | 10.8 |
| 300 PPM | NIR4698 | 130 | 31  | 20  | 56  | 0.5   | 5.0 | 6.7   | 124     | 68  | 11.8 |
| 300 PPM | NIR4700 | 152 | 20  | 21  | 43  | 0.7   | 6.1 | 7.4   | 93      | 57  | 11.6 |
| 300 PPM | NIR4701 | 120 | 21  | 29  | 58  | 0.5   | 4.7 | 6.1   | 99      | 88  | 11.4 |
| 30 PPM  | NIR4708 | 148 | 20  | 19  | 44  | 0.6   | 5.3 | 6.6   | 75      | 74  | 11.8 |
| 30 PPM  | PIR4710 | 121 | 19  | 19  | 32  | 0.5   | 4.9 | 7.0   | 104     | 65  | 9.8  |
| 30 PPM  | PIR4720 | 135 | 18  | 26  | 50  | 0.7   | 5.7 | 7.5   | 45      | 99  | 9.6  |
| 30 PPM  | PIR4721 | 142 | 18  | 22  | 47  | 0.6   | 4.9 | 7.0   | 97      | 89  | 10.7 |
| 30 PPM  | PIR4730 | 140 | 16  | 18  | 39  | 0.6   | 5.1 | 7.3   | 53      | 63  | 10.9 |
| 30 PPM  | PIR4731 | 145 | 21  | 22  | 40  | 0.7   | 4.4 | 6.7   | 99      | 84  | 10.8 |
| 30 PPM  | PIR4734 | 137 | 18  | 21  | 50  | 0.7   | 5.5 | 7.4   | 61      | 114 | 11.5 |
| 30 PPM  | PIR4735 | 117 | 21  | 14  | 42  | 0.6   | 5.2 | 7.0   | 47      | 109 | 11.1 |
| 30 PPM  | PIR4736 | 106 | 22  | 20  | 53  | 0.6   | 5.3 | 7.1   | 33      | 111 | 11.0 |
| 30 PPM  | PIR4737 | 125 | 16  | 15  | 50  | 0.6   | 4.6 | 6.9   | 33      | 69  | 9.8  |
| 30 PPM  | PIR4738 | 141 | 16  | 17  | 45  | 0.6   | 4.6 | 6.7   | 55      | 83  | 9.9  |
| 30 PPM  | PIR4744 | 118 | 18  | 23  | 46  | 0.6   | 5.4 | 7.3   | 99      | 48  | 10.6 |
| 30 PPM  | PIR4749 | 133 | 21  | 16  | 38  | 0.6   | 4.9 | 6.9   | 58      | 58  | 9.8  |
| 30 PPM  | PIR4752 | 140 | 18  | 20  | 46  | 0.8   | 5.2 | 7.4   | 91      | 121 | 10.7 |
| 30 PPM  | PIR4753 | 133 | 16  | 19  | 51  | 0.4   | 4.3 | 6.4   | 98      | 63  | 9.9  |

TABLE 15

TWO YEAR ORAL (DIET) TOXICITY-ONCOGENICITY  
STUDY OF FLUOROCARBON FC-143 IN FEMALE RATS  
INDIVIDUAL SERUM CHEMISTRY VALUES

| MONTH=6 |         |     |     |     |     |       |     |       |         |     |      |
|---------|---------|-----|-----|-----|-----|-------|-----|-------|---------|-----|------|
| DOSE    | ANIMAL  | GLU | BUN | ALT | AST | THILI | ALB | TPROT | ALKPHOS | CPK | CA   |
| 0 PPM   | N1R4582 | 178 | 21  | 21  | 37  | 0.9   | 7.2 | 7.7   | 137     | 71  | 12.9 |
| 0 PPM   | N1R4584 | 172 | 22  | 55  | 114 | 0.6   | 5.8 | 8.9   | 125     | 55  | 11.2 |
| 0 PPM   | N1R4586 | 159 | 23  | 88  | 183 | 0.5   | 6.5 | 7.9   | 85      | 41  | 12.2 |
| 0 PPM   | N1R4590 | 183 | 22  | 26  | 48  | 0.6   | 5.6 | 7.2   | 101     | 69  | 11.8 |
| 0 PPM   | N1R4598 | 141 | 20  | 20  | 48  | 0.6   | 5.8 | 7.2   | 51      | 33  | 11.6 |
| 0 PPM   | N1R4603 | 161 | 22  | 32  | 71  | 0.4   | 6.1 | 7.5   | 39      | 85  | 11.6 |
| 0 PPM   | N1R4607 | 147 | 23  | 35  | 96  | 0.5   | 5.5 | 7.0   | 61      | 49  | 11.4 |
| 0 PPM   | N1R4616 | 150 | 18  | 25  | 56  | 0.4   | 5.2 | 6.9   | 55      | 52  | 11.0 |
| 0 PPM   | N1R4619 | 140 | 18  | 26  | 57  | 0.6   | 6.0 | 7.2   | 57      | 66  | 11.8 |
| 0 PPM   | N1R4621 | 154 | 20  | 26  | 47  | 0.7   | 6.9 | 8.1   | 51      | 73  | 12.2 |
| 0 PPM   | N1R4622 | 160 | 18  | 34  | 79  | 0.5   | 5.6 | 7.2   | 108     | 50  | 11.0 |
| 0 PPM   | N1R4629 | 130 | 20  | 33  | 58  | 0.4   | 4.9 | 6.3   | 98      | 55  | 11.4 |
| 0 PPM   | N1R4631 | 137 | 22  | 25  | 55  | 0.4   | 5.2 | 6.7   | 90      | 32  | 11.3 |
| 0 PPM   | N1R4632 | 154 | 24  | 27  | 30  | 0.7   | 6.4 | 8.0   | 50      | 59  | 12.3 |
| 0 PPM   | N1R4639 | 156 | 31  | 30  | 62  | 0.6   | 6.4 | 7.6   | 59      | 52  | 12.3 |
| 0 PPM   | N1R4650 | 133 | 18  | 76  | 122 | 0.6   | 6.2 | 7.4   | 111     | 63  | 11.7 |
| 300 PPM | N1R4653 | 128 | 19  | 30  | 50  | 0.5   | 5.2 | 7.6   | 76      | 60  | 11.5 |
| 300 PPM | N1R4657 | 123 | 19  | 75  | 115 | 0.5   | 5.2 | 7.5   | 78      | 126 | 11.4 |
| 300 PPM | N1R4660 | 136 | 25  | 22  | 61  | 0.6   | 5.1 | 7.3   | 88      | 64  | 11.0 |
| 300 PPM | N1R4663 | 125 | 17  | 16  | 43  | 0.4   | 4.9 | 7.0   | 41      | 80  | 12.3 |
| 300 PPM | N1R4670 | 151 | 19  | 14  | 30  | 0.6   | 6.0 | 7.9   | 97      | 54  | 11.9 |
| 300 PPM | N1R4673 | 125 | 24  | 66  | 100 | 0.4   | 5.4 | 7.5   | 81      | 51  | 11.9 |
| 300 PPM | N1R4681 | 125 | 21  | 34  | 40  | 0.5   | 5.4 | 7.7   | 56      | 51  | 12.1 |
| 300 PPM | N1R4682 | 118 | 22  | 26  | 44  | 0.5   | 5.4 | 7.7   | 57      | 53  | 11.6 |
| 300 PPM | N1R4692 | 142 | 22  | 23  | 42  | 0.4   | 5.1 | 7.4   | 97      | 40  | 11.5 |
| 300 PPM | N1R4693 | 137 | 24  | 23  | 41  | 0.6   | 5.1 | 7.0   | 73      | 63  | 11.3 |
| 300 PPM | N1R4694 | 144 | 17  | 23  | 38  | 0.6   | 5.2 | 6.8   | 100     | 89  | 11.4 |
| 300 PPM | N1R4698 | 135 | 26  | 29  | 53  | 0.6   | 5.6 | 7.3   | 116     | 58  | 11.5 |
| 300 PPM | N1R4699 | 147 | 18  | 27  | 45  | 0.5   | 5.5 | 7.0   | 101     | 77  | 12.5 |
| 300 PPM | N1R4700 | 135 | 20  | 31  | 64  | 0.7   | 6.3 | 8.0   | 110     | 134 | 11.6 |
| 300 PPM | N1R4710 | 109 | 19  | 25  | 54  | 0.5   | 4.6 | 6.7   | 140     | 52  | 12.1 |
| 30 PPM  | P1R4711 | 152 | 22  | 41  | 70  | 0.6   | 6.0 | 8.1   | 95      | 49  | 11.8 |
| 30 PPM  | P1R4717 | 144 | 17  | 32  | 33  | 0.7   | 6.1 | 7.8   | 78      | 117 | 12.1 |
| 30 PPM  | P1R4719 | 116 | 20  | 40  | 63  | 0.7   | 6.0 | 7.7   | 93      | 103 | 12.3 |
| 30 PPM  | P1R4729 | 144 | 18  | 59  | 61  | 0.7   | 6.3 | 8.0   | 100     | 38  | 11.1 |
| 30 PPM  | P1R4731 | 140 | 19  | 27  | 42  | 0.5   | 4.4 | 6.3   | 68      | 74  | 12.3 |
| 30 PPM  | P1R4732 | 122 | 20  | 26  | 38  | 0.6   | 5.7 | 7.3   | 57      | 78  | 11.3 |
| 30 PPM  | P1R4733 | 127 | 18  | 22  | 40  | 0.7   | 5.0 | 6.6   | 74      | 45  | 11.9 |
| 30 PPM  | P1R4737 | 140 | 21  | 25  | 40  | 0.5   | 5.3 | 7.4   | 99      | 51  | 12.0 |
| 30 PPM  | P1R4740 | 133 | 19  | 27  | 53  | 0.6   | 5.4 | 7.0   | 42      | 133 | 11.6 |
| 30 PPM  | P1R4743 | 112 | 14  | 23  | 75  | 0.5   | 4.6 | 6.7   | 50      | 205 | 10.8 |
| 30 PPM  | P1R4745 | 133 | 21  | 27  | 41  | 0.5   | 4.8 | 7.9   | 81      | 107 | 12.3 |
| 30 PPM  | P1R4746 | 117 | 21  | 58  | 102 | 0.5   | 6.1 | 7.7   | 61      | 60  | 12.0 |
| 30 PPM  | P1R4749 | 125 | 21  | 35  | 47  | 0.8   | 6.2 | 7.7   | 65      | 72  | 11.8 |
| 30 PPM  | P1R4750 | 115 | 20  | 67  | 140 | 0.7   | 5.8 | 7.6   |         |     |      |

TABLE 15

TWO YEAR ORAL (DIET) TOXICITY-ONCOGENICITY  
STUDY OF FLUOROCARBON FC-143 IN FEMALE RATS  
INDIVIDUAL SERUM CHEMISTRY VALUES

| DOSE    | ANIMAL  | GLU | RUN | ALT | AST | TBILI | ALB | TPROT | ALKPHOS | CPK | CA   |
|---------|---------|-----|-----|-----|-----|-------|-----|-------|---------|-----|------|
| 0 PPM   | N1R4578 | 146 | 24  | 27  | 48  | 1.2   | 4.1 | 7.3   | 71      | 62  | 11.7 |
| 0 PPM   | N1R4582 | 124 | 18  | 22  | 42  | 1.5   | 4.7 | 8.6   | 134     | 82  | 12.5 |
| 0 PPM   | N1R4585 | 132 | 24  | 33  | 60  | 0.8   | 4.5 | 7.6   | 84      | 42  | 11.5 |
| 0 PPM   | N1R4588 | 137 | 20  | 23  | 47  | 0.5   | 4.4 | 7.0   | 44      | 56  | 10.8 |
| 0 PPM   | N1R4589 | 132 | 19  | 67  | 183 | 0.7   | 4.6 | 7.7   | 104     | 50  | 11.7 |
| 0 PPM   | N1R4590 | 136 | 19  | 24  | 46  | 0.6   | 4.5 | 7.3   | 84      | 38  | 11.3 |
| 0 PPM   | N1R4601 | 143 | 20  | 40  | 59  | 0.6   | 4.1 | 7.3   | 127     | 41  | 10.8 |
| 0 PPM   | N1R4608 | 131 | 18  | 24  | 51  | 1.1   | 4.2 | 7.2   | 39      | 60  | 11.1 |
| 0 PPM   | N1R4610 | 127 | 21  | 25  | 62  | 1.0   | 4.1 | 7.1   | 72      | 104 | 10.7 |
| 0 PPM   | N1R4620 | 146 | 19  | 31  | 51  | 0.6   | 4.1 | 7.0   | 71      | 55  | 10.9 |
| 0 PPM   | N1R4629 | 136 | 18  | 67  | 119 | 0.4   | 3.9 | 6.7   | 80      | 40  | 10.9 |
| 0 PPM   | N1R4630 | 157 | 22  | 42  | 79  | 0.5   | 3.8 | 6.6   | 54      | 37  | 10.5 |
| 0 PPM   | N1R4631 | 128 | 20  | 41  | 94  | 0.5   | 4.4 | 7.4   | 99      | 29  | 10.8 |
| 0 PPM   | N1R4632 | 113 | 18  | 19  | 33  | 1.4   | 4.3 | 8.2   | 43      | 76  | 12.4 |
| 0 PPM   | N1R4640 | 135 | 17  | 26  | 47  | 0.2   | 4.4 | 7.2   | 42      | 47  | 11.1 |
| 300 PPM | N1R4642 | 137 | 18  | 28  | 51  | 0.5   | 4.5 | 7.7   | 39      | 31  | 11.1 |
| 300 PPM | N1R4652 | 128 | 20  | 112 | 163 | 0.6   | 4.6 | 7.8   | 115     | 42  | 11.7 |
| 300 PPM | N1R4655 | 132 | 24  | 28  | 51  | 0.7   | 4.6 | 7.5   | 137     | 36  | 11.5 |
| 300 PPM | N1R4656 | 136 | 22  | 32  | 56  | 0.6   | 4.6 | 7.4   | 46      | 41  | 11.4 |
| 300 PPM | N1R4664 | 127 | 25  | 29  | 54  | 0.6   | 4.3 | 7.0   | 99      | 40  | 11.2 |
| 300 PPM | N1R4666 | 125 | 15  | 26  | 57  | 0.4   | 3.7 | 6.6   | 44      | 51  | 10.7 |
| 300 PPM | N1R4669 | 129 | 23  | 23  | 48  | 0.6   | 4.3 | 7.0   | 101     | 37  | 10.9 |
| 300 PPM | N1R4671 | 139 | 18  | 38  | 59  | 1.0   | 4.3 | 7.1   | 56      | 67  | 11.5 |
| 300 PPM | N1R4674 | 125 | 22  | 40  | 79  | 0.4   | 4.0 | 6.7   | 155     | 58  | 10.7 |
| 300 PPM | N1R4676 | 134 | 17  | 41  | 65  | 0.9   | 4.3 | 7.0   | 132     | 40  | 10.9 |
| 300 PPM | N1R4687 | 132 | 37  | 26  | 52  | 0.3   | 3.5 | 6.6   | 124     | 41  | 10.5 |
| 300 PPM | N1R4689 | 148 | 22  | 35  | 52  | 0.4   | 4.2 | 6.9   | 96      | 16  | 11.1 |
| 300 PPM | N1R4692 | 146 | 18  | 32  | 50  | 0.6   | 4.2 | 7.2   | 39      | 44  | 11.2 |
| 300 PPM | N1R4699 | 149 | 19  | 38  | 53  | 0.9   | 4.5 | 7.8   | 142     | 38  | 11.2 |
| 300 PPM | N1R4704 | 143 | 18  | 51  | 103 | 0.4   | 4.1 | 6.3   | 41      | 38  | 11.0 |
| 30 PPM  | P1R4711 | 141 | 17  | 38  | 62  | 1.2   | 4.7 | 8.1   | 121     | 52  | 12.1 |
| 30 PPM  | P1R4714 | 121 | 17  | 29  | 57  | 0.6   | 4.7 | 8.3   | 94      | 38  | 11.3 |
| 30 PPM  | P1R4715 | 142 | 19  | 49  | 85  | 0.8   | 4.1 | 7.2   | 86      | 271 | 10.9 |
| 30 PPM  | P1R4716 | 128 | 19  | 36  | 55  | 0.6   | 4.0 | 6.9   | 102     | 35  | 10.5 |
| 30 PPM  | P1R4717 | 134 | 22  | 31  | 51  | 0.8   | 4.2 | 7.7   | 131     | 42  | 10.5 |
| 30 PPM  | P1R4721 | 124 | 19  | 39  | 72  | 1.0   | 4.7 | 7.9   | 122     | 248 | 11.1 |
| 30 PPM  | P1R4725 | 159 | 19  | 76  | 94  | 0.4   | 4.1 | 6.9   | 102     | 42  | 10.4 |
| 30 PPM  | P1R4727 | 149 | 19  | 33  | 48  | 0.5   | 4.7 | 7.7   | 108     | 26  | 11.0 |
| 30 PPM  | P1R4729 | 131 | 18  | 37  | 58  | 0.7   | 4.4 | 7.4   | 85      | 48  | 11.2 |
| 30 PPM  | P1R4734 | 135 | 19  | 36  | 54  | 0.7   | 4.3 | 7.3   | 76      | 39  | 10.9 |
| 30 PPM  | P1R4742 | 135 | 25  | 30  | 55  | 0.8   | 4.0 | 6.9   | 87      | 59  | 10.8 |
| 30 PPM  | P1R4743 | 125 | 21  | 26  | 194 | 1.0   | 4.5 | 8.2   | 22      | 46  | 11.5 |
| 30 PPM  | P1R4749 | 146 | 27  | 42  | 83  | 0.4   | 4.6 | 7.5   | 53      | 45  | 11.1 |
| 30 PPM  | P1R4750 | 130 | 18  | 36  | 74  | 0.8   | 4.4 | 7.5   | 48      | 145 | 11.2 |
| 30 PPM  | P1R4755 | 131 | 19  | 18  | 43  | 0.9   | 4.4 | 7.6   | 104     | 44  | 11.2 |

TABLE 15

TWO YEAR ORAL (DIET) TOXICITY-ONCOGENICITY  
STUDY OF FLUOROCARBON FC-143 IN FEMALE RATS  
INDIVIDUAL SERUM CHEMISTRY VALUES

| DOSE    | ANIMAL  | GLU | BUN | ALT | AST | TBILI | ALB | TPROT | ALPKPHOS | CPK | CA   |
|---------|---------|-----|-----|-----|-----|-------|-----|-------|----------|-----|------|
| 0 PPM   | NIR4581 | 128 | 22  | 37  | 50  | 0.3   | 3.3 | 6.4   | 88       | 33  | 11.8 |
| 0 PPM   | NIR4583 | 120 | 17  | 40  | 64  | 0.8   | 3.9 | 8.4   | 51       | 39  | 11.7 |
| 0 PPM   | NIR4586 | 98  | 19  | 59  | 93  | 0.3   | 3.7 | 7.8   | 152      | 27  | 11.3 |
| 0 PPM   | NIR4592 | 107 | 23  | 35  | 53  | 0.6   | 4.2 | 8.4   | 91       | 42  | 11.7 |
| 0 PPM   | NIR4595 | 116 | 18  | 71  | 132 | 0.4   | 4.0 | 8.6   | 63       | 37  | 11.5 |
| 0 PPM   | NIR4598 | 123 | 17  | 55  | 79  | 0.5   | 4.0 | 7.8   | 40       | 32  | 11.7 |
| 0 PPM   | NIR4599 | 133 | 16  | 69  | 106 | 0.5   | 4.0 | 7.7   | 53       | 47  | 11.3 |
| 0 PPM   | NIR4602 | 103 | 21  | 43  | 58  | 0.8   | 4.0 | 8.2   | 55       | 37  | 12.1 |
| 0 PPM   | NIR4604 | 150 | 14  | 38  | 44  | 0.5   | 3.8 | 7.4   | 62       | 27  | 11.0 |
| 0 PPM   | NIR4606 | 126 | 18  | 58  | 79  | 0.7   | 3.8 | 7.8   | 88       | 27  | 11.6 |
| 0 PPM   | NIR4609 | 110 | 15  | 48  | 65  | 1.0   | 4.2 | 8.6   | 56       | 33  | 11.3 |
| 0 PPM   | NIR4611 | 143 | 19  | 40  | 49  | 0.6   | 4.0 | 7.5   | 17       | 36  | 11.2 |
| 0 PPM   | NIR4612 | 138 | 18  | 42  | 49  | 1.2   | 3.8 | 7.9   | 60       | 66  | 10.0 |
| 0 PPM   | NIR4627 | 116 | 16  | 42  | 65  | 0.6   | 3.7 | 7.8   | 27       | 41  | 12.2 |
| 0 PPM   | NIR4638 | 141 | 18  | 54  | 65  | 0.9   | 4.0 | 8.3   | 79       | 35  | 11.0 |
| 300 PPM | NIR4645 | 119 | 21  | 50  | 65  | 0.5   | 3.7 | 7.2   | 36       | 31  | 11.0 |
| 300 PPM | NIR4647 | 117 | 19  | 56  | 49  | 1.2   | 4.1 | 8.5   | 68       | 35  | 9.9  |
| 300 PPM | NIR4648 | 121 | 21  | 51  | 61  | 0.3   | 3.4 | 6.6   | 59       | 18  | 10.6 |
| 300 PPM | NIR4651 | 130 | 20  | 33  | 48  | 0.5   | 4.0 | 7.4   | 105      | 37  | 11.3 |
| 300 PPM | NIR4663 | 134 | 13  | 49  | 57  | 0.7   | 4.3 | 8.2   | 74       | 26  | 11.3 |
| 300 PPM | NIR4667 | 121 | 19  | 54  | 112 | 0.3   | 3.4 | 7.6   | 149      | 43  | 10.9 |
| 300 PPM | NIR4675 | 116 | 24  | 52  | 41  | 0.8   | 3.6 | 8.2   | 78       | 54  | 10.9 |
| 300 PPM | NIR4679 | 118 | 16  | 42  | 52  | 0.6   | 3.8 | 8.1   | 65       | 26  | 11.3 |
| 300 PPM | NIR4684 | 109 | 15  | 49  | 47  | 0.5   | 4.0 | 8.1   | 63       | 32  | 11.2 |
| 300 PPM | NIR4688 | 128 | 18  | 45  | 65  | 0.5   | 4.0 | 7.9   | 90       | 26  | 11.5 |
| 300 PPM | NIR4690 | 124 | 13  | 49  | 66  | 0.5   | 4.2 | 7.9   | 79       | 29  | 11.4 |
| 300 PPM | NIR4693 | 118 | 20  | 44  | 95  | 0.5   | 4.2 | 7.8   | 91       | 38  | 11.6 |
| 300 PPM | NIR4694 | 134 | 15  | 44  | 47  | 0.6   | 4.0 | 8.0   | 65       | 40  | 11.0 |
| 300 PPM | NIR4696 | 112 | 21  | 37  | 51  | 0.3   | 3.8 | 7.7   | 30       | 49  | 11.5 |
| 300 PPM | NIR4698 | 99  | 23  | 41  | 57  | 0.5   | 3.9 | 7.9   | 89       | 42  | 11.3 |
| 30 PPM  | PIR4707 | 102 | 20  | 18  | 62  | 0.4   | 3.9 | 7.7   | 53       | 30  | 12.1 |
| 30 PPM  | PIR4709 | 118 | 22  | 51  | 60  | 0.7   | 3.6 | 8.7   | 53       | 16  | 8.8  |
| 30 PPM  | PIR4714 | 123 | 20  | 36  | 42  | 0.7   | 3.9 | 9.4   | 53       | 24  | 11.1 |
| 30 PPM  | PIR4718 | 122 | 24  | 45  | 51  | 0.9   | 3.9 | 8.9   | 30       | 18  | 9.5  |
| 30 PPM  | PIR4720 | 98  | 20  | 28  | 56  | 0.6   | 3.6 | 8.0   | 49       | 41  | 10.2 |
| 30 PPM  | PIR4722 | 126 | 16  | 24  | 65  | 0.3   | 3.3 | 6.7   | 31       | 37  | 11.5 |
| 30 PPM  | PIR4725 | 148 | 14  | 21  | 51  | 0.3   | 3.6 | 7.6   | 47       | 25  | 11.0 |
| 30 PPM  | PIR4729 | 120 | 19  | 57  | 48  | 0.8   | 3.8 | 8.8   | 42       | 11  | 9.5  |
| 30 PPM  | PIR4732 | 127 | 27  | 39  | 59  | 0.6   | 3.8 | 8.0   | 40       | 16  | 10.5 |
| 30 PPM  | PIR4733 | 143 | 21  | 60  | 76  | 0.7   | 4.2 | 8.6   | 41       | 22  | 9.8  |
| 30 PPM  | PIR4737 | 136 | 23  | 48  | 60  | 0.8   | 3.6 | 8.0   | 57       | 18  | 11.1 |
| 30 PPM  | PIR4748 | 94  | 13  | 24  | 48  | 0.5   | 3.6 | 8.0   | 21       | 17  | 11.3 |
| 30 PPM  | PIR4749 | 116 | 16  | 42  | 148 | 0.6   | 4.3 | 9.0   | 13       | 89  | 11.6 |
| 30 PPM  | PIR4752 | 127 | 22  | 61  | 52  | 1.2   | 3.9 | 9.3   | 44       | 35  | 9.3  |
| 30 PPM  | PIR4754 | 133 | 25  | 37  | 74  | 0.5   | 4.0 | 8.0   | 22       | 15  | 11.6 |

TABLE 15

TWO YEAR ORAL (DIET) TOXICITY-ONCOGENICITY  
STUDY OF FLUOROCARBON FC-143 IN FEMALE RATS  
INDIVIDUAL SERUM CHEMISTRY VALUES

MONTH=24

| DOSE    | ANIMAL  | GLU | BUN | ALT | AST | THI1 | ALB | TPROT | ALPHOS | CPK | CA   |
|---------|---------|-----|-----|-----|-----|------|-----|-------|--------|-----|------|
| 0 PPM   | N1R4583 | 135 | 17  | 36  | 52  | 1.0  | 3.3 | 8.1   | 49     | 76  | 12.4 |
| 0 PPM   | N1R4586 | 121 | 18  | 52  | 88  | 0.3  | 3.4 | 7.3   | 149    | 45  | 11.2 |
| 0 PPM   | N1R4591 | 118 | 20  | 32  | 58  | 1.2  | 3.5 | 7.8   | 127    | 109 | 12.4 |
| 0 PPM   | N1R4595 | 123 | 17  | 66  | 154 | 0.5  | 3.6 | 8.5   | 53     | 57  | 12.0 |
| 0 PPM   | N1R4598 | 140 | 16  | 37  | 52  | 0.4  | 3.4 | 7.2   | 38     | 34  | 11.5 |
| 0 PPM   | N1R4603 | 138 | 26  | 34  | 56  | 0.4  | 3.4 | 7.2   | 35     | 59  | 11.0 |
| 0 PPM   | N1R4606 | 120 | 17  | 36  | 52  | 0.7  | 3.3 | 7.9   | 78     | 119 | 11.4 |
| 0 PPM   | N1R4611 | 148 | 21  | 42  | 81  | 0.5  | 3.2 | 6.5   | 70     | 50  | 11.3 |
| 0 PPM   | N1R4614 | 115 | 17  | 37  | 42  | 0.6  | 3.7 | 7.6   | 76     | 36  | 11.3 |
| 0 PPM   | N1R4616 | 118 | 16  | 42  | 73  | 0.4  | 3.3 | 7.5   | 46     | 60  | 11.0 |
| 0 PPM   | N1R4626 | 112 | 10  | 27  | 52  | 0.2  | 3.7 | 8.6   | 39     | 52  | 11.1 |
| 0 PPM   | N1R4628 | 107 | 15  | 36  | 48  | 0.4  | 3.2 | 7.5   | 39     | 75  | 11.0 |
| 0 PPM   | N1R4634 | 97  | 26  | 42  | 98  | 0.2  | 2.9 | 6.1   | 87     | 35  | 10.5 |
| 0 PPM   | N1R4636 | 130 | 15  | 29  | 42  | 0.6  | 3.4 | 7.5   | 61     | 58  | 11.6 |
| 0 PPM   | N1R4638 | 111 | 17  | 52  | 65  | 1.1  | 3.5 | 8.4   | 84     | 141 | 12.8 |
| 300 PPM | N1R4644 | 154 | 19  | 30  | 41  | 0.4  | 3.4 | 7.0   | 77     | 48  | 11.1 |
| 300 PPM | N1R4646 | 113 | 15  | 41  | 51  | 0.5  | 3.5 | 7.0   | 93     | 78  | 11.2 |
| 300 PPM | N1R4649 | 100 | 17  | 28  | 50  | 0.2  | 2.8 | 6.5   | 47     | 39  | 10.3 |
| 300 PPM | N1R4657 | 117 | 15  | 33  | 52  | 0.4  | 3.4 | 7.2   | 51     | 59  | 10.9 |
| 300 PPM | N1R4659 | 108 | 13  | 32  | 58  | 0.3  | 3.0 | 7.9   | 60     | 110 | 10.8 |
| 300 PPM | N1R4661 | 148 | 26  | 37  | 54  | 0.4  | 3.4 | 7.2   | 91     | 62  | 10.9 |
| 300 PPM | N1R4663 | 121 | 12  | 36  | 49  | 0.8  | 3.8 | 7.5   | 73     | 86  | 11.5 |
| 300 PPM | N1R4672 | 100 | 11  | 29  | 52  | 0.4  | 3.5 | 7.2   | 67     | 38  | 11.5 |
| 300 PPM | N1R4679 | 114 | 19  | 37  | 59  | 0.6  | 3.2 | 7.8   | 46     | 117 | 11.9 |
| 300 PPM | N1R4683 | 105 | 14  | 46  | 100 | 0.5  | 3.2 | 8.8   | 27     | 111 | 11.1 |
| 300 PPM | N1R4688 | 109 | 13  | 131 | 183 | 0.2  | 3.4 | 7.4   | 64     | 57  | 10.9 |
| 300 PPM | N1R4693 | 129 | 19  | 36  | 61  | 0.7  | 3.7 | 7.9   | 75     | 71  | 11.7 |
| 300 PPM | N1R4695 | 81  | 18  | 33  | 53  | 0.3  | 3.8 | 6.8   | 30     | 42  | 12.0 |
| 300 PPM | N1R4697 | 104 | 17  | 45  | 83  | 0.3  | 3.6 | 7.5   | 72     | 53  | 11.0 |
| 300 PPM | N1R4701 | 127 | 15  | 53  | 59  | 0.5  | 3.6 | 7.0   | 74     | 45  | 11.6 |
| 30 PPM  | P1R4708 | 108 | 17  | 33  | 50  | 0.5  | 3.3 | 6.4   | 56     | 35  | 11.2 |
| 30 PPM  | P1R4711 | 106 | 16  | 37  | 56  | 1.0  | 3.4 | 7.8   | 76     | 83  | 11.3 |
| 30 PPM  | P1R4714 | 114 | 12  | 27  | 41  | 0.4  | 3.5 | 7.7   | 33     | 37  | 11.5 |
| 30 PPM  | P1R4716 | 117 | 17  | 34  | 63  | 0.2  | 3.3 | 6.8   | 70     | 37  | 10.4 |
| 30 PPM  | P1R4720 | 115 | 14  | 40  | 53  | 0.4  | 3.2 | 8.1   | 65     | 70  | 11.1 |
| 30 PPM  | P1R4723 | 141 | 17  | 36  | 80  | 0.3  | 3.3 | 7.2   | 35     | 42  | 11.3 |
| 30 PPM  | P1R4726 | 103 | 19  | 58  | 86  | 0.6  | 3.3 | 7.5   | 72     | 58  | 11.4 |
| 30 PPM  | P1R4729 | 119 | 14  | 38  | 54  | 0.6  | 3.2 | 6.9   | 63     | 63  | 11.5 |
| 30 PPM  | P1R4733 | 127 | 15  | 61  | 78  | 0.6  | 3.8 | 7.9   | 57     | 107 | 11.7 |
| 30 PPM  | P1R4736 | 137 | 12  | 38  | 62  | 0.4  | 3.6 | 7.4   | 29     | 75  | 11.4 |
| 30 PPM  | P1R4739 | 101 | 15  | 32  | 71  | 0.2  | 2.2 | 5.5   | 104    | 59  | 11.5 |
| 30 PPM  | P1R4745 | 121 | 10  | 30  | 55  | 0.3  | 3.1 | 6.6   | 46     | 93  | 10.4 |
| 30 PPM  | P1R4747 | 116 | 13  | 31  | 67  | 0.3  | 3.0 | 6.2   | 36     | 171 | 10.7 |
| 30 PPM  | P1R4752 | 110 | 15  | 39  | 58  | 0.6  | 3.7 | 8.0   | 60     | 93  | 12.0 |
| 30 PPM  | P1R4754 | 156 | 24  | 45  | 79  | 0.4  | 3.6 | 7.3   | 49     | 46  | 11.6 |

TABLE 16

Two Year Oral (Diet) Toxicity-Oncogenicity Study of Fluorocarbon FC-143 in Rats  
0281CR0012

Ranges of Urinalysis Values at 3 and 6 Months

| Dose Group          | Specific Gravity | pH  | Albumin | Bilirubin | Glucose | Occult Blood | Ketones |
|---------------------|------------------|-----|---------|-----------|---------|--------------|---------|
| <u>3 Mo. Male</u>   |                  |     |         |           |         |              |         |
| Control             | 1.025-1.062      | 7-9 | N-Tr    | N-N       | N-N     | N-4+         | N-N     |
| 300 PPM             | 1.030-1.046      | 7-9 | N-1+    | N-N       | N-N     | N-N          | N-N     |
| 30 PPM              | 1.018-1.090      | 7-8 | N-Tr    | N-N       | N-N     | N-3+         | N-N     |
| <u>3 Mo. Female</u> |                  |     |         |           |         |              |         |
| Control             | 1.011-1.052      | 7-8 | N-1+    | N-N       | N-N     | N-N          | N-N     |
| 300 PPM             | 1.015-1.052      | 7-9 | N-N     | N-N       | N-N     | N-N          | N-N     |
| 30 PPM              | 1.016-1.056      | 7-8 | N-N     | N-N       | N-N     | N-N          | N-N     |
| <u>6 Mo. Male</u>   |                  |     |         |           |         |              |         |
| Control             | 1.021-1.066      | 6-8 | N-3+    | N-N       | N-N     | N-3+         | N-N     |
| 300 PPM             | 1.022-1.054      | 7-8 | N-Tr    | N-N       | N-N     | N-1+         | N-1+    |
| 30 PPM              | 1.018-1.070      | 6-8 | N-Tr    | N-N       | N-N     | N-1+         | N-N     |
| <u>6 Mo. Female</u> |                  |     |         |           |         |              |         |
| Control             | 1.028-1.072      | 6-7 | N-3+    | N-N       | N-N     | N-1+         | N-1+    |
| 300 PPM             | 1.018-1.046      | 6-8 | N-3+    | N-N       | N-N     | N-2+         | N-1+    |
| 30 PPM              | 1.024-1.050      | 6-8 | N-Tr    | N-N       | N-N     | N-Tr         | N-1+    |

Code: N - negative  
Tr - trace

1+ - slight  
2+ - slight to moderate

3+ - moderate marked  
4+ - marked

TABLE 16

Two Year Oral (Diet) Toxicity-Oncogenicity Study of Fluorocarbon FC-143 in Rats  
0281CR0012

Ranges of Urinalysis Values at 12 and 18 Months

| Dose Group           | Specific Gravity | pH      | Albumin | Bilirubin | Glucose | Occult Blood | Ketones |
|----------------------|------------------|---------|---------|-----------|---------|--------------|---------|
| <u>12 Mo. Male</u>   |                  |         |         |           |         |              |         |
| Control              | 1.040-1.093      | 7.0-8.5 | N-4+    | N-N       | N-N     | N-3+         | N-Tr    |
| 300 PPM              | 1.015-1.054      | 7.0-8.5 | N-3+    | N-N       | N-N     | N-Tr         | N-Tr    |
| 30 PPM               | 1.029-1.063      | 7.5-8.5 | N-4+    | N-N       | N-N     | N-3+         | N-N     |
| <u>12 Mo. Female</u> |                  |         |         |           |         |              |         |
| Control              | 1.023-1.070      | 6.5-7.5 | N-3+    | N-N       | N-N     | N-N          | N-N     |
| 300 PPM              | 1.012-1.059      | 6.5-9.0 | N-3+    | N-N       | N-N     | N-2+         | N-N     |
| 30 PPM               | 1.008-1.048      | 6.5-7.5 | N-2+    | N-N       | N-N     | N-2+         | N-N     |
| <u>18 Mo. Male</u>   |                  |         |         |           |         |              |         |
| Control              | 1.016-1.064      | 6.5-8.0 | N-3+    | N-N       | N-N     | N-2+         | N-N     |
| 300 PPM              | 1.024-1.050      | 7.0-8.5 | N-4+    | N-N       | N-N     | N-N          | N-N     |
| 30 PPM               | 1.022-1.066      | 6.5-8.0 | N-4+    | N-N       | N-N     | N-3+         | N-N     |
| <u>18 Mo. Female</u> |                  |         |         |           |         |              |         |
| Control              | 1.016-1.058      | 7.0-7.5 | N-3+    | N-N       | N-N     | N-Tr         | N-N     |
| 300 PPM              | 1.011-1.034      | 6.5-8.0 | N-2+    | N-N       | N-N     | N-Tr         | N-N     |
| 30 PPM               | 1.016-1.050      | 6.0-7.5 | N-3+    | N-N       | N-Tr    | N-4+         | N-N     |

Code: N - negative 1+ - slight 3+ - moderate to marked  
Tr - trace 2+ - slight to moderate 4+ - marked

TABLE 16

Two Year Oral (Diet) Toxicity-Oncogenicity Study of Fluorocarbon FC-143 in Rats  
0281CR0012

Ranges of Urinalysis Values at 24 Months

| Dose Group           | Specific Gravity | pH      | Albumin | Bilirubin | Glucose | Occult Blood | Ketones |
|----------------------|------------------|---------|---------|-----------|---------|--------------|---------|
| <u>24 Mo. Male</u>   |                  |         |         |           |         |              |         |
| Control              | 1.018-1.054      | 6.5-8.5 | N-4+    | N-N       | N-N     | N-4+         | N-N     |
| 300 PPM              | 1.023-1.043      | 6.5-8.5 | N-4+    | N-N       | N-N     | N-N          | N-N     |
| 30 PPM               | 1.018-1.056      | 6.0-8.0 | N-4+    | N-N       | N-N     | N-4+         | N-N     |
| <u>24 Mo. Female</u> |                  |         |         |           |         |              |         |
| Control              | 1.012-1.034      | 7.0-8.5 | N-2+    | N-N       | N-N     | N-N          | N-N     |
| 300 PPM              | 1.009-1.037      | 5.0-8.0 | N-2+    | N-N       | N-N     | N-N          | N-N     |
| 30 PPM               | 1.014-1.030      | 7.0-8.0 | N-1+    | N-N       | N-N     | N-4+         | N-N     |

Code: N - negative 1+ - slight 3+ - moderate to marked  
Tr - trace 2+ - slight to moderate 4+ - marked

TABLE 17

TWO YEAR ORAL (DIET) TOXICITY-ONCOGENICITY STUDY OF FLUOROCARBON FC-143 IN RATS  
ABSOLUTE AND RELATIVE MEAN ORGAN WEIGHTS  
ONE YEAR INTERIM

| ABSOLUTE ORGAN WEIGHTS (GRAMS) |               |    |               |    |    |
|--------------------------------|---------------|----|---------------|----|----|
| 0 PPM                          |               |    | 300 PPM       |    |    |
| MALE                           |               |    | N = 15        |    |    |
| ORGAN                          | WT            | SD | WT            | SD | SD |
| BODY                           | 625.5+-65.905 |    | 580.8+-51.153 |    |    |
| LIVER                          | 19.15+-3.212  |    | 21.33+-2.497  |    |    |
| HEART                          | 1.629+-0.157  |    | 1.452+-0.053* |    |    |
| SPLEEN                         | 0.894+-0.144  |    | 0.800+-0.109  |    |    |
| KIDNEYS                        | 3.854+-0.507  |    | 4.047+-0.419  |    |    |
| ADRENALS                       | .0679+-0.013  |    | .0553+-0.008* |    |    |
| TESTES                         | 3.553+-0.419  |    | 3.459+-0.325  |    |    |
| BRAIN                          | 2.113+-0.111  |    | 2.064+-0.067  |    |    |
| PITUITARY                      | .0205+-0.006  |    | .0115+-0.004* |    |    |

| ABSOLUTE ORGAN WEIGHTS (GRAMS) |               |    |                |    |    |
|--------------------------------|---------------|----|----------------|----|----|
| 0 PPM                          |               |    | 300 PPM        |    |    |
| FEMALE                         |               |    | N = 15         |    |    |
| ORGAN                          | WT            | SD | WT             | SD | SD |
| BODY                           | 401.1+-77.172 |    | 403.1+-66.702  |    |    |
| LIVER                          | 12.28+-1.904  |    | 12.90+-1.781   |    |    |
| HEART                          | 1.117+-0.134  |    | 1.086+-0.121   |    |    |
| SPLEEN                         | 0.663+-0.123  |    | 0.613+-0.120   |    |    |
| KIDNEYS                        | 2.533+-0.383  |    | 2.599+-0.283 A |    |    |
| ADRENALS                       | .0761+-0.012  |    | .0796+-0.019   |    |    |
| UTERUS                         | 0.775+-0.247  |    | 0.702+-0.221   |    |    |
| BRAIN                          | 1.963+-0.128  |    | 1.970+-0.119   |    |    |
| PITUITARY                      | .0227+-0.006  |    | .0195+-0.007   |    |    |

\* : P <= .05, TWO TAILED DUNNETT T ON RAW DATA.  
 # : P <= .05, TWO TAILED DUNNETT T ON RANKED DATA.  
 A : N = 14.

TABLE 17

TWO YEAR ORAL (DIET) TOXICITY-ONCOGENICITY STUDY OF FLUOROCARBON FC-143 IN RATS  
ABSOLUTE AND RELATIVE MEAN ORGAN WEIGHTS  
ONE YEAR INTERIM

|           |  | ORGAN WEIGHT/BODY WEIGHT (%) |    |                |    |
|-----------|--|------------------------------|----|----------------|----|
|           |  | 0 PPM                        |    | 300 PPM        |    |
| MALE      |  | N = 15                       |    | N = 15         |    |
| ORGAN     |  | %                            | SD | %              | SD |
| LIVER     |  | 3.053+-0.318                 |    | 3.696+-0.504*  |    |
| HEART     |  | 0.262+-0.021                 |    | 0.252+-0.024   |    |
| SPLEEN    |  | 0.144+-0.025                 |    | 0.138+-0.018   |    |
| KIDNEYS   |  | 0.617+-0.057                 |    | 0.701+-0.090*  |    |
| ADRENALS  |  | 0.011+-0.002                 |    | 0.010+-0.001   |    |
| TESTES    |  | 0.570+-0.057                 |    | 0.598+-0.064   |    |
| BRAIN     |  | 0.340+-0.026                 |    | 0.358+-0.029   |    |
| PITUITARY |  | 0.003+-0.001                 |    | 0.002+-0.001*  |    |
| FEMALE    |  |                              |    |                |    |
|           |  | N = 15                       |    | N = 15         |    |
| ORGAN     |  | %                            | SD | %              | SD |
| LIVER     |  | 3.090+-0.293                 |    | 3.239+-0.423   |    |
| HEART     |  | 0.284+-0.038                 |    | 0.274+-0.040   |    |
| SPLEEN    |  | 0.168+-0.031                 |    | 0.158+-0.048   |    |
| KIDNEYS   |  | 0.642+-0.091                 |    | 0.649+-0.111 A |    |
| ADRENALS  |  | 0.020+-0.005                 |    | 0.020+-0.006   |    |
| UTERUS    |  | 0.201+-0.077                 |    | 0.181+-0.074   |    |
| BRAIN     |  | 0.507+-0.105                 |    | 0.499+-0.077   |    |
| PITUITARY |  | 0.006+-0.002                 |    | 0.005+-0.002   |    |

\* : P <= .05, TWO TAILED DUNNETT T ON RAW DATA.  
 \* : P <= .05, TWO TAILED DUNNETT T ON RANKED DATA.  
 A : N = 14.

TABLE 17

TWO YEAR ORAL (DIET) TOXICITY-ONCOGENICITY STUDY OF FLUOROCARBON FC-143 IN RATS  
ABSOLUTE AND RELATIVE MEAN ORGAN WEIGHTS  
ONE YEAR INTERIM

| ORGAN WEIGHT/BRAIN WEIGHT (GRAMS) |           |              |         |                |    |
|-----------------------------------|-----------|--------------|---------|----------------|----|
| 0 PPM                             |           |              | 300 PPM |                |    |
| N = 15                            |           |              | N = 15  |                |    |
| MALE                              | ORGAN     | RATIO        | SD      | RATIO          | SD |
|                                   | LIVER     | 9.049+-1.321 |         | 10.339+-1.187* |    |
|                                   | HEART     | 0.772+-0.071 |         | 0.705+-0.036*  |    |
|                                   | SPLEEN    | 0.424+-0.070 |         | 0.389+-0.058   |    |
|                                   | KIDNEYS   | 1.821+-0.192 |         | 1.964+-0.227   |    |
|                                   | ADRENALS  | 0.032+-0.006 |         | 0.027+-0.004*  |    |
|                                   | TESTES    | 1.678+-0.150 |         | 1.675+-0.129   |    |
|                                   | PITUITARY | 0.010+-0.003 |         | 0.005+-0.002*  |    |
| FEMALE                            | ORGAN     | RATIO        | SD      | RATIO          | SD |
|                                   | LIVER     | 6.273+-1.001 |         | 6.550+-0.826   |    |
|                                   | HEART     | 0.571+-0.073 |         | 0.552+-0.065   |    |
|                                   | SPLEEN    | 0.337+-0.056 |         | 0.312+-0.064   |    |
|                                   | KIDNEYS   | 1.294+-0.197 |         | 1.323+-0.123A  |    |
|                                   | ADRENALS  | 0.039+-0.006 |         | 0.041+-0.010   |    |
|                                   | UTERUS    | 0.397+-0.130 |         | 0.356+-0.111   |    |
|                                   | PITUITARY | 0.012+-0.004 |         | 0.010+-0.003   |    |

\* : P <= .05, TWO TAILED DUNNETT T ON RAW DATA.  
# : P <= .05, TWO TAILED DUNNETT T ON RANKED DATA.

A : N = 14.

TABLE 17

TWO YEAR ORAL (DIET) TOXICITY-ONCOGENICITY  
STUDY OF FLUOROCARBON FC-143 IN MALE RATS  
ONE YEAR INTERIM INDIVIDUAL ORGAN WEIGHTS

| DOSE    | ANIMAL   | BODY | LIVER | HEART | SPLEEN | KIDNEYS | ADRENALS <sup>a</sup> | TESTES | BRAIN | PITUITARY <sup>a</sup> |
|---------|----------|------|-------|-------|--------|---------|-----------------------|--------|-------|------------------------|
| 0 PPM   | AIR-3516 | 720  | 23.88 | 1.786 | 1.079  | 3.970   | 94                    | 3.727  | 2.330 | 9                      |
| 0 PPM   | AIR-3517 | 651  | 21.74 | 1.565 | 0.874  | 4.043   | 66                    | 4.147  | 2.111 | 14                     |
| 0 PPM   | AIR-3520 | 655  | 20.87 | 1.719 | 0.772  | 4.352   | 62                    | 3.967  | 2.204 | 19                     |
| 0 PPM   | AIR-3522 | 627  | 16.18 | 1.675 | 0.776  | 4.281   | 67                    | 3.744  | 2.227 | 20                     |
| 0 PPM   | AIR-3527 | 634  | 16.71 | 1.517 | 0.658  | 3.356   | 57                    | 3.316  | 2.088 | 33                     |
| 0 PPM   | AIR-3535 | 594  | 18.12 | 1.654 | 0.895  | 3.474   | 87                    | 3.238  | 1.953 | 27                     |
| 0 PPM   | AIR-3543 | 747  | 24.96 | 1.783 | 0.904  | 4.365   | 54                    | 3.704  | 2.194 | 16                     |
| 0 PPM   | AIR-3546 | 656  | 17.61 | 2.018 | 0.905  | 3.958   | 77                    | 3.460  | 2.079 | 26                     |
| 0 PPM   | AIR-3550 | 566  | 15.19 | 1.476 | 0.704  | 3.656   | 41                    | 3.911  | 2.150 | 15                     |
| 0 PPM   | AIR-3551 | 494  | 13.96 | 1.361 | 0.751  | 2.657   | 59                    | 2.581  | 1.920 | 24                     |
| 0 PPM   | AIR-3559 | 627  | 19.53 | 1.536 | 0.872  | 3.548   | 78                    | 3.331  | 2.074 | 23                     |
| 0 PPM   | AIR-3568 | 688  | 22.31 | 1.629 | 1.091  | 4.679   | 64                    | 3.870  | 2.207 | 14                     |
| 0 PPM   | AIR-3570 | 575  | 16.55 | 1.526 | 0.991  | 3.525   | 64                    | 3.503  | 2.114 | 25                     |
| 0 PPM   | AIR-3575 | 551  | 19.88 | 1.636 | 1.113  | 3.741   | 67                    | 2.944  | 1.971 | 15                     |
| 0 PPM   | AIR-3580 | 548  | 19.77 | 1.556 | 1.028  | 4.170   | 76                    | 3.805  | 2.071 | 15                     |
| 300 PPM | AIR-3584 | 547  | 18.56 | 1.487 | 0.603  | 3.845   | 53                    | 3.226  | 1.981 | 6                      |
| 300 PPM | AIR-3588 | 564  | 25.31 | 1.516 | 0.593  | 4.584   | 63                    | 3.995  | 2.147 | 15                     |
| 300 PPM | AIR-3589 | 552  | 24.34 | 1.506 | 0.794  | 3.852   | 55                    | 3.700  | 2.076 | 11                     |
| 300 PPM | AIR-3592 | 657  | 18.67 | 1.402 | 0.820  | 3.659   | 65                    | 3.839  | 2.165 | 20                     |
| 300 PPM | AIR-3598 | 565  | 22.98 | 1.448 | 0.742  | 4.396   | 61                    | 3.264  | 2.054 | 10                     |
| 300 PPM | AIR-3604 | 554  | 21.43 | 1.503 | 0.854  | 4.826   | 62                    | 3.228  | 1.947 | 10                     |
| 300 PPM | AIR-3613 | 686  | 18.07 | 1.368 | 0.963  | 3.593   | 70                    | 3.376  | 2.046 | 9                      |
| 300 PPM | AIR-3617 | 552  | 20.50 | 1.485 | 0.875  | 3.915   | 48                    | 3.604  | 2.033 | 10                     |
| 300 PPM | AIR-3620 | 641  | 22.91 | 1.499 | 0.859  | 4.096   | 54                    | 3.484  | 2.109 | 11                     |
| 300 PPM | AIR-3622 | 487  | 17.88 | 1.357 | 0.780  | 3.442   | 61                    | 2.700  | 1.994 | 16                     |
| 300 PPM | AIR-3626 | 603  | 25.32 | 1.395 | 0.813  | 4.592   | 47                    | 3.205  | 2.066 | 12                     |
| 300 PPM | AIR-3627 | 595  | 20.94 | 1.481 | 0.715  | 3.743   | 47                    | 3.381  | 2.124 | 11                     |
| 300 PPM | AIR-3638 | 559  | 20.30 | 1.412 | 0.746  | 3.793   | 47                    | 3.822  | 2.124 | 6                      |
| 300 PPM | AIR-3642 | 543  | 20.35 | 1.439 | 0.887  | 3.886   | 49                    | 3.649  | 2.101 | 14                     |
| 300 PPM | AIR-3643 | 607  | 22.38 | 1.489 | 0.958  | 4.446   | 43                    | 3.418  | 1.938 | 11                     |

NOTES: Body weights and organ weights in grams.

<sup>a</sup> indicates organ weights in mg.

TABLE 17

TWO YEAR ORAL (DIET) TOXICITY-ONCONEUTICITY  
STUDY OF FLUOROCARBON PC-143 IN FEMALE RATS  
ONE YEAR INTERIM INDIVIDUAL ORGAN WEIGHTS

| DOSE    | ANIMAL   | BODY | LIVER | HEART | SPLEEN | KIDNEYS            | ADRENALS <sup>a</sup> | UTERUS | BRAIN | PITUITARY <sup>a</sup> |
|---------|----------|------|-------|-------|--------|--------------------|-----------------------|--------|-------|------------------------|
| 0 PPM   | N1R-4578 | 540  | 15.34 | 1.390 | 0.751  | 3.279              | 80                    | 0.696  | 2.044 | 22                     |
| 0 PPM   | N1R-4582 | 385  | 12.26 | 1.185 | 0.419  | 2.405              | 81                    | 0.470  | 1.674 | 27                     |
| 0 PPM   | N1R-4585 | 353  | 12.90 | 1.035 | 0.626  | 2.223              | 56                    | 0.674  | 1.912 | 14                     |
| 0 PPM   | N1R-4588 | 386  | 11.99 | 1.117 | 0.679  | 2.535              | 87                    | 0.654  | 2.073 | 14                     |
| 0 PPM   | N1R-4589 | 375  | 13.19 | 1.095 | 0.651  | 3.106              | 78                    | 1.032  | 1.963 | 25                     |
| 0 PPM   | N1R-4590 | 373  | 10.52 | 1.037 | 0.571  | 2.308              | 78                    | 0.433  | 1.875 | 17                     |
| 0 PPM   | N1R-4601 | 470  | 13.39 | 1.164 | 0.868  | 3.115              | 62                    | 0.407  | 1.928 | 25                     |
| 0 PPM   | N1R-4608 | 429  | 13.00 | 1.021 | 0.648  | 2.356              | 85                    | 0.663  | 2.124 | 14                     |
| 0 PPM   | N1R-4610 | 345  | 11.31 | 0.982 | 0.681  | 2.435              | 87                    | 1.371  | 1.969 | 30                     |
| 0 PPM   | N1R-4620 | 320  | 11.45 | 1.176 | 0.789  | 2.470              | 89                    | 0.846  | 2.135 | 14                     |
| 0 PPM   | N1R-4629 | 401  | 11.33 | 1.084 | 0.663  | 2.176              | 65                    | 0.523  | 1.967 | 14                     |
| 0 PPM   | N1R-4630 | 466  | 13.63 | 1.280 | 0.725  | 2.616              | 80                    | 0.520  | 2.154 | 17                     |
| 0 PPM   | N1R-4631 | 248  | 7.37  | 0.830 | 0.414  | 1.844              | 62                    | 0.520  | 1.883 | 20                     |
| 0 PPM   | N1R-4632 | 531  | 14.70 | 1.128 | 0.723  | 2.620              | 59                    | 0.490  | 1.846 | 40                     |
| 0 PPM   | N1R-4640 | 395  | 11.69 | 1.238 | 0.731  | 2.512              | 92                    | 0.833  | 1.843 | 25                     |
| 300 PPM | 01R-4642 | 323  | 10.85 | 0.920 | 0.732  | 2.679              | 76                    | 1.150  | 1.945 | 25                     |
| 300 PPM | 01R-4652 | 383  | 13.12 | 1.114 | 0.609  | 2.972              | 64                    | 0.766  | 2.265 | 25                     |
| 300 PPM | 01R-4655 | 372  | 12.16 | 1.045 | 0.603  | 2.527              | 71                    | 0.543  | 1.740 | 6                      |
| 300 PPM | 01R-4656 | 447  | 13.49 | 1.160 | 0.805  | 3.020              | 74                    | 0.888  | 2.011 | 6                      |
| 300 PPM | 01R-4664 | 399  | 14.26 | 1.156 | 0.685  | 2.384              | 75                    | 0.557  | 1.948 | 21                     |
| 300 PPM | 01R-4666 | 339  | 12.28 | 1.066 | 0.618  | 2.788              | 106                   | 0.863  | 1.966 | 22                     |
| 300 PPM | 01R-4669 | 385  | 12.10 | 0.952 | 0.470  | 2.396              | 59                    | 0.756  | 1.856 | 14                     |
| 300 PPM | 01R-4671 | 497  | 17.67 | 1.181 | 0.663  | 2.852              | 114                   | 0.835  | 2.008 | 17                     |
| 300 PPM | 01R-4674 | 355  | 13.59 | 0.927 | 0.594  | 2.290              | 64                    | 0.468  | 2.009 | 25                     |
| 300 PPM | 01R-4676 | 519  | 14.36 | 1.206 | 0.630  | 2.888 <sup>b</sup> | 90                    | 0.704  | 2.048 | 30                     |
| 300 PPM | 01R-4687 | 329  | 12.56 | 1.108 | 0.837  | 2.647              | 88                    | 0.926  | 2.047 | 17                     |
| 300 PPM | 01R-4689 | 363  | 11.72 | 1.312 | 0.798  | 2.448              | 115                   | 0.668  | 1.837 | 21                     |
| 300 PPM | 01R-4692 | 531  | 13.54 | 1.210 | 0.664  | 2.488              | 60                    | 0.356  | 1.991 | 22                     |
| 300 PPM | 01R-4699 | 395  | 11.59 | 0.982 | 0.561  | 2.384              | 70                    | 0.708  | 1.830 | 20                     |
| 300 PPM | 01R-4704 | 409  | 10.18 | 0.943 | 0.527  | 2.067              | 64                    | 0.358  | 1.648 | 14                     |

NOTES: Body weights and organ weights in grams.

<sup>a</sup> Indicates organ weights in mg.<sup>b</sup> Kidney weights not recorded due to marked hydronephrosis.

TABLE 18

TWO YEAR ORAL (DIET) TOXICITY-ONCOGENICITY STUDY OF FLUOROCARRON FC-143 IN RATS  
ABSOLUTE AND RELATIVE MEAN ORGAN WEIGHTS

| ABSOLUTE ORGAN WEIGHT (GRAMS) |          |                |    |               |    |               |    |
|-------------------------------|----------|----------------|----|---------------|----|---------------|----|
| MALE                          | ORGAN    | 0 PPM          |    | 300 PPM       |    | 30 PPM        |    |
|                               |          | N = 15         |    | N = 15        |    | N = 15        |    |
|                               |          | WT             | SD | WT            | SD | WT            | SD |
|                               | RODY     | 666.7+-99.6761 |    | 632.6+-91.947 |    | 649.2+-106.96 |    |
|                               | LIVER    | 18.15+-3.074   |    | 19.12+-3.037  |    | 18.81+-3.427  |    |
|                               | HEART    | 1.720+-0.225   |    | 1.665+-0.295  |    | 1.806+-0.313  |    |
|                               | SPLEEN   | 1.217+-0.339   |    | 1.159+-0.310  |    | 1.105+-0.206  |    |
|                               | KIDNEYS  | 4.404+-0.746   |    | 4.590+-0.525  |    | 5.185+-1.782  |    |
|                               | ADRENALS | .0801+-0.018   |    | .0866+-0.018  |    | .0900+-0.027  |    |
|                               | TESTES   | 3.478+-0.702   |    | 3.626+-0.643  |    | 3.696+-0.727  |    |
|                               | BRAIN    | 2.105+-0.133   |    | 2.185+-0.072  |    | 2.203+-0.130* |    |
|                               |          |                |    |               |    |               |    |
| FEMALE                        | ORGAN    | N = 15         |    | N = 15        |    | N = 15        |    |
|                               |          | WT             | SD | WT            | SD | WT            | SD |
|                               |          | WT             | SD | WT            | SD | WT            | SD |
|                               | RODY     | 512.5+-82.585  |    | 451.2+-68.116 |    | 533.3+-82.486 |    |
|                               | LIVER    | 15.11+-3.752   |    | 14.05+-2.735A |    | 17.06+-3.847  |    |
|                               | HEART    | 1.306+-0.199   |    | 1.310+-0.170  |    | 1.489+-0.192  |    |
|                               | SPLEEN   | 0.797+-0.140   |    | 0.698+-0.195  |    | 1.153+-0.681* |    |
|                               | KIDNEYS  | 3.129+-0.287   |    | 3.155+-0.465  |    | 3.475+-0.446* |    |
|                               | ADRENALS | .1030+-0.046A  |    | .1126+-0.039  |    | .1365+-0.044  |    |
|                               | UTERUS   | 0.814+-0.290   |    | 0.819+-0.391  |    | 0.858+-0.487  |    |
|                               | BRAIN    | 2.034+-0.102   |    | 2.049+-0.111  |    | 2.030+-0.131  |    |

\* : P <= .05, TWO TAILED DUNNETT T ON RAW DATA;  
# : P <= .05, TWO TAILED DUNNETT T ON RANKED DATA.  
A : N = 14 ANIMALS.

TABLE 18

TWO YEAR ORAL (DIET) TOXICITY-ONCOGENICITY STUDY OF FLUOROCARBON FC-143 IN RATS  
ABSOLUTE AND RELATIVE MEAN ORGAN WEIGHTS

| ORGAN WEIGHT/BODY WEIGHT (%) |          |              |    |              |    |              |    |
|------------------------------|----------|--------------|----|--------------|----|--------------|----|
|                              |          | 0 PPM        |    | 300 PPM      |    | 30 PPM       |    |
|                              |          | N = 15       |    | N = 15       |    | N = 15       |    |
| MALE                         | ORGAN    | %            | SD | %            | SD | %            | SD |
|                              | LIVER    | 2.733+-0.339 |    | 3.043+-0.400 |    | 2.934+-0.531 |    |
|                              | HEART    | 0.261+-0.037 |    | 0.267+-0.054 |    | 0.283+-0.055 |    |
|                              | SPLEEN   | 0.187+-0.059 |    | 0.184+-0.047 |    | 0.174+-0.042 |    |
|                              | KIDNEYS  | 0.606+-0.101 |    | 0.736+-0.105 |    | 0.821+-0.350 |    |
|                              | ADRENALS | 0.012+-0.003 |    | 0.014+-0.003 |    | 0.014+-0.005 |    |
|                              | TESTES   | 0.536+-0.144 |    | 0.578+-0.100 |    | 0.574+-0.093 |    |
|                              | BRAIN    | 0.322+-0.049 |    | 0.353+-0.054 |    | 0.347+-0.056 |    |

| ORGAN WEIGHT/BODY WEIGHT (%) |          |               |    |               |    |               |    |
|------------------------------|----------|---------------|----|---------------|----|---------------|----|
|                              |          | 0 PPM         |    | 300 PPM       |    | 30 PPM        |    |
|                              |          | N = 15        |    | N = 15        |    | N = 15        |    |
| FEMALE                       | ORGAN    | %             | SD | %             | SD | %             | SD |
|                              | LIVER    | 2.941+-0.465  |    | 3.125+-0.417A |    | 3.196+-0.550  |    |
|                              | HEART    | 0.269+-0.036  |    | 0.296+-0.056  |    | 0.283+-0.046  |    |
|                              | SPLEEN   | 0.158+-0.033  |    | 0.197+-0.046  |    | 0.210+-0.078* |    |
|                              | KIDNEYS  | 0.621+-0.080  |    | 0.709+-0.120* |    | 0.662+-0.102  |    |
|                              | ADRENALS | 0.020+-0.008A |    | 0.025+-0.010  |    | 0.026+-0.007  |    |
|                              | UTERUS   | 0.161+-0.055  |    | 0.183+-0.076  |    | 0.163+-0.092  |    |
|                              | BRAIN    | 0.408+-0.077  |    | 0.465+-0.079  |    | 0.388+-0.056  |    |

\* : P <= .05, TWO TAILED DUNNETT T ON RAW DATA;  
# : P <= .05, TWO TAILED DUNNETT T ON RANKED DATA.  
A : N = 14 ANIMALS.

TABLE 18

TWO YEAR ORAL (DIET) TOXICITY-ONCOGENICITY STUDY OF FLUOROCARRON FC-143 IN RATS  
ABSOLUTE AND RELATIVE MEAN ORGAN WEIGHTS

## ORGAN WEIGHT/BRAIN WEIGHT (GRAMS)

| MALE     | 0 PPM  |        | 300 PPM |        | 30 PPM |        |
|----------|--------|--------|---------|--------|--------|--------|
|          | N = 15 |        | N = 15  |        | N = 15 |        |
|          | ORGAN  | RATIO  | SD      | RATIO  | SD     | RATIO  |
| LIVER    | 8.648  | +1.587 | 8.756   | +1.42* | 8.544  | +1.485 |
| HEART    | 0.819  | +0.103 | 0.760   | +0.119 | 0.821  | +0.141 |
| SPLEEN   | 0.578  | +0.155 | 0.531   | +0.149 | 0.501  | +0.086 |
| KIDNEYS  | 2.099  | +0.377 | 2.101   | +0.232 | 2.360  | +0.827 |
| ADRENALS | 0.038  | +0.010 | 0.040   | +0.008 | 0.041  | +0.013 |
| TESTES   | 1.658  | +0.336 | 1.659   | +0.287 | 1.675  | +0.297 |

| FEMALE   | N = 15 |         | N = 15 |        | N = 15  |         |        |
|----------|--------|---------|--------|--------|---------|---------|--------|
|          | ORGAN  | RATIO   | SD     | RATIO  | SD      | RATIO   | SD     |
|          | LIVER  | 7.456   | +1.918 | 6.883  | +1.508A | 8.460   | +2.162 |
| HEART    | 0.673  | +0.100  | 0.642  | +0.097 | 0.738   | +0.117  |        |
| SPLEEN   | 0.394  | +0.078  | 0.343  | +0.100 | 0.568   | +0.325* |        |
| KIDNEYS  | 1.543  | +0.166  | 1.545  | +0.255 | 1.716   | +0.231  |        |
| ADRENALS | 0.050  | +0.022A | 0.055  | +0.019 | 0.068   | +0.023  |        |
| UTERUS   | 0.404  | +0.156  | 0.400  | +0.173 | 0.419   | +0.226  |        |

\* : P &lt;= .05, TWO TAILED DUNNETT T ON RAW DATA.

# : P &lt;= .05, TWO TAILED DUNNETT T ON RANKED DATA.

A : N = 14 ANIMALS.

TABLE 18

TWO YEAR ORAL (GIEI) TOXICITY-ONCOGENICITY  
STUDY OF FLUOROCARBON FC-143 IN MALE RATS  
TWO YEAR INDIVIDUAL ORGAN WEIGHTS

| DOSE    | ANIMAL  | BODY | LIVER | HEART | SPLEEN | KIDNEYS | ADRENALS <sup>a</sup> | TESTES | BRAIN |
|---------|---------|------|-------|-------|--------|---------|-----------------------|--------|-------|
| 0 PPM   | A1R3510 | 556  | 15.12 | 1.623 | 1.318  | 3.913   | 60                    | 4.523  | 2.154 |
| 0 PPM   | A1R3524 | 638  | 23.45 | 1.511 | 1.415  | 4.845   | 57                    | 3.919  | 2.046 |
| 0 PPM   | A1R3528 | 812  | 19.67 | 1.784 | 1.111  | 4.924   | 87                    | 4.082  | 2.076 |
| 0 PPM   | A1R3531 | 733  | 17.52 | 1.871 | 0.870  | 3.842   | 75                    | 3.574  | 2.127 |
| 0 PPM   | A1R3533 | 765  | 18.07 | 1.575 | 0.991  | 4.128   | 100                   | 2.996  | 2.080 |
| 0 PPM   | A1R3538 | 788  | 21.72 | 2.251 | 1.893  | 4.235   | 94                    | 3.778  | 2.193 |
| 0 PPM   | A1R3542 | 733  | 17.60 | 1.556 | 0.728  | 4.233   | 54                    | 1.434  | 2.200 |
| 0 PPM   | A1R3548 | 706  | 18.44 | 1.867 | 1.148  | 4.670   | 73                    | 3.526  | 2.329 |
| 0 PPM   | A1R3554 | 517  | 14.19 | 1.547 | 1.135  | 3.461   | 88                    | 3.628  | 1.990 |
| 0 PPM   | A1R3557 | 612  | 17.71 | 1.786 | 1.106  | 4.718   | 70                    | 4.123  | 2.252 |
| 0 PPM   | A1R3562 | 588  | 15.14 | 1.616 | 1.754  | 3.988   | 61                    | 3.475  | 2.061 |
| 0 PPM   | A1R3564 | 576  | 16.20 | 1.679 | 1.396  | 3.745   | 93                    | 3.328  | 2.223 |
| 0 PPM   | A1R3569 | 696  | 21.44 | 2.172 | 1.586  | 6.410   | 100                   | 3.203  | 2.046 |
| 0 PPM   | A1R3573 | 759  | 22.41 | 1.825 | 0.907  | 5.011   | 113                   | 3.561  | 1.861 |
| 0 PPM   | A1R3578 | 521  | 13.52 | 1.538 | 0.900  | 3.641   | 77                    | 3.015  | 1.850 |
| 0 PPM   | A1R3581 | 734  | 18.42 | 1.786 | 1.227  | 4.472   | 92                    | 4.177  | 2.240 |
| 300 PPM | A1R3585 | 656  | 21.42 | 1.465 | 1.447  | 4.641   | 84                    | 3.944  | 2.074 |
| 300 PPM | A1R3591 | 440  | 14.04 | 1.427 | 0.662  | 3.831   | 62                    | 2.631  | 2.091 |
| 300 PPM | A1R3594 | 774  | 23.83 | 1.486 | 1.237  | 5.013   | 76                    | 3.967  | 2.210 |
| 300 PPM | A1R3597 | 634  | 14.49 | 1.582 | 0.992  | 4.032   | 97                    | 4.056  | 2.134 |
| 300 PPM | A1R3601 | 643  | 21.09 | 2.530 | 1.023  | 5.680   | 89                    | 3.943  | 2.272 |
| 300 PPM | A1R3605 | 626  | 20.04 | 1.523 | 0.995  | 4.160   | 92                    | 2.867  | 2.141 |
| 300 PPM | A1R3608 | 606  | 18.66 | 1.385 | 1.640  | 4.787   | 84                    | 3.254  | 2.045 |
| 300 PPM | A1R3611 | 641  | 18.43 | 1.642 | 1.320  | 4.271   | 107                   | 3.777  | 2.282 |
| 300 PPM | A1R3618 | 801  | 18.91 | 1.574 | 0.790  | 4.342   | 77                    | 3.844  | 2.123 |
| 300 PPM | A1R3623 | 622  | 20.26 | 1.803 | 1.217  | 5.057   | 91                    | 3.943  | 2.212 |
| 300 PPM | A1R3630 | 507  | 15.62 | 1.443 | 0.824  | 4.081   | 78                    | 3.886  | 2.210 |
| 300 PPM | A1R3633 | 632  | 24.81 | 1.666 | 1.800  | 5.125   | 135                   | 3.436  | 2.130 |
| 300 PPM | A1R3636 | 564  | 16.44 | 1.585 | 1.067  | 4.222   | 68                    | 2.114  | 2.247 |
| 300 PPM | A1R3641 | 609  | 19.45 | 2.032 | 1.129  | 5.133   | 67                    | 4.444  | 2.231 |
| 30 PPM  | A1R3646 | 680  | 18.71 | 1.409 | 1.042  | 3.748   | 66                    | 3.199  | 2.218 |
| 30 PPM  | A1R3650 | 586  | 18.17 | 1.805 | 1.417  | 4.367   | 94                    | 4.043  | 2.473 |
| 30 PPM  | A1R3654 | 704  | 21.44 | 2.020 | 1.108  | 5.309   | 83                    | 5.371  | 2.317 |
| 30 PPM  | A1R3658 | 628  | 16.67 | 1.293 | 0.837  | 4.197   | 60                    | 4.001  | 2.164 |
| 30 PPM  | A1R3663 | 713  | 25.66 | 2.172 | 1.178  | 5.023   | 99                    | 3.794  | 2.220 |
| 30 PPM  | A1R3667 | 583  | 17.03 | 1.872 | 0.979  | 4.562   | 74                    | 3.305  | 2.111 |
| 30 PPM  | A1R3670 | 653  | 19.03 | 2.010 | 1.417  | 7.178   | 124                   | 3.205  | 2.286 |
| 30 PPM  | A1R3672 | 616  | 16.77 | 1.825 | 1.082  | 4.468   | 73                    | 2.452  | 2.060 |
| 30 PPM  | A1R3676 | 539  | 24.00 | 2.326 | 1.414  | 10.404  | 143                   | 3.209  | 2.150 |
| 30 PPM  | A1R3679 | 921  | 23.86 | 2.120 | 0.962  | 5.664   | 90                    | 4.544  | 2.304 |
| 30 PPM  | A1R3682 | 545  | 16.02 | 1.464 | 0.905  | 4.147   | 64                    | 3.080  | 1.938 |
| 30 PPM  | A1R3684 | 772  | 16.98 | 2.022 | 1.151  | 5.550   | 91                    | 4.109  | 2.146 |
| 30 PPM  | A1R3689 | 491  | 13.94 | 1.416 | 0.773  | 4.170   | 62                    | 3.064  | 2.312 |
| 30 PPM  | A1R3691 | 595  | 16.89 | 1.707 | 1.277  | 3.988   | 81                    | 3.832  | 2.244 |
| 30 PPM  | A1R3694 | 697  | 16.58 | 1.631 | 1.033  | 4.626   | 142                   | 4.179  | 2.040 |

NOTES: Body weights and organ weights in grams.

<sup>a</sup> Indicates adrenal weight in mg.

TABLE 18

TWO YEAR ORAL (DIET) TOXICITY-ONCOGENICITY  
STUDY OF FLUOROCARBON FC-1-3 IN FEMALE RATS  
TWO YEAR INDIVIDUAL ORGAN WEIGHTS

| DOSE    | ANIMAL  | BODY | LIVER        | HEART | SPLEEN | KIDNEYS | ADRENALS <sup>a</sup> | UTERUS | BRAIN |
|---------|---------|------|--------------|-------|--------|---------|-----------------------|--------|-------|
| 0 PPM   | N1R4583 | 494  | 15.99        | 1.174 | 1.032  | 3.308   | 98                    | 0.843  | 2.035 |
| 0 PPM   | N1R4586 | 480  | 11.86        | 1.215 | 0.983  | 2.824   | 63                    | 1.065  | 2.069 |
| 0 PPM   | N1R4591 | 516  | 14.21        | 1.322 | 0.749  | 3.161   | 84                    | 0.884  | 1.960 |
| 0 PPM   | N1R4595 | 455  | 11.98        | 1.415 | 0.740  | 2.768   | 108                   | 0.729  | 2.089 |
| 0 PPM   | N1R4598 | 471  | 13.45        | 1.538 | 0.983  | 3.466   | <sup>b</sup>          | 1.155  | 1.928 |
| 0 PPM   | N1R4603 | 481  | 14.37        | 1.465 | 0.657  | 3.218   | 84                    | 0.725  | 2.174 |
| 0 PPM   | N1R4606 | 592  | 14.99        | 1.601 | 0.757  | 3.374   | 114                   | 1.591  | 1.927 |
| 0 PPM   | N1R4611 | 604  | 24.88        | 1.567 | 0.721  | 3.318   | 253                   | 0.566  | 2.115 |
| 0 PPM   | N1R4614 | 518  | 14.40        | 1.498 | 0.697  | 3.356   | 91                    | 0.570  | 2.055 |
| 0 PPM   | N1R4616 | 387  | 11.77        | 1.254 | 0.717  | 3.012   | 122                   | 0.803  | 2.140 |
| 0 PPM   | N1R4626 | 353  | 10.28        | 0.949 | 0.581  | 2.464   | 78                    | 0.354  | 2.032 |
| 0 PPM   | N1R4628 | 535  | 13.34        | 1.182 | 0.938  | 3.082   | 79                    | 0.812  | 1.971 |
| 0 PPM   | N1R4634 | 567  | 19.23        | 1.523 | 0.665  | 2.878   | 108                   | 0.738  | 1.919 |
| 0 PPM   | N1R4636 | 560  | 19.57        | 1.180 | 0.933  | 3.261   | 85                    | 0.746  | 1.874 |
| 0 PPM   | N1R4638 | 675  | 16.28        | 1.612 | 0.798  | 3.390   | 75                    | 0.636  | 2.218 |
| 300 PPM | N1R4644 | 468  | 14.35        | 1.208 | 0.608  | 2.832   | 76                    | 0.466  | 1.968 |
| 300 PPM | N1R4646 | 539  | 17.04        | 1.258 | 0.946  | 3.688   | 89                    | 0.767  | 2.236 |
| 300 PPM | N1R4649 | 378  | 11.32        | 1.056 | 0.495  | 2.806   | 38                    | 0.588  | 2.195 |
| 300 PPM | N1R4657 | 418  | 14.58        | 1.179 | 0.677  | 2.844   | 131                   | 0.596  | 2.043 |
| 300 PPM | N1R4659 | 519  | 15.84        | 1.308 | 1.134  | 3.293   | 102                   | 1.465  | 2.016 |
| 300 PPM | N1R4661 | 459  | 12.22        | 1.153 | 0.630  | 2.398   | 64                    | 0.424  | 2.085 |
| 300 PPM | N1R4663 | 480  | 14.01        | 1.452 | 0.688  | 3.275   | 136                   | 1.076  | 2.024 |
| 300 PPM | N1R4672 | 380  | 10.92        | 1.403 | 0.944  | 2.930   | 100                   | 0.665  | 1.934 |
| 300 PPM | N1R4679 | 551  | 21.39        | 1.521 | 0.717  | 4.125   | 128                   | 0.926  | 1.947 |
| 300 PPM | N1R4683 | 376  | 13.96        | 1.575 | 0.841  | 3.490   | 183                   | 0.438  | 2.065 |
| 300 PPM | N1R4688 | 375  | 13.32        | 1.334 | 0.454  | 3.143   | 137                   | 1.043  | 2.264 |
| 300 PPM | N1R4693 | 480  | 12.13        | 1.187 | 0.557  | 2.542   | 129                   | 0.926  | 2.086 |
| 300 PPM | N1R4695 | 449  | <sup>c</sup> | 1.610 | 0.471  | 3.737   | 175                   | 1.532  | 2.031 |
| 300 PPM | N1R4697 | 354  | 11.60        | 1.122 | 0.722  | 2.977   | 87                    | 0.803  | 1.933 |
| 300 PPM | N1R4701 | 542  | 13.98        | 1.288 | 0.589  | 3.194   | 112                   | 0.529  | 1.958 |
| 30 PPM  | N1R4708 | 526  | 17.63        | 1.375 | 0.857  | 3.809   | 173                   | 0.949  | 1.975 |
| 30 PPM  | N1R4711 | 559  | 22.66        | 1.456 | 1.016  | 3.045   | 123                   | 0.517  | 1.927 |
| 30 PPM  | N1R4714 | 545  | 23.62        | 1.693 | 1.027  | 3.504   | 202                   | 0.612  | 1.859 |
| 30 PPM  | N1R4716 | 404  | 10.49        | 1.594 | 0.989  | 2.722   | 105                   | 0.408  | 1.840 |
| 30 PPM  | N1R4720 | 539  | 19.79        | 1.411 | 1.296  | 3.788   | 185                   | 0.610  | 2.010 |
| 30 PPM  | N1R4723 | 542  | 16.73        | 1.432 | 1.089  | 4.066   | 118                   | 2.450  | 2.127 |
| 30 PPM  | N1R4726 | 606  | 16.96        | 1.864 | 1.057  | 3.878   | 103                   | 1.064  | 2.117 |
| 30 PPM  | N1R4729 | 502  | 19.16        | 1.693 | 0.947  | 3.608   | 169                   | 1.035  | 1.841 |
| 30 PPM  | N1R4733 | 452  | 12.22        | 1.217 | 0.707  | 2.997   | 94                    | 0.811  | 2.103 |
| 30 PPM  | N1R4736 | 533  | 13.87        | 1.399 | 0.920  | 3.216   | 73                    | 0.540  | 2.001 |
| 30 PPM  | N1R4739 | 756  | 22.13        | 1.708 | 3.561  | 3.113   | 210                   | 0.522  | 2.085 |
| 30 PPM  | N1R4745 | 428  | 14.03        | 1.464 | 0.824  | 3.670   | 111                   | 0.974  | 2.097 |
| 30 PPM  | N1R4747 | 545  | 16.57        | 1.274 | 0.993  | 3.407   | 125                   | 0.846  | 2.051 |
| 30 PPM  | N1R4752 | 575  | 15.09        | 1.538 | 0.854  | 4.012   | 164                   | 0.864  | 2.106 |
| 30 PPM  | N1R4754 | 487  | 14.88        | 1.210 | 1.157  | 2.856   | 89                    | 0.614  | 1.967 |

NOTES: Body weights and organ weights in grams.

<sup>a</sup> Indicates adrenal weights in mg.

<sup>b</sup> Indicates adrenal weight not recorded; left adrenal greatly enlarged.

<sup>c</sup> Indicates liver weight not recorded due to mass.

TABLE 19

Two Year Oral (Diet) Toxicity - Oncogenicity Study of  
Fluorocarbon FC-143 in Rats

## Summary of Major Microscopic Findings - Percent Incidence at 2 Years

|                          |       | NEOPLASTIC LESIONS |              |            |              |            |              |
|--------------------------|-------|--------------------|--------------|------------|--------------|------------|--------------|
| Organ/Lesion             | n = 1 | Controls           |              | High       |              | Low        |              |
|                          |       | Male<br>50         | Female<br>50 | Male<br>50 | Female<br>50 | Male<br>50 | Female<br>50 |
| Adrenal                  |       |                    |              |            |              |            |              |
| Pheochromocytoma, benign |       | 4                  | 4            | 8          | 0            | 8          | 0            |
| Pheochromocytoma, malig. |       | 0                  | 0            | 0          | 2            | 2          | 0            |
| Liver                    |       |                    |              |            |              |            |              |
| Hepatocellular Carcinoma |       | 6                  | 0            | 10         | 2            | 2          | 0            |
| Mammary Gland            |       |                    |              |            |              |            |              |
| Adenocarcinoma           |       | -                  | 15           | -          | 11           | -          | 31           |
| Adenoma                  |       | -                  | 7            | -          | 0            | -          | 0            |
| Carcinoma                |       | -                  | 2            | -          | 0            | -          | 0            |
| Fibroadenoma             |       | -                  | 22           | -          | 48*          | -          | 42           |
| Lymphangiosarcoma        |       | -                  | 0            | -          | 2            | -          | 0            |
| Pituitary                |       |                    |              |            |              |            |              |
| Adenoma                  |       | 35                 | 72           | 28         | 72           | 36         | 83           |
| Testes/Epididymis        |       |                    |              |            |              |            |              |
| Leydig Cell Adenoma      |       | 0                  | -            | 14*        | -            | 4          | -            |
| Thyroid                  |       |                    |              |            |              |            |              |
| C-cell Adenoma           |       | 0                  | 2            | 9          | 0            | 4          | 0            |
| C-cell Carcinoma         |       | 5                  | 0            | 0          | 0            | 0          | 0            |

1 = 50 rats/sex/group were at risk, % values derived from actual tissues examined

\* = Significantly different (  $p = 0.05$ ) from controls

TABLE 20

Two Year Oral (Diet) Toxicity - Oncogenicity Study of  
Fluorocarbon FC-143 in Rats

## Summary of Major Microscopic Findings - Percent Incidence at 2 Years

|                                   |       | NON-NEOPLASTIC LESIONS |              |            |              |            |              |
|-----------------------------------|-------|------------------------|--------------|------------|--------------|------------|--------------|
| Organ/Lesion                      | n = 1 | Controls               |              | High       |              | Low        |              |
|                                   |       | Male<br>50             | Female<br>50 | Male<br>50 | Female<br>50 | Male<br>50 | Female<br>50 |
| Adrenal                           |       |                        |              |            |              |            |              |
| Nodular Hyperplasia               |       | 4                      | 0            | 18         | 2            | 2          | 6            |
| Sinusoidal Ectasis                |       | 22                     | 84           | 32         | 82           | 26         | 86           |
| Heart                             |       |                        |              |            |              |            |              |
| Myocarditis, Chronic              |       | 28                     | 32           | 34         | 20           | 36         | 10*          |
| Liver                             |       |                        |              |            |              |            |              |
| Cystoid Degeneration              |       | 8                      | 0            | 56*        | 2            | 14         | 2            |
| Hepatocellular Alt. Basophil.     |       | 4                      | 16           | 12         | 4            | 2          | 16           |
| Hyperplastic Nodule               |       | 0                      | 2            | 6          | 4            | 0          | 0            |
| Megalocytosis                     |       | 0                      | 0            | 80*        | 16*          | 12         | 2            |
| Portal Mononuclear<br>Cell Infil. |       | 74                     | 38           | 96*        | 38           | 64         | 22           |
| Necrosis                          |       | 6                      | 10           | 10         | 4            | 10         | 12           |
| Lung                              |       |                        |              |            |              |            |              |
| Alveolar Macrophages              |       | 20                     | 28           | 62*        | 38           | 32         | 20           |
| Hemorrhage                        |       | 20                     | 28           | 44*        | 38           | 28         | 26           |
| Perivas. Mono. Infil.             |       | 42                     | 26           | 14*        | 28           | 6*         | 4*           |
| Vascular Mineralization           |       | 86                     | 44           | 94         | 52           | 86         | 76*          |
| Pneumonia, Interstitial           |       | 32                     | 14           | 14         | 18           | 10*        | 6            |
| Testis/Epididymis                 |       |                        |              |            |              |            |              |
| Tubular Atrophy                   |       | 14                     | -            | 22         | -            | 20         | -            |
| Vascular Mineralization           |       | 0                      | -            | 18*        | -            | 6          | -            |
| Ovary                             |       |                        |              |            |              |            |              |
| Cyst                              |       | -                      | 13           | -          | 11           | -          | 18           |
| Tubular Hyperplasia               |       | -                      | 0            | -          | 32*          | -          | 14*          |
| Thyroid                           |       |                        |              |            |              |            |              |
| C-Cell Hyperplasia                |       | 2                      | 0            | 2          | 7            | 13         | 2            |
| Uterus                            |       |                        |              |            |              |            |              |
| Cystic Glands                     |       | -                      | 14           | -          | 10           | -          | 24           |
| Pancreas                          |       |                        |              |            |              |            |              |
| Acinar Atrophy                    |       | 13                     | 12           | 22         | 9            | 20         | 12           |
| Salivary Gland                    |       |                        |              |            |              |            |              |
| Sialadenitis, Chronic             |       | 2                      | 2            | 30*        | 5            | 27*        | 2            |
| Spleen                            |       |                        |              |            |              |            |              |
| Hemosiderosis                     |       | 32                     | 50           | 44         | 24*          | 8*         | 6*           |

1 = 50 rats/sex/group were at risk, % values derived from actual tissues examined

\* = Significantly different (  $p = 0.05$ ) from controls

FIGURE 1

TWO YEAR ORAL (DIET) TOXICITY-ONCOGENICITY STUDY OF FLUOROCARBON FC-143 IN RATS  
MEAN BODY WEIGHTS (G) OF MALES

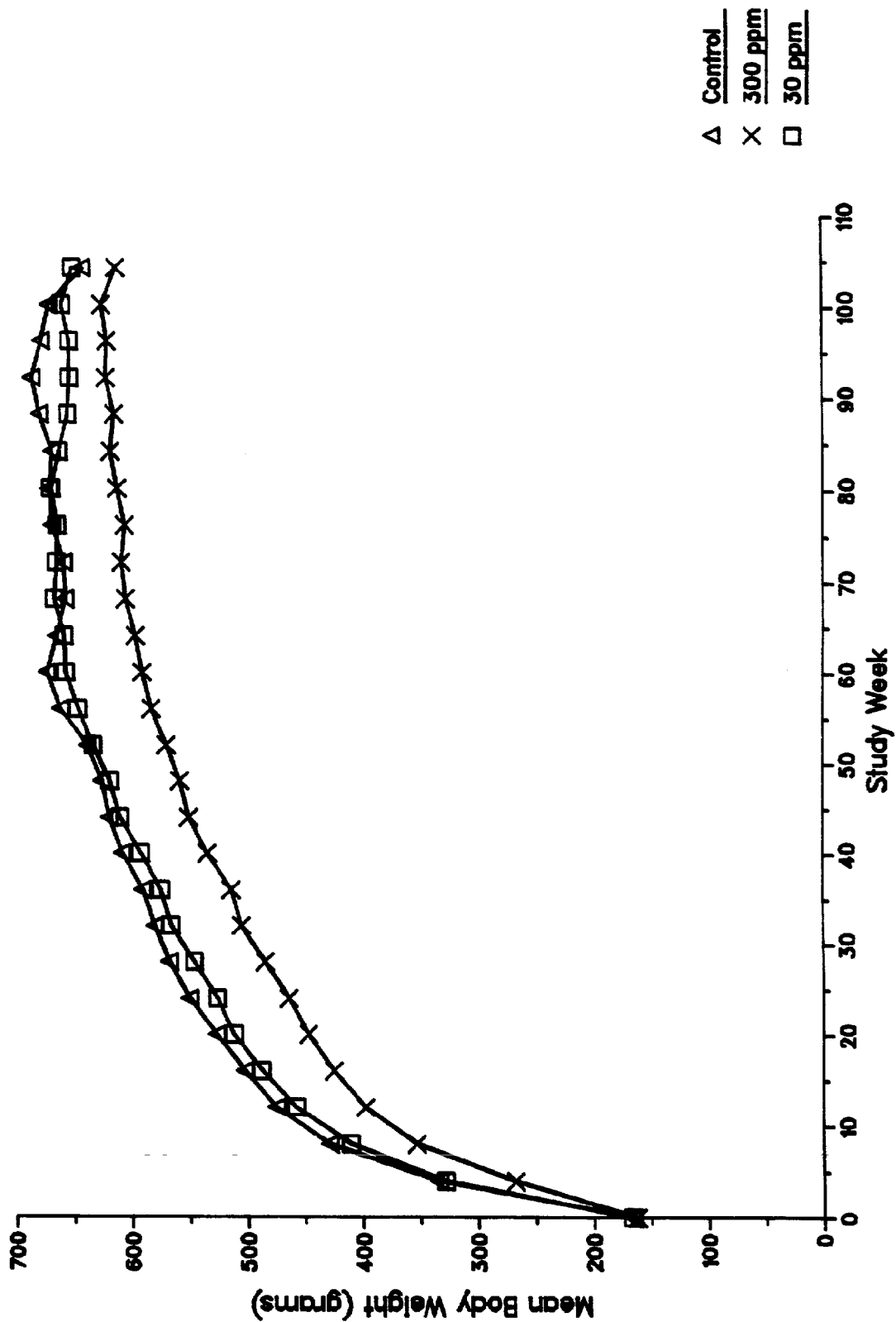


FIGURE 2

TWO YEAR ORAL (DIET) TOXICITY-ONCOGENICITY STUDY OF FLUOROCARBON FC-143 IN RATS  
MEAN BODY WEIGHTS (G) OF FEMALES

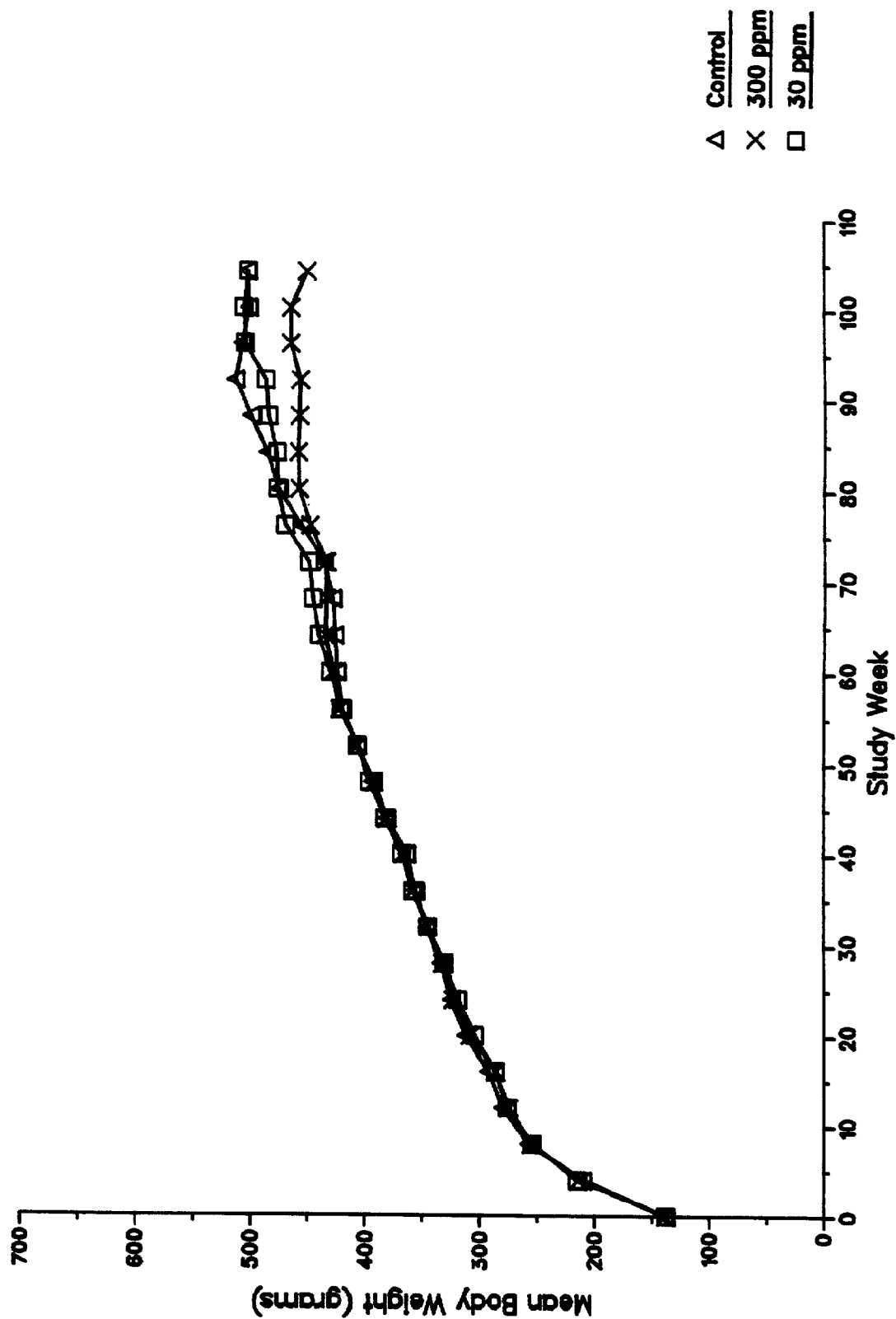


FIGURE 3

TWO YEAR ORAL (DIET) TOXICITY-ONCOGENICITY STUDY OF FLUOROCARBON FC-143 IN RATS  
MEAN FOOD CONSUMPTION (G/KG OF MEAN BODY WEIGHT) OF MALES

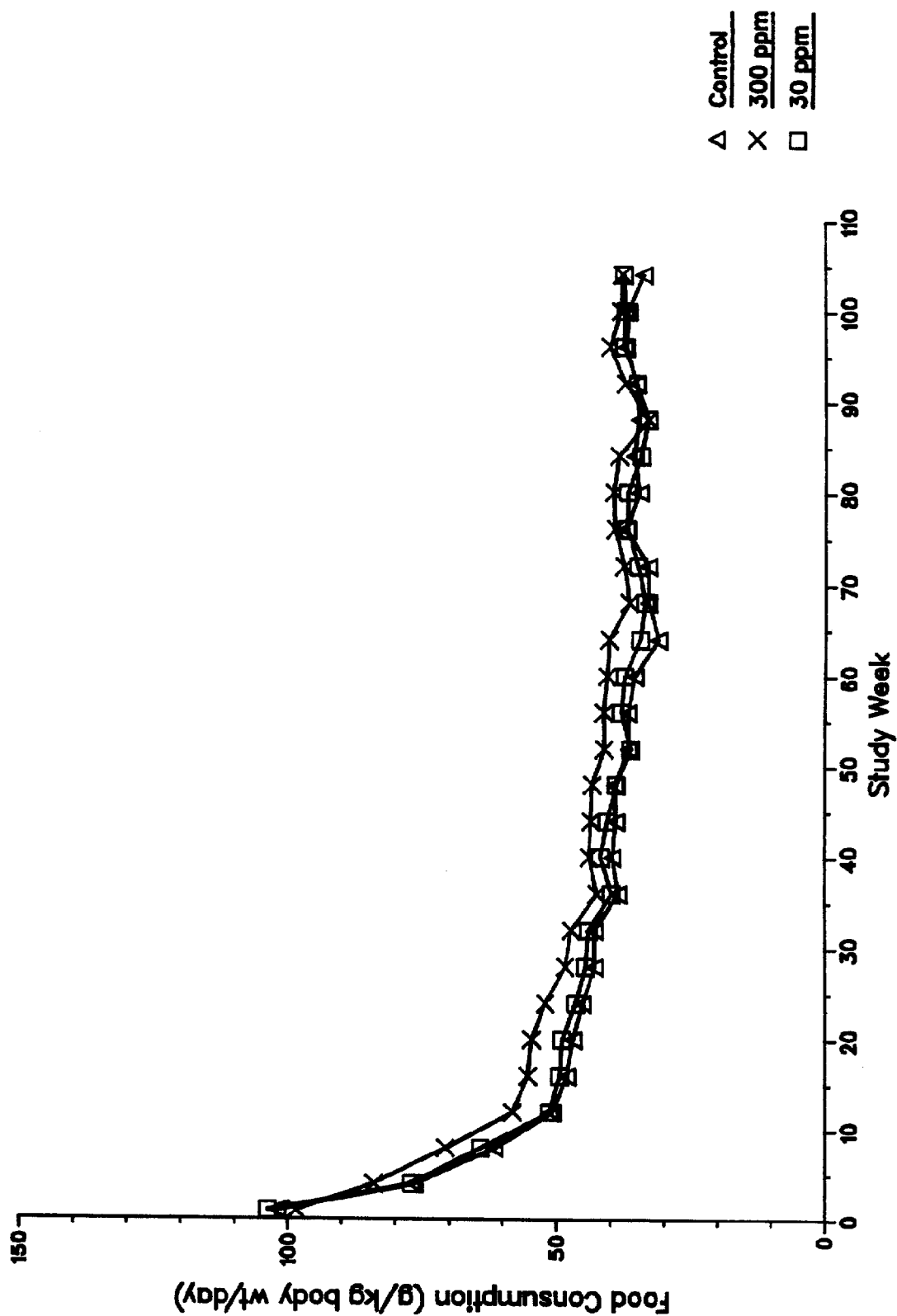
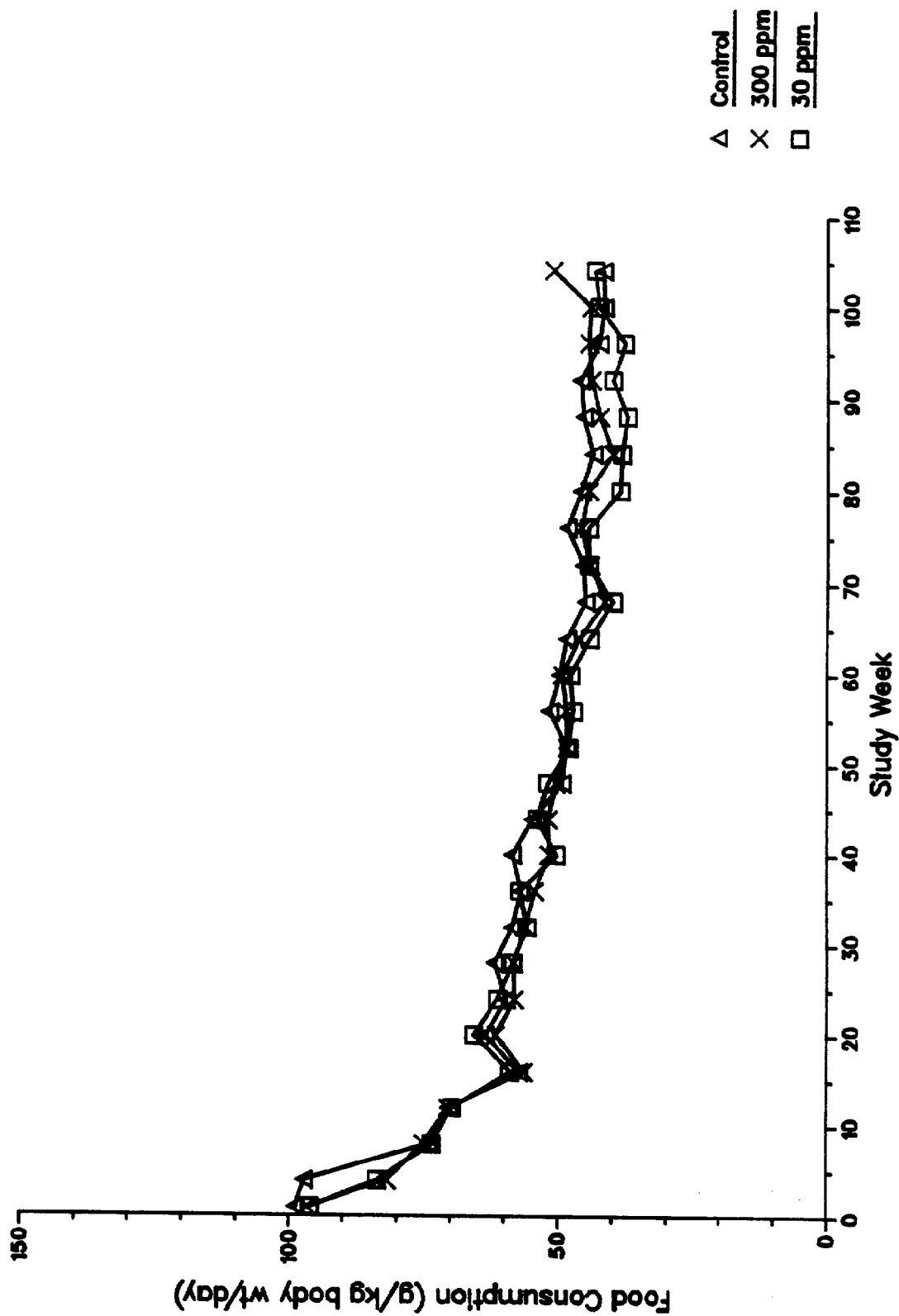


FIGURE 4

TWO YEAR ORAL (DIET) TOXICITY-ONCOGENICITY STUDY OF FLUOROCARBON FC-143 IN RATS  
MEAN FOOD CONSUMPTION (G/KG OF MEAN BODY WEIGHT) OF FEMALES



TWO YEAR ORAL (DIET) TOXICITY / CARCINOGENICITY  
STUDY OF FLUOROCHEMICAL FC-143 IN RATS

APPENDIX ITEMS

Internal Correspondence

Appendix Item A

cc: F. D. Griffith - 220-2E-02  
W. C. McCormick - 220-2E-02  
  
rc: J. K. Sugg - 220-2E-02  
F. A. Ubel, M.D. - 220-2E-02

To: M. T. CASE - RIKER LABORATORIES - 218-3S  
From: S. D. SORENSON - MEDICAL, IND. HYG. SERV. - 220-2E-02  
Subject: Air Monitoring, Project 89003107  
Date: August 27, 1981

**3M**

Summary

Air monitoring has been conducted in three animal treatment room used in fluorochemical studies. The purpose of the monitoring was to evaluate possible airborne contaminants.

The sample results indicate that fluorochemical exposures, if any, were below detectable amounts.

Detail

Air sampling was conducted in the three animal treatment rooms used in the two year animal feeding study of FM-3924 and FC-143. The study has been in progress since April 21, 1981.

Area samples were collected in each of the several treatment rooms by means of either impingers with methanol media or SKC® silica gel sampling tubes. With one exception, samples were located on top of the animal racks. The one exception was an air sampler located near the room air exhaust near the floor. The periods sampled are judged representative of "usual" or steady state conditions.

The flow rate of the sample pumps was checked approximately every 30 minutes throughout the sampling period.

The samples were analyzed by the Analytical Section of the 3M Central Research Laboratory. This laboratory has full accreditation as an Industrial Hygiene Laboratory by the American Industrial Hygiene Association.

Appendix Item A

M. T. Case

-2-

August 27, 1981

The sample results indicate that airborne concentrations of the test fluorochemicals, if any, were below detectable limits. On this basis, it is judged that cross contamination potential by airborne means is unlikely.

Please call if there are any questions.

  
SDS:cr

APPENDIX ITEM A

M. T. Case

-3-

August 27, 1981

Sample Data  
Building 218-3  
Project #89003107  
August 7, 1981

| <u>Sample<br/>Number</u> | <u>Description</u>                                                            | <u>Time</u> | <u>Compound</u> | <u>Concentration, mg/m<sup>3</sup></u> |
|--------------------------|-------------------------------------------------------------------------------|-------------|-----------------|----------------------------------------|
| CCL81-20                 | D-340. Control Room,<br>top of rack.                                          | 922-1225    | FM-3924         | < 0.003                                |
| CCL81-23                 | Same as above                                                                 | 922-1225    | FC-143          | < 0.001                                |
| CCL81-21                 | D-332. FM-3924, dose<br>Room. Sampler on top of<br>high dose rack.            | 926-1236    | FM-3924         | < 0.003                                |
| CCL81-25                 | D-332. Sampler at<br>rear room air exhaust<br>about 18 inches above<br>floor. | 1055-1236   | FM-3924         | < 0.025                                |
| CCL81-22                 | D-338. FC-143, dose<br>Room. Sampler on top<br>of high dose rack.             | 925-1228    | FC-143          | < 0.001                                |
| CCL81-24                 | Same as CCL81-22,<br>duplicate sample<br>using silica gel tube.               | 931-1228    | FC-143          | < 0.002                                |

SAMPLING METHOD: FM-3924 SKC silica gel sampling tubes.  
FC-143 Impinger - methanol.

ANALYTICAL METHOD: FM-3924 - gas chromatography, electron capture detector.  
FC-143 - derivatization; gas chromatography, electron capture  
detector.

ANALYTICAL REQUEST: #A80248.

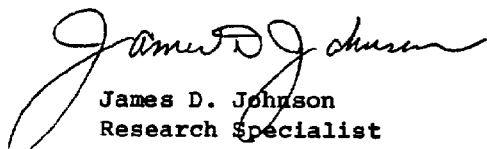
Internal Correspondence

APPENDIX ITEM A

To: L. J. Sibinski  
From: J. D. Johnson  
Subject: Analysis of Plasma Samples from Sentinal Rats Housed in Room  
with Two Year Tox Study-Rats (Riker Study No. 0281CR0012)  
Date: October 7, 1985

**3M**

I have attached the one page protocol attachment for the use of sentinal rats in Riker Study No. 0281CR0012. These samples were collected as described. On July 15, 1981, forty plasma samples (see attached) were transferred to V. Pothapragada (Dr. V) in Commercial Chemicals for analysis of organic fluorine. The results were sent back by Dr. V 8/24/81. All samples were less than one part per million. From this, it can be concluded that there was no airborne fluorine present that was interfering with this study. These data are in SJG Notebook 56531, p 53.

  
James D. Johnson  
Research Specialist  
Riker Laboratories, Inc.

Internal Correspondence

cc: M.T. Case  
F.D. Griffith  
R.E. Ober  
W.H. Pearlson  
R.A. Prokop

~~218-3~~ 218-3

To: V. Pothapragada

From: J.D. Johnson

Subject: Analysis of Plasma Samples from Sentinel Rats Housed in Room  
with Two Year Tox Study Rats (Riker Study No. 0281 CR 0012).

Date: July 15, 1981

**3M**

Forty plasma samples from sentinel rats are submitted for fluorine analysis. These samples include 5 male (IR 3861, IR 3862, IR 3863, IR 3864, and IR 3865) and 5 female (IR 4921, IR 4922, IR 4923, IR 4924, and IR 4925) which were sacrificed before dosing was initiated. The other thirty plasma samples were collected at 30 days after dosing started. There are 5 rats of each sex from the control room, from the room in which study rats are receiving FC-143, and from the room in which study rats are receiving FM-3924.

The numbers for these rats are as follows:

5 male Control Room (IR 3866, IR 3867, IR 3868, IR 3869, IR 3870)

5 female Control Room (IR 4926, IR 4927, IR 4928, IR 4929, IR 4930)

5 male FC-143 Room (IR 3876, IR 3877, IR 3878, IR 3879, IR 3880)

5 female FC-143 Room (IR 4936, IR 4937, IR 4938, IR 4939, IR 4940)

5 male FM-3924 Room (IR 3886, IR 3887, IR 3888, IR 3889, IR 3890)

5 female FM-3924 Room (IR 4946, IR 4947, IR 4948, IR 4949, IR 4950)

Please get back to us with the data. It may be that interpretation of the results will lead to specific analysis or to analysis of tissue.

  
J.D. Johnson/mho

Appendix Item B

To ~~████████████████████████████████████████~~  
 From P. J. Colbert - 236-2B  
 Subject GLC Analysis of FM-3924 (T-2999CoC) FC-143 (T-2998CoC) Blended  
 into Ground Lab Chow. (Riker Study #0281CR0012)  
 Date April 29, 1981

**3**

Reference: Commercial Chemicals Analytical Laboratory  
 Requests #17079, 17080, 17096

Commercial Chemicals Analytical Laboratory  
 Method #'s 630-0481, 631-0481

The samples of FM-3924 (W.R. EtFOSE) blended into Ground Lab Chow, along with four blank Ground Lab Chow samples, were received from L. J. Sibinski on 4-20-81 for analysis. All samples were run in triplicate. The results are:

| <u>Compound</u>                          | <u>Theoretical ppm</u> | <u>Actual ppm</u><br><u>ug/g FM-3924</u> |
|------------------------------------------|------------------------|------------------------------------------|
| Blank for concentrate                    | 0                      | 0                                        |
| FM-3924 Concentrate<br>(blended 4-17-81) | 200                    | 214                                      |
| FM-3924 Top Sample                       | 100                    | 105                                      |
| Mid Sample                               | 100                    | 105                                      |
| Bottom Sample                            | 100                    | 111                                      |
| FM-3924 Top Sample                       | 30                     | 29                                       |
| Mid Sample                               | 30                     | 27                                       |
| Bottom Sample                            | 30                     | 30                                       |
| FM-3924 Top Sample                       | 10                     | 11                                       |
| Mid Sample                               | 10                     | 9                                        |
| Bottom Sample                            | 10                     | 10                                       |

APPENDIX ITEM B

L. J. Sibinski  
CCD Analytical Report #213  
April 29, 1981  
Page 2

| <u>Compound</u>         | <u>Theoretical ppm</u> | <u>Actual ppm</u><br><u>(ug/g) FM-3924</u> |
|-------------------------|------------------------|--------------------------------------------|
| Blank for 100 ppm level | 0                      | 0                                          |
| Blank for 30 ppm level  | 0                      | 0                                          |
| Blank for 10 ppm level  | 0                      | 0                                          |

The level of ethanol in FM-3924 Concentrate (blended 4-17-79) was also checked and found to be less than 1 ppm (ug/g).

Six samples of FC-143 blended into Ground Lab Chow, along with two blank Ground Lab Chow samples were received from L. J. Sibinski on 4/20/81 for analysis. All samples were run in triplicate. The results are:

| <u>Compound</u>         | <u>Theoretical ppm</u> | <u>Actual ppm</u><br><u>(ug/g) FC-143</u> |
|-------------------------|------------------------|-------------------------------------------|
| FC-143 Top Sample       | 300                    | 326                                       |
| Mid Sample              | 300                    | 282                                       |
| Bottom Sample           | 300                    | 297                                       |
| Blank for 300 ppm level | 0                      | 0                                         |
| FC-143 Top Sample       | 30                     | 24                                        |
| Mid Sample              | 30                     | 23                                        |
| Bottom Sample           | 30                     | 28                                        |
| Blank for 30 ppm level  | 0                      | 0                                         |

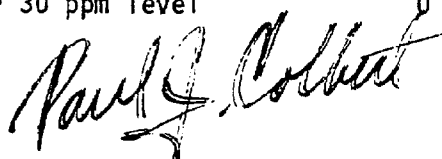
Because two of the three 30 ppm level samples were low, another set of samples were received from L. J. Sibinski on 4/27/81 for analysis. The results are:

APPENDIX ITEM B

L. J. Sibinski  
CCD Analytical Report #213  
April 29, 1981  
Page 3

| <u>Compound</u>        | <u>Theoretical ppm</u> | <u>Actual ppm</u><br><u>(ug/g) FC-143</u> |
|------------------------|------------------------|-------------------------------------------|
| FC-143 Top Sample      | 30                     | 31                                        |
| Mid Sample             | 30                     | 28                                        |
| Bottom Sample          | 30                     | 30                                        |
| Blank for 30 ppm level | 0                      | 0                                         |

LJS/mao



cc: M. T. Case - 218-2  
E. G. Lamprecht - 218-3  
W. C. McCormick - 220-2E-02  
J. D. LaZerte - 236-1L  
R. A. Prokop - 236-2B  
V. Pothapragada - 236-3A

APPENDIX ITEM B

**Internal Correspondence**

dc: M. T. Case 218-2  
E. G. Lamprecht 218-3  
J. D. LaZerte 236-1  
W. C. McCormick 220-2E-02  
V. Pothapragada 236-3A  
R. A. Prokop 236-2B  
L. D. Winter 236-2B

Commercial Chemicals  
Analytical Report  
#229

To: L. J. Sibinski 218-3-3

From: P. J. Colbert 236-2B

Subject: GLC Analysis of FM-3924 (T-2999 CoC) FC-143 (T-2998 CoC) Blended  
Into Ground Lab Chow (Riker Study #0281CR0012)

Date: June 15, 1981

**3M**

Six samples of FC-143 blended into Ground Lab Chow, along with two blank Ground Lab Chow samples, were received from L. J. Sibinski on 5-18-81 for analysis. All samples were run in triplicate. The results are:

| <u>Sample</u>     | <u>Theoretical ppm</u> | <u>Actual ppm</u><br><u>µg/g FC-143</u> |
|-------------------|------------------------|-----------------------------------------|
| Blank for 300 ppm | 0                      | 0                                       |
| FC-143 Top        | 300                    | 303                                     |
| Mid               | 300                    | 305                                     |
| Bottom            | 300                    | 295                                     |
| Blank for 30 ppm  | 0                      | 0                                       |
| FC-143 Top        | 30                     | 31                                      |
| Mid               | 30                     | 31                                      |
| Bottom            | 30                     | 29                                      |

The next set of Ground Lab Chow Samples will be submitted for analysis on August 17, 1981.

*Paul J. Colbert*

PJC:da

APPENDIX ITEM BCommercial Chemicals  
Analytical Report #250

To: L. J. Sibinski - 218-3-3  
From: P. J. Colbert - 236-2B  
Subject: GLC Analysis of FC-143 (T-2995CoC) Blended into Ground Lab Chow (Riker Study #0281CR0012)  
Date: August 20, 1981

**3M**

Reference: Commercial Chemicals Analytical Laboratory  
Request #17449, and CCD Method G31-0481

Six samples of FC-143 blended into Ground Lab Chow, along with two Blank Ground Lab Chow samples, were received from L. J. Sibinski on August 17, 1981, for analysis. All samples were run in triplicate. The results are:

| <u>Sample</u>     | <u>Theoretical ppm</u> | <u>Actual ppm</u><br><u>ug/g FC-143</u> |
|-------------------|------------------------|-----------------------------------------|
| Blank for 300 ppm | 0                      | 0                                       |
| FC-143 Top        | 300                    | 308                                     |
| Mid               | 300                    | 310                                     |
| Bottom            | 300                    | 328                                     |
| Blank for 30 ppm  | 0                      | 0                                       |
| FC-143 Top        | 30                     | 28                                      |
| Mid               | 30                     | 30                                      |
| Bottom            | 30                     | 30                                      |

PJC/mao

*Paul J. Colbert*

dc: M. T. Case - 218-2  
E. G. Lamprecht - 218-3  
J. D. LaZerte - 236-1L  
W. C. McCormick - 220-2E-02  
V. Pothapragada - 236-3A  
R. A. Prokop - 236-2B  
L. D. Winter - 236-2B  
R. M. Payfer - 236-2B  
G. W. Kirsch - 236-3A

APPENDIX ITEM BCOMMERCIAL CHEMICALS  
ANALYTICAL REPORT #289

To: L. J. SIBINSKI - 218-3-3  
From: R. M. PAYFER - 236-2B  
Subject: GLC ANALYSIS OF FC-143 (T-2998 CoC) BLENDED INTO GROUND  
LAB CHOW (RIKER STUDY #2081cR0012)  
Date: November 30, 1981

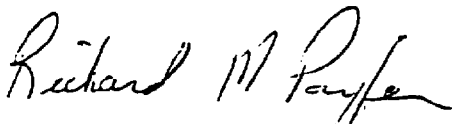
**3M**

References: Commercial Chemicals Analytical Laboratory  
Request #17779

Six samples of FC-143 blended into ground lab chow, along with two blank ground lab chow samples, were received from L. J. Sibinski on November 16, 1981 for analysis. All samples were run in triplicate with the following results:

| <u>Sample</u>    | <u>Theoretical PPM</u> | <u>Actual PPM</u><br><u>ug/g FC-143</u> |
|------------------|------------------------|-----------------------------------------|
| Blank for 300    | 0                      | 0                                       |
| PPM FC-143 Top   | 300                    | 278                                     |
| Middle           | 300                    | 310                                     |
| Bottom           | 300                    | 323                                     |
| Blank for 30 PPM | 0                      | 0                                       |
| FC-143 Top       | 30                     | 29                                      |
| Middle           | 30                     | 28                                      |
| Bottom           | 30                     | 33                                      |

RMP/hc



dc: M. T. Case - 218-2  
G. W. Kirsch - 236-3A  
E. G. Lamprecht - 218-3  
J. D. LaZerte - 236-1  
W. C. McCormick - 220-2E-02  
V. Pothapragada - 236-3A  
R. A. Prokop - 236-2B  
L. D. Winter - 236-2B (2 copies)

APPENDIX ITEM B

Internal Correspondence:

dc: M.T. Case - 218-2  
G.W. Kirsch - 236-44  
E.G. Lamprecht - 218-3  
J.D. LaZerte - 236-1  
W.C. McCormick - 220-2E-02  
V. Pothapragada - 236-3A  
L.D. Winter - 236-2B

COMMERCIAL CHEMICALS  
ANALYTICAL REPORT #319

To: L. J. SIBINSKI - 218-3-3

From: R. M. PAYFER - 236-2B

Subject: GLC ANALYSIS OF FC-143 (T-2998 CoC) BLENDED INTO GROUND  
LAB CHOW (RIKER STUDY #2081 CR 0012)

Date: MARCH 5, 1982



Reference: Commercial Chemicals Analytical Laboratory Request #18069

Six samples of FC-143 blended into ground lab chow, along with two blank ground lab chow samples, were received from L. J. Sibinski on February 15, 1982. These samples were analyzed in triplicate for FC-143 with the following results:

| <u>Sample</u>     | <u>Theoretical PPM</u> | <u>Actual PPM ug/g FC-143</u> |
|-------------------|------------------------|-------------------------------|
| Blank for 300 PPM | 0                      | 0                             |
| 300 PPM Top       | 300                    | 165                           |
| 300 PPM Middle    | 300                    | 215                           |
| 300 PPM Bottom    | 300                    | 215                           |
| Blank for 30 PPM  | 0                      | 0                             |
| 30 PPM Top        | 30                     | 27                            |
| 30 PPM Middle     | 30                     | 33                            |
| 30 PPM Bottom     | 30                     | 24                            |

*Richard M. Payfer*  
RMP:df

*incorrect reading due to faulty detector in our communication with R.M. Payfer on 3/16/82 additional*

*Re-analyze 11 samples*

Internal Correspondence

APPENDIX ITEM B

COMMERCIAL CHEMICALS  
ANALYTICAL REPORT #328

To: L. J. SIBINSKI - 218-3-3  
From: R. M. PAYFER - 236-2B  
Subject: GLC RE-ANALYSIS OF FC-143 (T-2998 COC) BLENDED INTO  
GROUND LAB CHOW (RIKER STUDY #2081 CRO012)  
Date: March 31, 1982

**3M**

Reference: Commercial Chemicals Analytical Laboratory Request #18100

Three samples of FC-143 blended into ground lab chow, along with one blank ground lab chow sample, were received from L. J. Sibinski on March 8, 1982. These samples were analyzed in triplicate for FC-143 with the following results:

| <u>Sample</u>     | <u>Theoretical PPM</u> | <u>Actual PPM ug/g FC-143</u> |
|-------------------|------------------------|-------------------------------|
| Blank for 300 PPM | 0                      | 0                             |
| 300 PPM Top       | 300                    | 278                           |
| 300 PPM Middle    | 300                    | 283                           |
| 300 PPM Bottom    | 300                    | 284                           |

*R. M. Payfer*  
RMP/hc

cc: M. T. Case - 218-2  
G. W. Kirsch - 236-3A  
E. G. Lamprecht - 218-3  
J. D. LaZerte - 236-1  
W. C. McCormick - 220-2E-02  
V. Pothapragada - 236-3A  
L. D. Winter - 236-2B

Internal Correspondence

APPENDIX ITEM B

COMMERCIAL CHEMICALS  
ANALYTICAL REPORT #340

To: L. J. SIBINSKI - 218-3-3  
From: R. M. PAYFER - 236-2B  
Subject: GLC ANALYSIS OF FC-143 (T-2998 Coc) BLENDED INTO GROUND  
LAB CHOW (RIKER STUDY #0281 CRO012)  
Date: May 28, 1982

**3M**

Reference: Commercial Chemicals Analytical Laboratory Request #18320

Six samples of FC-143 blended into ground lab chow, along with two blank ground lab chow samples, were received from L. J. Sibinski on May 17, 1982. These samples were analyzed in triplicate for FC-143 with the following results:

| <u>Sample</u>     | <u>Theoretical PPM</u> | <u>Actual PPM</u><br><u>ug/g FC-143</u> |
|-------------------|------------------------|-----------------------------------------|
| Blank for 300 PPM | 0                      | 0                                       |
| 300 PPM Top       | 300                    | 310                                     |
| 300 PPM Middle    | 300                    | 280                                     |
| 300 PPM Bottom    | 300                    | 289                                     |
| Blank for 30 PPM  | 0                      | 0                                       |
| 30 PPM Top        | 30                     | 31                                      |
| 30 PPM Middle     | 30                     | 33                                      |
| 30 PPM Bottom     | 30                     | 33                                      |

RMP/hc

dc: M. T. Case - 218-2  
G. W. Kirsch - 236-GB  
E. G. Lamprecht - 218-3  
J. D. LaZerte - 236-1  
W. C. McCormick - 220-2E-02  
V. Pothapragada - 236-GB  
L. D. Winter - 236-2B

APPENDIX ITEM B

COMMERCIAL CHEMICALS  
ANALYTICAL REPORT #366

To: L. J. SIBINSKI - 218-3-3  
From: R. M. PAYFER - 236-2B  
Subject: GLC ANALYSIS OF FC-143 (T-2998 Coc) BLENDED INTO GROUND  
LAB CHOW (RIKER STUDY #0281 CRO012)  
Date: Sept. 13, 1982

**3M**

Reference: Commercial Chemicals Analytical Laboratory Request #18609

Six samples of FC-143 blended into ground lab chow, along with two blank ground lab chow samples, were received from L. J. Sibinski on Aug. 16, 1982. These samples were analyzed in triplicate for FC-143 with the following results:

| <u>Sample</u>     | <u>Theoretical PPM</u> | <u>Actual PPM</u><br><u>ug/g FC-143</u> |
|-------------------|------------------------|-----------------------------------------|
| Blank for 300 PPM | 0                      | 0                                       |
| 300 PPM Top       | 300                    | 300                                     |
| 300 PPM Middle    | 300                    | 319                                     |
| 300 PPM Bottom    | 300                    | 304                                     |
| Blank for 30 PPM  | 0                      | 0                                       |
| 30 PPM Top        | 30                     | 29.5                                    |
| 30 PPM Middle     | 30                     | 35                                      |
| 30 PPM Bottom     | 30                     | 29.5                                    |

*Richard Payfer*  
RMP/hc

dc: M. T. Case - 218-2  
G. W. Kirsch - 236-GB  
E. G. Lamprecht - 218-3  
J. D. LaZerte - 236-1  
W. C. McCormick - 220-2E-D2  
V. Pothapragada - 236-GB  
L. D. Winter - 236-2B

Internal Correspondence

APPENDIX ITEM B

To: J. L. Sibinski - 218-3  
From: G. W. Kirsch - 236-2B  
Subject: GLC Analysis of FC-143 (T-2998 CoC) Blended into Ground Lab Chow (Riker Study #0281 CR0012)  
Date: December 8, 1982

Commercial Chemicals  
Analytical Report #384

**3M**

Reference: Commercial Chemicals Analytical Laboratory  
Request #18855.

Six samples of FC-143 blended into ground lab chow, along with two blank ground lab chow samples, were received from L. J. Sibinski on December 5, 1982. These samples were analyzed in triplicate for FC-143 with the following results:

| <u>Sample</u>     | <u>Theoretical ppm</u> | <u>Actual ppm</u><br><u>µg/g FC-143</u> |
|-------------------|------------------------|-----------------------------------------|
| Blank for 300 ppm | 0                      | 0                                       |
| 300 ppm Top       | 300                    | 323                                     |
| 300 ppm Middle    | 300                    | 292                                     |
| 300 ppm Bottom    | 300                    | 303                                     |
| Blank for 30 ppm  | 0                      | 0                                       |
| 30 ppm Top        | 30                     | 28                                      |
| 30 ppm Middle     | 30                     | 32                                      |
| 30 ppm Bottom     | 30                     | 32                                      |

*Blank + 2%*  
*300 ppm + 2%*  
*30 ppm + 2%*

GKirsch

GWK:ch

cc: M. T. Case - 218-2  
E. G. Lamprecht - 218-3  
J. D. LaZerte - 236-1L  
W. C. McCormick - 220-2E  
R. M. Payfer - 236-2B  
V. Prothapragada - 236-GB  
L. D. Winter - 236-2B

Internal Correspondence

APPENDIX ITEM B

Commercial Chemicals  
Analytical Report #395

To: ~~L. J.~~ SIBINSKI - 218-3  
From: G. W. KIRSCH - 236-2B  
Subject: GLC ANALYSIS OF FC-143 (T-2998 CoC) BLENDED INTO GROUND  
RODENT CHOW (RIKER STUDY #0281-CR0012)  
Date: MARCH 7, 1983

**3M**

Reference: Commercial Chemicals Analytical Laboratory Request #19121

Six samples of FC-143 blended into ground lab chow, along with two blank ground lab chow samples, were received from L. J. Sibinski on February 16, 1983. These samples were analyzed in triplicate for FC-143 with the following results:

| <u>Sample</u>     | <u>Theoretical ppm</u> | <u>Actual ppm</u><br><u>ug/g FC-143</u> |
|-------------------|------------------------|-----------------------------------------|
| Blank for 300 ppm | 0                      | 0                                       |
| 300 ppm Top       | 300                    | 317                                     |
| 300 ppm Middle    | 300                    | 286                                     |
| 300 ppm Bottom    | 300                    | 323                                     |
| Blank for 30 ppm  | 0                      | 0                                       |
| 30 ppm Top        | 30                     | 32                                      |
| 30 ppm Middle     | 30                     | 30                                      |
| 30 ppm Bottom     | 30                     | 31                                      |

GWK/hc *3Kinch*

dc: M. T. Case - 218-2  
E. G. Lamprechts - 218-3  
J. D. LaZerte - 236-1

W. C. McCormick - 220-2E  
R. M. Payfer - 236-2B  
W. H. Pearlson - 223-6SE  
L. D. Winter - 236-2B

Internal Correspondence

APPENDIX ITEM B

Commercial Chemicals  
Analytical Report #404

To: L. J. SIBINSKI - 218-3  
From: G. W. KIRSCH - 236-2B  
Subject: GLC ANALYSIS OF FC-143 (T-2998 CoC) BLENDED INTO GROUND  
RODENT CHOW (RIKER STUDY #0281-CR0012)  
Date: MAY 2, 1983

**3M**

Reference: Commercial Chemicals Analytical Laboratory Request #19333

Six samples of FC-143 blended into ground rat chow, along with two blank ground rat chow samples, were received from L. J. Sibinski on April 13, 1983. All samples were analyzed in triplicate for FC-143 with the following results:

| <u>Sample</u>     | <u>Theoretical ppm</u> | <u>Actual ppm</u><br><u>ug/g FC-143</u> |
|-------------------|------------------------|-----------------------------------------|
| Blank for 300 ppm | 0                      | 0                                       |
| 300 ppm Top       | 300                    | 326                                     |
| 300 ppm Middle    | 300                    | 331                                     |
| 300 ppm Bottom    | 300                    | 328                                     |
| Blank for 30 ppm  | 0                      | 0                                       |
| 30 ppm Top        | 30                     | 33                                      |
| 30 ppm Middle     | 30                     | 34                                      |
| 30 ppm Bottom     | 30                     | 32                                      |

GWK/hc *G. Kirsch*

dc: M. T. Case - 218-2      R. M. Payfer - 236-2B  
J. D. LaZerte - 236-1      W. H. Pearlson - 223-6SE  
W. C. McCormick - 220-2E      L. D. Winter - 236-2B

Appendix Item C

Two Year Oral (Diet) Toxicity-Oncogenicity Study of Fluorocarbon  
FC-143 in Rats

Normal Ranges for Hematologic and Blood Chemistry Values of Rats  
at Riker Laboratories, Inc., St. Paul, MN

|                                                     |                                 |
|-----------------------------------------------------|---------------------------------|
| Erythrocytes                                        | 5,000,000-8,000,000 cells/cu mm |
| Hemoglobin                                          | 11-17 g/dl                      |
| Hematocrit                                          | 36-52%                          |
| Mean Corpuscular Volume (MCV)                       | 57-77 microns <sup>3</sup>      |
| Mean Corpuscular Hemoglobin (MCH)                   | 18-24 picograms                 |
| Mean Corpuscular Hemoglobin<br>Concentration (MCHC) | 30-34%                          |
| Leukocytes                                          | 6,000-15,000 cells/cu mm        |
| Neutrophils 2-22%                                   | 500-4,000 cells/cu mm           |
| Lymphocytes 65-95%                                  | 5,000-14,000 cells/cu mm        |
| Monocytes 0-5%                                      | 0-500 cells/cu mm               |
| Eosinophils 0-6%                                    | 0-500 cells/cu mm               |
| Blood Urea Nitrogen (BUN)                           | 10-30 mg/dl                     |
| Glucose                                             | 120-160 mg/dl                   |
| Total Bilirubin                                     | 0.1-1.0 mg/dl                   |
| Total Protein                                       | 5.5-7.5 g/dl                    |
| Albumin                                             | 3.5-5.5 g/dl                    |
| Calcium                                             | 10.2-12.5 mg/dl                 |
| Alanine Aminotransferase (ALT)                      | 10-40 International Units/l     |
| Aspartate Aminotransferase (AST)                    | 20-60 International Units/l     |
| Alkaline Phosphatase                                | 50-200 International Units/l    |
| Creatine Phosphokinase (CPK)                        | 50-150 International Units/l    |

Appendix Item C

Methods Used for Hematology On Bleedings at 3 and 6 Months

| Parameters                      | Units          | Methods                                                                |
|---------------------------------|----------------|------------------------------------------------------------------------|
| <u>Hematology</u>               |                |                                                                        |
| Total Erythrocytes & Leukocytes | cells/cubic mm | Coulter Counter Model FN<br>Coulter Electronics                        |
| Hemoglobin                      | g/dl           | Hemoglobinometer, Model 231,<br>Instrumentation Laboratories           |
| Hematocrit                      | % packed cells | Microhematocrit Centrifuge,<br>Model MB<br>International Equipment Co. |
| Differential                    | %/100 WBC      | Microscope slide                                                       |

## APPENDIX ITEM C

### METHODS USED FOR HEMATOLOGY DETERMINATIONS FOR 12, 18 AND 24 MONTHS

### METHODS USED FOR CLINICAL CHEMISTRY DETERMINATIONS FOR 3, 6, 12, 18 AND 24 MONTHS

| Parameters                                                      |                             |                                                                                          |
|-----------------------------------------------------------------|-----------------------------|------------------------------------------------------------------------------------------|
| <u>Hematology</u>                                               | <u>Units</u>                | <u>Methods and Techniques</u>                                                            |
| Erythrocytes                                                    | cells( $10^6/\text{mm}^3$ ) | UltraLogic 800 Hematology Analyzer<br>Clay Adams, Division of<br>Becton, Dickinson & Co. |
| Leukocytes                                                      | cells( $10^3/\text{mm}^3$ ) |                                                                                          |
| Hemoglobin                                                      | g/dl                        |                                                                                          |
| Hematocrit                                                      | %                           |                                                                                          |
| Differential                                                    | %/100 WBC                   | Microscope slide                                                                         |
| <u>Chemistry</u>                                                |                             |                                                                                          |
| Total Bilirubin, Glucose                                        | mg/dl                       | Rotochem 36 IIA<br>Travenol Laboratories, Inc.                                           |
| Blood Urea Nitrogen                                             |                             |                                                                                          |
| Albumin, Total Protein                                          | g/dl                        |                                                                                          |
| Alkaline Phosphatase                                            | International Units/l       |                                                                                          |
| AST, ALT, CPK                                                   |                             |                                                                                          |
| <u>Urinalysis</u>                                               |                             |                                                                                          |
| Specific Gravity                                                |                             | TS Meter, AO Instrument Co.                                                              |
| pH, Albumin, Bilirubin,<br>Glucose, Occult Blood<br>and Ketones |                             | BiliLabstix<br>Ames Company                                                              |

APPENDIX ITEM D

PATHOLOGY REPORT OF RATS  
RECEIVING FLUOROCHEMICAL FC-143  
IN DIET FOR TWO YEARS

## METHODS

### Gross Pathology

All rats which were sacrificed at the 1 year interim or the 2 year terminal sacrifice or which died or were sacrificed in extremis during the course of study were necropsied. At necropsy, an examination was made of the external body surface and body orifices. The carcass was then opened and the contents of the abdomen, thorax and cranium were examined in situ and after removal from the carcass. Representative tissues and organs from each rat were fixed in 10% buffered neutral formalin for subsequent histologic processing. At the 1 and 2 year sacrifices, wet weights were obtained on adrenals, brain, testes, heart, kidneys, liver, spleen and uterus from 15 randomly selected rats/sex/group. Body weights were obtained prior to necropsy from the same rats for calculation of relative organ weights.

### Histopathology

Microscopic examination was made of hematoxylin and eosin stained paraffin tissue sections of the following tissues and organs, where available, from all rats from the control group (0 ppm) and the 300 ppm group which were sacrificed at 1 and 2 years or which died or were sacrificed in extremis during the course of study.

|                                                                                                                              |                                       |
|------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|
| aorta                                                                                                                        | liver (2 sections)                    |
| adrenals (2)                                                                                                                 | lung (2 sections)                     |
| brain (3 sections including<br>frontal cortex and basal<br>ganglia, parietal cortex<br>and thalamus; cerebellum<br>and pons) | lymph node (mesenteric)               |
| eyes                                                                                                                         | mammary gland (females)               |
| gonads                                                                                                                       | pancreas                              |
| ovaries (2)                                                                                                                  | pituitary                             |
| testes/epididymides (2)                                                                                                      | salivary gland                        |
| heart                                                                                                                        | spinal cord/bone marrow (vertebrae)   |
| small intestine (3 sections)                                                                                                 | spleen                                |
| large intestine                                                                                                              | stomach                               |
| kidneys (2 sections)                                                                                                         | thyroid/parathyroid/trachea/esophagus |
|                                                                                                                              | urinary bladder                       |
|                                                                                                                              | uterus or prostate                    |
|                                                                                                                              | any tissue masses (suspected tumors)  |
|                                                                                                                              | any other gross lesions               |

Microscopic examination of tissues from the 30 ppm group included all the above listed tissues except aorta, brain, eyes, small and large intestine, lymph node and spinal cord/bone marrow.

0281CR0012 (FC-143)

## RESULTS

### Gross Pathology

There were no gross findings suggestive of a compound effect in any rats from the 300 ppm group which were sacrificed at the 1 year interim. At the 2 year terminal sacrifice and in rats which died or were sacrificed in extremis during the course of study (TS/DOS), possible compound related lesions included an increased incidence of masses, nodules or raised lesions in the liver, an increased incidence of yellow or pale liver foci or lesions and an increased incidence of mottled livers and testicular masses in male rats from the 300 ppm group. There were no findings suggestive of a compound effect in TS/DOS female rats from the 300 or 30 ppm groups or in male rats from the 30 ppm group.

Other gross pathologic findings were typical of findings in ageing rats of this strain. These included mammary masses, pituitary foci and masses, ulcers on the hind footpads, pale livers and pale, pitted and enlarged kidneys.

### Organ Weights

There were statistically significant ( $p < 0.05$ ) variations in absolute and relative weights (organ:body or organ:brain weight ratios) of a number of organs in 300 ppm group male rats sacrificed at the 1 year interim. Except for an increase in the liver:body weight ratio, these variations were not considered toxicologically significant. The increase in liver:body weight ratio correlated with compound related morphologic liver changes. The mean absolute liver weight and the liver:brain weight ratio in these rats also were increased but not to a statistically significant degree. There were no statistically significant variations in organ weights in 300 ppm females sacrificed at the 1 year interim.

None of the several statistically significant organ weight variations in rats sacrificed at the 2 year termination occurred in target organs or showed a dose response; none was considered toxicologically significant.

### Histopathology

Compound related microscopic changes were observed in the liver of male rats from the 300 ppm group at the 1 year interim sacrifice and in liver of male and female TS/DOS rats at both the 300 and 30 ppm levels. The principal compound related liver change was megalocytosis, which was characterized by an increase in size of liver parenchymal cells due to increased cytoplasmic volume. The increased cytoplasm was of a finely granular "ground glass" appearance. The coarser cytoplasmic organelles were relatively decreased and were displaced

to the cell membrane. The nucleus:cytoplasm ratio was decreased by the increase in cytoplasm in affected cells. In affected livers, most or all lobules were involved and the centrilobular cells were more severely affected. At the 1 year interim, megalocytosis occurred to a minimal to moderate degree in 12/15 males from the 300 ppm group. No females were affected at the 1 year interim. In TS/DOS rats, megalocytosis to a minimal to moderate degree occurred in 40/50 males at the 300 ppm level and to a minimal to mild degree in 8/50 females at the same level. At the 30 ppm level in TS/DOS rats, megalocytosis to a minimal degree occurred in 6/50 males and in 1/50 females. In more markedly involved livers, the megalocytic hepatocytes were frequently vacuolated with multiple small spherical cytoplasmic vacuoles which in life probably contained lipid. Livers which had appreciable involvement with megalocytosis and cytoplasmic vacuolation also commonly had focal areas of necrosis. This association of hepatocyte vacuolation and necrosis with megalocytosis suggests that the progression of lesions is megalocytosis to fatty degeneration to necrosis. Incidence of hyperplastic nodules was also increased at 300 ppm, indicating regeneration also occurred. The association of hepatocyte vacuolation and focal necrosis with megalocytosis was more clear-cut at the 1 year interim than in TS/DOS rats because of the normally higher background incidence of the former in older rats. Cystoid degeneration, characterized by areas of multilocular microcysts in the liver parenchyma, also was increased in male TS/DOS rats from the 300 ppm group. Incidence of this lesion was 4/50, 28/50 and 7/50 in the 0, 300 and 30 ppm males, respectively. The increased incidence of cystoid degeneration, megalocytosis and portal mononuclear cell infiltration in the 300 ppm dosage group was statistically significant at the 5% level in male rats. In females from the 300 ppm level, only the increased incidence of megalocytosis was statistically significant.

Occurrence of these histomorphologic changes in the liver correlates with elevation of alkaline phosphatase, aspartate aminotransferase and alanine aminotransferase levels observed in male rats. The markedly reduced incidence and severity of histomorphologic liver changes in females parallels the absence of alterations in liver specific serum biochemical values in females.

There was no direct or indirect compound effect in tissues other than liver at the 1 year interim sacrifice. In TS/DOS rats, changes which were considered secondarily compound related, probably through to FC-143 altered liver metabolism of endogenous steroids, were observed in the adrenals, ovaries and

testes. In the adrenals, an increased incidence of nodular hyperplasia of the cortex occurred in males at the 300 ppm level. Incidence of this finding in males was 2/49, 9/50 and 1/50 in 0, 300 and 30 ppm males, respectively. The increased incidence of nodular hyperplasia in males at the 300 ppm level was not statistically significant, however. In females, tubular hyperplasia of the ovarian stroma occurred in 0/48, 15/47 and 7/50 rats from the 0, 300 and 30 ppm groups, respectively. This incidence was statistically significant at both the 300 and 30 ppm levels. Tubular hyperplasia of the stroma was a non-neoplastic diffuse increase in tubular elements of the ovarian stroma which was usually bilateral and associated with absent or markedly reduced follicular development.

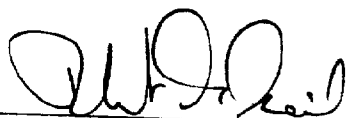
In male rats, there was a statistically significant, compound related occurrence of benign Leydig cell tumors of the testes at the 300 ppm level. Incidence of Leydig cell tumors was 0/49, 7/50 and 2/50 at the 0, 300 and 30 ppm levels, respectively. Although occurrence of 2 Leydig cell tumors at 30 ppm is also suggestive of a compound effect, these neoplasms are not uncommon in untreated rats, although none were found in control rats from this study. The occurrence of Leydig cell tumors correlated with the observations of testicular masses at necropsy. Testes which contained Leydig cell tumors were usually totally aspermic. Mineralization of vessels within the testes occurred in 0/49, 9/50 and 3/50 rats from the 0, 300 and 30 ppm groups respectively. The increased incidence of testicular vascular mineralization at 300 ppm was statistically significant. In female rats, there was a statistically significant increased incidence in mammary fibroadenomas at the 300 ppm level. Incidence of this tumor was 10/46, 21/44 and 19/45 at the 0, 300 and 30 ppm levels, respectively.

An increased incidence of focal accumulations of foamy alveolar macrophages occurred in the lungs of males from the 300 and 30 ppm groups. The incidence of this finding was 10/50, 31/50 and 16/50 at the 0, 300 and 30 ppm levels respectively. The increased incidence of alveolar macrophages at 300 ppm was statistically significant. In females, the incidence of 14/50, 19/50 and 10/50 at the 0, 300 and 30 ppm levels did not have a statistically significant increase in treated animals. Other microscopic lesions in tissues from FC-143 treated rats were typical of naturally occurring inflammatory, degenerative and neoplastic lesions in an ageing population of Charles River CD rats. Commonly occurring inflammatory lesions included chronic nonsuppurative myocarditis, with associated myocardial fibrosis, mononuclear inflammatory cell infiltrate into the portal

triads of the liver which was frequently associated with portal bile duct proliferation and perivascular mononuclear inflammatory cell infiltrate and multifocal chronic interstitial pneumonia in the lung. A high incidence of chronic sialadenitis occurred in male rats from the 300' and 30 ppm groups sacrificed at termination. The appearance of the salivary glands in these animals was typical of glands in the recovery stages of dacryosialadenitis, a common, highly contagious disease of laboratory rats. Its peculiar incidence in this study was attributed to the housing arrangement. Both affected groups were housed in the same room and the unaffected groups were housed in other rooms. Although the incidence of sialadenitis in male rats from the 300 and 30 ppm groups was statistically significant, this increase was not considered compound related since it was explainable by the housing arrangement. Other statistically significant variations in incidence of non-neoplastic lesions which were not considered of toxicological significance included decreased chronic myocarditis in females from the 30 ppm group, increased lung hemorrhage in males from the 300 ppm group, decreased perivascular mononuclear cell infiltrate in the lung in males from the 300 ppm group and in males and females from the 30 ppm group and decreased splenic hemosiderosis in females from the 300 ppm group and in males and females from the 30 ppm group.

Some of the more commonly occurring degenerative lesions in this study included adrenal cortical vacuolation and sinusoidal ectasia, focal mineralization in large pulmonary artery branches in the lung, focal acinar atrophy in the pancreas and chronic progressive nephropathy. Pituitary adenomas were the most common neoplasm in male and female rats.

Overall, the health of the rats in this study was excellent, with organs free of lesions of common infectious diseases which would have had an impact upon survival or the validity of the study.



Robert G. Geil, D.V.M.  
Diplomate, American College  
of Veterinary Pathologists

9/27/81  
Date

# TABLE OF CONTENTS

| <u>Table Number</u> |                                                            | <u>Page</u> |
|---------------------|------------------------------------------------------------|-------------|
| 1                   | Macroscopic Incidence for Males - 1 Year Interim.....      | 1           |
| 2                   | Macroscopic Incidence for Females - 1 Year Interim.....    | 2           |
| 3                   | Macroscopic Incidence for Males.....                       | 3-5         |
| 4                   | Macroscopic Incidence for Females.....                     | 6-7         |
| 5                   | Non-neoplastic Incidence for Males - 1 Year Interim.....   | 8-11        |
| 6                   | Non-neoplastic Incidence for Females - 1 Year Interim..... | 12-15       |
| 7                   | Non-neoplastic Incidence for Males.....                    | 16-24       |
| 8                   | Non-neoplastic Incidence for Females.....                  | 25-33       |
| 9                   | Neoplastic Incidence for Males - 1 Year Interim.....       | 34          |
| 10                  | Neoplastic Incidence for Females - 1 Year Interim.....     | 35 -        |
| 11                  | Neoplastic Incidence for Males.....                        | 36-37       |
| 12                  | Neoplastic Incidence for Females.....                      | 38-39       |

## Appendix

| <u>Table Number</u> |                                                      | <u>Page</u>          |
|---------------------|------------------------------------------------------|----------------------|
| 1                   | Single Tabulated Animal Report - 1 Year Interim..... | 1-27                 |
| 2                   | Single Tabulated Animal Report.....                  | 28-214               |
| 3                   | Tissue Inventory - 1 Year Interim.....               | 215-218              |
| 4                   | Tissue Inventory.....                                | 21 <sup>a</sup> -242 |

## Macroscopic Incidence for Males

Riker Laboratories, Inc. SM

Table: 1

FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats - One Year Interim

Project Number: 0261CR0012 Species: Rat

| Site/<br>Description | Group 1 | Group 5 |
|----------------------|---------|---------|
| No visible lesions   | 0       | 0       |
| Eye                  |         |         |
| opacity              |         | 1       |
| Pituitary            |         |         |
| mass                 |         | 1       |
| Liver                |         |         |
| pale/tan color       | 2       | 3       |
| Mesentery            |         |         |
| fat necrosis         | 1       |         |
| Kidney               |         |         |
| hydronephrosis       | 1       |         |
| cystic lesion        | 1       |         |
| depressed area       |         | 1       |
| Testis               |         |         |
| small                |         | 1       |
| Skin                 |         |         |
| nodule               |         | 1       |
| Soft Tissue (leg)    |         |         |
| swollen foot         | 1       |         |

## Titles:

Group 1 CONTROL 0 ppm

Group 5 FC-143 300 ppm

Macroscopic Incidence Page: 1

126

3MA00027255

1337.0130

## Macroscopic Incidence for Females

Riker Laboratories, Inc. 3M

Table: 2

FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats - One Year Interim

Project Number: 0261CR0012 Species: Rat

| Site/<br>Description    | Group 1 | Group 5 |
|-------------------------|---------|---------|
| No visible lesions      | 5       | 9       |
| Eye                     |         |         |
| atrophy                 | 1       | 2       |
| Pituitary               |         |         |
| enlarged                | 3       |         |
| Adrenal                 |         |         |
| enlarged                | 1       |         |
| Liver                   |         |         |
| pale/tan*               | 1       | 1       |
| Lymph Node (mesenteric) |         |         |
| hemorrhagic             |         | 1       |
| Mesentery               |         |         |
| mass                    | 1       |         |
| Kidney                  |         |         |
| hydronephrosis          | 1       | 1       |
| calculi                 |         | 1       |
| Ureter                  |         |         |
| dilatation, calculi     |         | 1       |
| Urinary Bladder         |         |         |
| distended, calculi      |         | 1       |
| Uterus                  |         |         |
| cystic lesion           | 1       |         |
| enlarged                | 1       |         |
| dilated, fluid filled   |         | 1       |
| Mammary Gland           |         |         |
| mass                    | 1       | 3       |
| Skin                    |         |         |
| hair loss               | 2       |         |

## Titles:

Group 1 CONTROL 0 ppm

Group 5 FC-143 300 ppm

\* includes "possibly"

Macroscopic Incidence Page: 2

127

3MA00027256

1337.0131

Macroscopic Incidence for Males  
Riker Laboratories, Inc. 3M  
FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats

Table: 3

Project Number: 0231CR0012 Species: Rat

| Site/<br>Description               | Group 1 | Group 5 | Group 6 |
|------------------------------------|---------|---------|---------|
| No visible lesions                 | 11      | 12      | 18      |
| Brain                              |         |         |         |
| dark area                          | 1       |         |         |
| Eye                                |         |         |         |
| opacity/cloudy                     |         | 1       | 4       |
| hypopyon                           |         | 1       |         |
| Pituitary                          |         |         |         |
| mass/enlarged/raised lesion        | 7       | 3       | 11      |
| dark/hemorrhagic/red foci          | 4       | 2       | 2       |
| Thyroid                            |         |         |         |
| enlarged*                          | 1       | 1       | 1       |
| Adrenal                            |         |         |         |
| enlarged/mass                      | 2       | 2       | 3       |
| Throat (internal)                  |         |         |         |
| fluid filled                       | 1       |         |         |
| Thymus                             |         |         |         |
| enlarged*                          | 1       | 2       |         |
| hemorrhagic/hemorrhagic lesion     |         | 1       |         |
| mass                               |         |         | 1       |
| Lung                               |         |         |         |
| mottled                            | 1       |         |         |
| frothy tracheal exudate            | 1       |         |         |
| consolidation*                     |         |         | 1       |
| mass/raised lesion                 |         | 1       |         |
| multiple white lesions             |         |         | 1       |
| Heart                              |         |         |         |
| flaccid/flabby                     | 1       |         |         |
| enlarged*                          |         |         | 1       |
| pale                               | 1       |         |         |
| Abdomen (internal)                 |         |         |         |
| gas, gastrointestinal tract        | 1       | 1       |         |
| stomach empty of food              | 1       |         |         |
| mass, omentum                      | 1       |         |         |
| fatty tumor                        |         |         | 1       |
| Stomach                            |         |         |         |
| edema/thickened wall               | 1       |         | 1       |
| erosions/ulcerations*              | 1       |         | 2       |
| Small Intestine                    |         |         |         |
| enlarged, reddened Peyer's patches |         | 1       |         |
| Large Intestine                    |         |         |         |
| enlarged, reddened Peyer's patches |         | 1       |         |
| impaction                          |         |         | 1       |

Titles:

Group 1 CONTROL 0 ppm  
Group 5 FC-143 300 ppm  
Group 6 FC-143 30 ppm

\* includes "possibly"

Macroscopic Incidence Page: 3

Macroscopic Incidence for Males  
Riker Laboratories, Inc. 3M  
FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats

Table 3

Project Number: 0201CR0012 Species: Rat

| Site/<br>Description                     | Group 1 | Group 5 | Group 6 |
|------------------------------------------|---------|---------|---------|
| Pancreas                                 |         |         |         |
| mass/nodule                              | 2       |         |         |
| Liver                                    |         |         |         |
| pale/pale lobes*                         | 10      | 3       | 7       |
| mass/nodule/raised lesion                | 3       | 7       | 1       |
| mottled*                                 |         | 6       | 5       |
| yellow/pale foci/lesion                  | 1       | 9       |         |
| enlarged                                 | 1       | 1       |         |
| possible congestion                      |         |         | 1       |
| Spleen                                   |         |         |         |
| enlarged                                 | 3       | 2       | 3       |
| raised lesion                            | 1       |         |         |
| pale foci                                | 2       |         |         |
| pale, depressed area                     | 1       |         |         |
| small*                                   |         | 1       |         |
| Lymph node (mesenteric/abdominal)        |         |         |         |
| enlarged                                 | 2       | 2       | 2       |
| greenish color                           |         |         | 1       |
| Mesentery                                |         |         |         |
| nodular/enlarged/thickened vessels       | 1       |         | 2       |
| mass                                     |         | 1       | 1       |
| Kidney                                   |         |         |         |
| enlarged, pale, pitted                   | 3       | 1       | 2       |
| enlarged, pitted                         |         | 1       |         |
| pale, pitted                             | 2       | 1       | 1       |
| pale, enlarged*                          | 1       |         | 3       |
| pale                                     |         | 1       |         |
| pale area                                | 1       |         |         |
| hydronephrosis, pelvic dilatation        | 2       | 3       |         |
| cystic/polycystic                        | 3       |         | 2       |
| Urinary Bladder                          |         |         |         |
| distended                                | 1       | 2       |         |
| hematuria/filled with reddish/dark fluid |         | 1       |         |
| hemorrhagic wall                         | 1       |         |         |
| Testis/Epididymis                        |         |         |         |
| small                                    | 4       | 5       | 6       |
| mass                                     |         | 6       | 1       |
| Penis                                    |         |         |         |
| swollen                                  |         | 1       |         |
| Mammary Gland                            |         |         |         |
| mass                                     |         | 1       | 2       |

Titles:

Group 1 CONTROL 0 ppm  
Group 5 FC-143 300 ppm  
Group 6 FC-143 30 ppm

\* includes "possibly"

Macroscopic Incidence Page: 4

Macroscopic Incidence for Males  
 Riker Laboratories, Inc. 3M  
 FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats

Table: 3

Project Number: 0231CR0012 Species: Rat

| Site/ | Description                                            | Group 1 | Group 5 | Group 6 |
|-------|--------------------------------------------------------|---------|---------|---------|
| Skin  | ulcers/inflamed/circular/raised lesions, hind footpads | 7       | 1       | 4       |
|       | dermatitis/ulcer/lesion/inflamed area*                 | 1       |         | 2       |
|       | moist area                                             | 1       |         |         |
|       | hair loss                                              | 1       |         | 1       |
|       | mass/thickening                                        | 4       | 1       | 1       |
|       | abscess                                                | 1       |         | 1       |
|       | inflamed fat                                           |         |         | 1       |
|       | Soft Tissue (neck) mass                                |         | 1       | 1       |
|       | Soft Tissue (thorax) mass                              | 1       |         |         |
|       | Soft Tissue (leg) swollen paws/feet                    | 1       |         | 2       |
| Bone  | swollen joints                                         | 1       | 1       |         |

Titles:

Group 1 CONTROL 0 ppm  
 Group 5 FC-143 300 ppm  
 Group 5 FC-143 30 ppm

\* includes "possibly"

Macroscopic Incidence Page: 5

130

3MA00027259

1337.0134

Macroscopic Incidence for Females  
 Riker Laboratories, Inc. 3M  
 FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats

Table: 4

Project Number: 0271CRO012 Species: Rat

| Site/<br>Description               | Group 1 | Group 5 | Group 6 |
|------------------------------------|---------|---------|---------|
| No visible lesions                 | 4       | 3       | 3       |
| Eye                                |         |         |         |
| opacity/cloudy                     | 3       |         |         |
| inflammation                       | 1       |         |         |
| atrophy                            | 1       |         |         |
| Pituitary                          |         |         |         |
| mass/enlarged/raised lesion        | 25      | 25      | 25      |
| hemorrhagic/dark lesion            |         | 2       | 3       |
| Adrenal                            |         |         |         |
| enlarged                           | 8       | 3       | 7       |
| mass/raised lesion                 |         |         | 1       |
| pale                               | 1       |         |         |
| small                              |         | 1       |         |
| Lung                               |         |         |         |
| mottled                            | 1       |         |         |
| consolidation                      | 2       | 1       | 1       |
| nodule                             | 1       |         | 1       |
| pale                               | 1       |         |         |
| Lymph Node (bronchial)             |         |         |         |
| enlarged                           | 1       |         |         |
| Heart                              |         |         |         |
| enlarged*                          |         | 1       | 1       |
| Abdomen (internal)                 |         |         |         |
| gas, gastrointestinal tract        |         |         | 1       |
| bloody fluid filled                |         |         | 2       |
| nodular tissue, omentum, mesentery |         |         | 1       |
| Stomach                            |         |         |         |
| ulcerations/erosions               | 1       |         |         |
| red mucosal areas/reddened         | 2       |         |         |
| Small Intestine                    |         |         |         |
| inflamed                           | 1       |         |         |
| ulceration/ulcerated outpouching   |         |         | 2       |
| Large Intestine                    |         |         |         |
| impaction                          | 1       |         |         |
| Pancreas                           |         |         |         |
| mass/nodule                        | 1       |         | 1       |
| Liver                              |         |         |         |
| pale*                              | 10      | 3       | 6       |
| mass/nodule/raised lesion          | 2       | 2       |         |
| mottled                            | 4       | 1       | 1       |
| circular lesion/pale foci/         |         |         |         |
| pale lesion/yellowish lesion       |         | 1       | 2       |
| enlarged*                          | 2       | 1       | 2       |

Titles:

Group 1 CONTROL 0 ppm  
 Group 5 FC-143 300 ppm  
 Group 6 FC-143 30 ppm

\* includes "possibly"

Macroscopic Incidence Page: 6

Macroscopic Incidence for Females  
 Riker Laboratories, Inc. 3M  
 FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats

Table: 4

Project Number: 0281CR0012 Species: Rat

| Site/<br>Description                      | Group 1 | Group 5 | Group 6 |
|-------------------------------------------|---------|---------|---------|
| Liver (continued)                         |         |         |         |
| dark red area/lobe                        | 1       |         |         |
| rough/irregular surface                   | 1       |         |         |
| Spleen                                    |         |         |         |
| enlarged*                                 | 5       |         | 2       |
| Lymph node (mesenteric/abdominal)         |         |         |         |
| enlarged                                  | 2       | 1       | 1       |
| reddened                                  | 1       |         |         |
| cystic                                    |         | 1       |         |
| Kidney                                    |         |         |         |
| enlarged, pale, pitted                    | 2       |         |         |
| enlarged*                                 | 1       |         |         |
| pale, pitted                              | 1       | 2       | 1       |
| pitted                                    | 2       |         |         |
| pale*                                     |         |         | 1       |
| cyst                                      | 3       |         | 1       |
| Urinary Bladder                           |         |         |         |
| enlarged                                  | 1       |         |         |
| calculi                                   | 1       |         |         |
| thickened walls                           | 1       | 1       |         |
| Ovary                                     |         |         |         |
| mass                                      | 1       |         |         |
| Uterus                                    |         |         |         |
| enlarged                                  |         |         | 1       |
| filled with dark/bloody fluid             |         |         | 1       |
| mass                                      | 1       |         | 1       |
| dark area/lesion                          | 2       |         | 1       |
| hemorrhagic lesion                        |         |         | 1       |
| Mammary Gland                             |         |         |         |
| mass/nodule                               | 27      | 26      | 37      |
| milk cyst                                 |         | 3       | 3       |
| Skin                                      |         |         |         |
| raised/inflamed/ulcerated lesion, footpad |         | 1       |         |
| mass                                      | 1       | 1       |         |
| raised lesion                             | 1       |         |         |
| hair loss/thinning                        | 2       |         | 3       |
| circular lesion                           | 1       |         |         |
| Soft Tissues (neck)                       |         |         |         |
| mass                                      |         |         | 1       |
| reddened, gland like structures           | 1       |         |         |
| Soft Tissues (leg)                        |         |         |         |
| swollen foot                              | 1       |         |         |

Titles:

Group 1 CONTROL 0 ppm  
 Group 5 FC-143 300 ppm  
 Group 6 FC-143 30 ppm

\* includes "possibly"

Macroscopic Incidence Page: 7

132

3MA00027261

1337.0136

Non-Neoplastic Incidence for Males  
Riker Laboratories, Inc. 3M  
FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats - One Year Interim

Table: 5

Project Number: 0281CR0012 Species: Rat

| Tissue/<br>Diagnosis/<br>Modifier   | Group 1<br>----- | Group 5<br>----- |
|-------------------------------------|------------------|------------------|
| Adrenal                             | ( 15)            | ( 15)            |
| Within normal limits                | 12               | 15               |
| Cortical vacuolation                | 1                | 0                |
| mild                                | 1                | 0                |
| Nodular hyperplasia, cortex         | 1                | 0                |
| moderate                            | 1                | 0                |
| Sinusoidal ectasia, cortex          | 1                | 0                |
| moderate                            | 1                | 0                |
| Aorta                               | ( 15)            | ( 11)            |
| Within normal limits                | 15               | 11               |
| Bone Marrow                         | ( 14)            | ( 15)            |
| Within normal limits                | 14               | 15               |
| Brain                               | ( 15)            | ( 15)            |
| Within normal limits                | 15               | 15               |
| Esophagus                           | ( 15)            | ( 15)            |
| Within normal limits                | 15               | 15               |
| Eye                                 | ( 15)            | ( 15)            |
| Within normal limits                | 15               | 13               |
| Cataract                            | 0                | 1                |
| Retinal atrophy                     | 0                | 1                |
| minimal                             | 0                | 1                |
| Heart                               | ( 15)            | ( 15)            |
| Within normal limits                | 14               | 12               |
| Myocardial fibrosis                 | 0                | 2                |
| minimal                             | 0                | 1                |
| mild                                | 0                | 1                |
| Myocarditis, chronic nonsuppurative | 1                | 2                |
| minimal                             | 0                | 2                |
| mild                                | 1                | 0                |
| Kidney                              | ( 15)            | ( 15)            |
| Within normal limits                | 5                | 4                |
| Calculus                            | 1                | 0                |
| Chronic progressive nephropathy     | 8                | 10               |
| minimal                             | 5                | 6                |
| mild                                | 3                | 4                |
| Cyst                                | 1                | 0                |
| Hydronephrosis                      | 1                | 0                |
| moderate                            | 1                | 0                |
| Mineralization                      | 0                | 1                |
| Nephritis, interstitial, chronic    | 1                | 0                |
| mild                                | 1                | 0                |

**Titles:**

Group 1 CONTROL 0 ppm  
Group 5 FC-143 300 ppm

( ) = Total Examined

Microscopic Incidence Page: 8

133

3MA00027262

1337.0137

## Non-Neoplastic Incidence for Males (continued)

Riker Laboratories, Inc. 3M

FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats - One Year Interim

Table: 5

Project Number: 0201CR0012 Species: Rat

| Tissue/<br>Diagnosis/<br>Modifier  | Group 1<br>----- | Group 5<br>----- |
|------------------------------------|------------------|------------------|
| Kidney (continued)                 |                  |                  |
| Pyelitis, acute                    | 1                | 1                |
| minimal                            | 1                | 0                |
| mild                               | 0                | 1                |
| Large Intestine                    | ( 15)            | ( 15)            |
| Within normal limits               | 15               | 14               |
| Nematodiasis                       | 0                | 1                |
| Liver                              | ( 15)            | ( 15)            |
| Within normal limits               | 7                | 0                |
| Hepatocyte alteration, vacuolated  | 2                | 0                |
| minimal                            | 1                | 0                |
| mild                               | 1                | 0                |
| Hepatocyte vacuolation             | 0                | 2                |
| minimal                            | 0                | 1                |
| mild                               | 0                | 1                |
| Megalocytosis                      | 0                | 12               |
| minimal                            | 0                | 7                |
| mild                               | 0                | 3                |
| moderate                           | 0                | 2                |
| Necrosis                           | 0                | 0                |
| minimal                            | 0                | 2                |
| mild                               | 0                | 4                |
| Pigment, Kupfer cell               | 0                | 2                |
| minimal                            | 0                | 1                |
| mild                               | 0                | 1                |
| Portal bile duct proliferation     | 5                | 1                |
| minimal                            | 1                | 0                |
| mild                               | 4                | 1                |
| Portal mononuclear cell infiltrate | 7                | 13               |
| minimal                            | 1                | 4                |
| mild                               | 5                | 9                |
| Lung                               | ( 15)            | ( 15)            |
| Within normal limits               | 1                | 2                |
| Alveolar macrophages               | 3                | 5                |
| mild                               | 3                | 5                |
| Atelectasis                        | 1                | 0                |
| mild                               | 1                | 0                |
| Hemorrhage                         | 6                | 3                |
| mild                               | 6                | 2                |
| moderate                           | 0                | 1                |
| Hyperplasia, septal cell           | 1                | 0                |
| mild                               | 1                | 0                |

## Titles:

Group 1 CONTROL 0 ppm

() = Total Examined

Group 5 FC-143 300 ppm

Microscopic Incidence Page: 9

134

3MA00027263

1337.0138

## Non-Neoplastic Incidence for Males (continued)

Riker Laboratories, Inc. 3M

FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats - One Year Interim

Table: 5

Project Number: 0231CR0012 Species: Rat

| Tissue/<br>Diagnosis/<br>Modifier   | Group 1 | Group 5 |
|-------------------------------------|---------|---------|
|                                     | -----   | -----   |
| Lung (continued)                    |         |         |
| Perivascular mononuclear infiltrate | 2       | 1       |
| mild                                | 2       | 1       |
| Pneumonia, interstitial, chronic    | 3       | 2       |
| minimal                             | 1       | 0       |
| mild                                | 2       | 2       |
| Vascular mineralization             | 7       | 8       |
| minimal                             | 4       | 1       |
| mild                                | 3       | 7       |
| Lymph Node (mesenteric)             | ( 13)   | ( 13)   |
| Within normal limits                | 13      | 11      |
| Hemorrhage                          | 0       | 2       |
| minimal                             | 0       | 1       |
| mild                                | 0       | 1       |
| Mammary Gland                       | ( 3)    | ( 0)    |
| Within normal limits                | 3       | 0       |
| Mesentery                           | ( 1)    | ( 0)    |
| Necrosis, fat                       | 1       | 0       |
| marked                              | 1       | 0       |
| Steatitis, chronic                  | 1       | 0       |
| moderate                            | 1       | 0       |
| Pancreas                            | ( 15)   | ( 15)   |
| Within normal limits                | 11      | 15      |
| Acinar atrophy                      | 3       | 0       |
| mild                                | 2       | 0       |
| moderate                            | 1       | 0       |
| Pancreatitis, chronic               | 3       | 0       |
| mild                                | 3       | 0       |
| Parathyroid                         | ( 7)    | ( 3)    |
| Within normal limits                | 7       | 3       |
| Pituitary                           | ( 14)   | ( 12)   |
| Within normal limits                | 13      | 12      |
| Cyst                                | 1       | 0       |
| Prostate                            | ( 15)   | ( 13)   |
| Within normal limits                | 15      | 12      |
| Prostatitis, chronic                | 0       | 1       |
| minimal                             | 0       | 1       |
| Salivary Gland                      | ( 15)   | ( 14)   |
| Within normal limits                | 15      | 14      |
| Small Intestine                     | ( 15)   | ( 15)   |
| Within normal limits                | 15      | 15      |

## Titles:

Group 1 CONTROL 0 ppm

() = Total Examined

Group 5 FC-143 300 ppm

Microscopic Incidence Page: 10

135

3MA00027264

1337.0139

## Non-Neoplastic Incidence for Males (continued)

Riker Laboratories, Inc. 3M

FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats - One Year Interim

Table: 5

Project Number: 0281CR0012 Species: Rat

| Tissue/<br>Diagnosis/<br>Modifier | Group 1<br>----- | Group 5<br>----- |
|-----------------------------------|------------------|------------------|
| Spinal Cord                       | ( 14)            | ( 15)            |
| Within normal limits              | 14               | 15               |
| Spleen                            | ( 15)            | ( 15)            |
| Within normal limits              | 15               | 14               |
| Hemosiderosis                     | 0                | 1                |
| mild                              | 0                | 1                |
| Stomach                           | ( 14)            | ( 15)            |
| Within normal limits              | 14               | 15               |
| Testis/Epididymis                 | ( 15)            | ( 15)            |
| Within normal limits              | 15               | 13               |
| Tubule atrophy, aspermatogenesis  | 0                | 2                |
| marked                            | 0                | 2                |
| Thyroid                           | ( 11)            | ( 13)            |
| Within normal limits              | 11               | 13               |
| Trachea                           | ( 15)            | ( 15)            |
| Within normal limits              | 15               | 15               |
| Urinary Bladder                   | ( 15)            | ( 13)            |
| Within normal limits              | 15               | 13               |

## Titles:

Group 1 CONTROL 0 ppm

Group 5 FC-143 300 ppm

() = Total Examined

Microscopic Incidence Page: 11

136

3MA00027265

1337.0140

## Non-Neoplastic Incidence for Females

Riker Laboratories, Inc. 3M

FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats - One Year Interim

Table: 6

Project Number: 0281CR0012 Species: Rat

| Tissue/<br>Diagnosis/<br>Modifier   | Group 1<br>----- | Group 5<br>----- |
|-------------------------------------|------------------|------------------|
| Adrenal                             | ( 15)            | ( 15)            |
| Within normal limits                | 10               | 11               |
| Cortical degeneration               | 2                | 1                |
| mild                                | 2                | 1                |
| Sinusoidal ectasia, cortex          | 4                | 3                |
| mild                                | 3                | 3                |
| marked                              | 1                | 0                |
| Aorta                               | ( 14)            | ( 13)            |
| Within normal limits                | 14               | 13               |
| Bone Marrow                         | ( 15)            | ( 15)            |
| Within normal limits                | 15               | 15               |
| Brain                               | ( 15)            | ( 15)            |
| Within normal limits                | 15               | 15               |
| Esophagus                           | ( 15)            | ( 13)            |
| Within normal limits                | 15               | 13               |
| Eye                                 | ( 15)            | ( 15)            |
| Within normal limits                | 14               | 13               |
| Atrophy                             | 1                | 2                |
| marked                              | 1                | 2                |
| Panophthalmitis                     | 1                | 2                |
| marked                              | 1                | 2                |
| Heart                               | ( 15)            | ( 15)            |
| Within normal limits                | 14               | 14               |
| Myocarditis, chronic nonsuppurative | 1                | 1                |
| minimal                             | 1                | 0                |
| mild                                | 0                | 1                |
| Kidney                              | ( 15)            | ( 15)            |
| Within normal limits                | 6                | 9                |
| Calculus                            | 4                | 2                |
| mild                                | 1                | 1                |
| moderate                            | 1                | 0                |
| Chronic progressive nephropathy     | 1                | 3                |
| mild                                | 1                | 3                |
| Cyst                                | 1                | 0                |
| mild                                | 1                | 0                |
| Hydronephrosis                      | 1                | 1                |
| moderate                            | 1                | 0                |
| marked                              | 0                | 1                |
| Hyperplasia, pelvic epithelium      | 1                | 0                |
| mild                                | 1                | 0                |
| Mineralization                      | 0                | 1                |
| mild                                | 0                | 1                |

## Titles:

Group 1 CONTROL 0 ppm

() = Total Examined

Group 5 FC-143 300 ppm

Microscopic Incidence Page: 12

137

3MA00027266

1337.0141

## Non-Neoplastic Incidence for Females (continued)

Riker Laboratories, Inc. 3M

FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats - One Year Interim

Table: 6

Project Number: 0281CR0012 Species: Rat

| Tissue/<br>Diagnosis/<br>Modifier   | Group 1 | Group 5 |
|-------------------------------------|---------|---------|
|                                     | -----   | -----   |
| Kidney (continued)                  |         |         |
| Pelvic mineralization               | 4       | 1       |
| minimal                             | 4       | 0       |
| mild                                | 0       | 1       |
| Pyelitis, chronic                   | 0       | 1       |
| moderate                            | 0       | 1       |
| Large Intestine                     | ( 14)   | ( 14)   |
| Within normal limits                | 12      | 12      |
| Nematodiasis                        | 2       | 2       |
| Liver                               | ( 15)   | ( 15)   |
| Within normal limits                | 6       | 3       |
| Hepatocyte alteration, vacuolated   | 1       | 0       |
| mild                                | 1       | 0       |
| Hepatocyte vacuolation              | 5       | 11      |
| minimal                             | 3       | 1       |
| mild                                | 2       | 10      |
| Portal bile duct proliferation      | 2       | 1       |
| mild                                | 2       | 1       |
| Portal mononuclear cell infiltrate  | 2       | 2       |
| minimal                             | 1       | 0       |
| mild                                | 1       | 2       |
| Lung                                | ( 15)   | ( 15)   |
| Within normal limits                | 3       | 5       |
| Alveolar macrophages                | 1       | 1       |
| mild                                | 1       | 1       |
| Hemorrhage                          | 11      | 9       |
| mild                                | 9       | 7       |
| moderate                            | 2       | 2       |
| Perivascular mononuclear infiltrate | 1       | 0       |
| mild                                | 1       | 0       |
| Pneumonia, interstitial, chronic    | 1       | 0       |
| mild                                | 1       | 0       |
| Vascular mineralization             | 1       | 1       |
| mild                                | 1       | 1       |
| Lymph Node (mesenteric)             | ( 12)   | ( 13)   |
| Within normal limits                | 12      | 12      |
| Hemorrhage                          | 0       | 1       |
| marked                              | 0       | 1       |
| Mammary Gland                       | ( 15)   | ( 13)   |
| Within normal limits                | 13      | 10      |
| Galactoceles                        | 2       | 1       |

## Titles:

Group 1 CONTROL 0 ppm

Group 5 FC-143 300 ppm

() = Total Examined

Microscopic Incidence Page: 13

138

3MA00027267

1337.0142

## Non-Neoplastic Incidence for Females (continued)

Riker Laboratories, Inc. 3M

FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats - One Year Interim

Table: C

Project Number: 0231CR0012 Species: Rat

| Tissue/<br>Diagnosis/<br>Modifier | Group 1 | Group 5 |
|-----------------------------------|---------|---------|
| Mesentery                         | ( 1)    | ( 0)    |
| Necrosis, fat                     | 1       | 0       |
| moderate                          | 1       | 0       |
| Steatitis, chronic                | 1       | 0       |
| moderate                          | 1       | 0       |
| Ovary                             | ( 15)   | ( 15)   |
| Within normal limits              | 14      | 15      |
| Cyst                              | 1       | 0       |
| Pancreas                          | ( 15)   | ( 15)   |
| Within normal limits              | 14      | 15      |
| Pancreatitis, chronic             | 1       | 0       |
| mild                              | 1       | 0       |
| Parathyroid                       | ( 6)    | ( 9)    |
| Within normal limits              | 5       | 9       |
| Pituitary                         | ( 15)   | ( 14)   |
| Within normal limits              | 14      | 14      |
| Salivary Gland                    | ( 15)   | ( 15)   |
| Within normal limits              | 15      | 15      |
| Skin                              | ( 2)    | ( 0)    |
| Within normal limits              | 2       | 0       |
| Small Intestine                   | ( 15)   | ( 15)   |
| Within normal limits              | 15      | 15      |
| Spinal Cord                       | ( 14)   | ( 15)   |
| Within normal limits              | 14      | 15      |
| Spleen                            | ( 15)   | ( 15)   |
| Within normal limits              | 14      | 15      |
| Hemosiderosis                     | 1       | 0       |
| mild                              | 1       | 0       |
| Stomach                           | ( 15)   | ( 15)   |
| Within normal limits              | 15      | 15      |
| Thyroid                           | ( 14)   | ( 13)   |
| Within normal limits              | 14      | 13      |
| Trachea                           | ( 15)   | ( 15)   |
| Within normal limits              | 15      | 15      |
| Ureter                            | ( 6)    | ( 1)    |
| Calculus                          | 0       | 1       |
| Dilatation                        | 0       | 1       |
| marked                            | 0       | 1       |
| Inflammation, chronic             | 0       | 1       |
| moderate                          | 0       | 1       |

## Titles:

Group 1 CONTROL 0 ppm

() = Total Examined

Group 5 FC-143 300 ppm

Microscopic Incidence Page: 13

139

3MA00027268

1337.0143

## Non-Neoplastic Incidence for Females (continued)

Riker Laboratories, Inc. 3M

FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats - One Year Interim

Table: 6

Project Number: 0281CR0012 Species: Rat

| Tissue/<br>Diagnosis/<br>Modifier | Group 1<br>----- | Group 5<br>----- |
|-----------------------------------|------------------|------------------|
| Urinary Bladder                   | ( 12)            | ( 15)            |
| Within normal limits              | 12               | 14               |
| Cystitis, chronic                 | 0                | 1                |
| moderate                          | 0                | 1                |
| Epithelial hyperplasia, simple    | 0                | 1                |
| mild                              | 0                | 1                |
| Uterus                            | ( 15)            | ( 15)            |
| Within normal limits              | 12               | 13               |
| Cystic glands                     | 1                | 0                |
| marked                            | 1                | 0                |
| Endometritis, chronic             | 0                | 1                |
| mild                              | 0                | 1                |
| Hydrometra                        | 0                | 2                |
| moderate                          | 0                | 1                |
| Hyperplasia, glandular epithelium | 2                | 0                |
| mild                              | 2                | 0                |
| Metaplasia, squamous              | 2                | 0                |
| mild                              | 2                | 0                |

## Titles:

Group 1 CONTROL 0 ppm

() = Total Examined

Group 5 FC-143 300 ppm

Microscopic Incidence Page: 15

140

3MA00027269

1337.0144

Non-Neoplastic Incidence for Males  
Riker Laboratories, Inc. 3M  
FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats

Table: 7

Project Number: 0231CR0012 Species: Rat

| Tissue/<br>Diagnosis/<br>Modifier | Group 1 |       | Group 5 |       | Group 6 |       |
|-----------------------------------|---------|-------|---------|-------|---------|-------|
|                                   | DOS     | SAC   | DOS     | SAC   | DOS     | SAC   |
| Adrenal                           | ( 15)   | ( 34) | ( 6)    | ( 44) | ( 14)   | ( 36) |
| Within normal limits              | 6       | 13    | 2       | 12    | 8       | 19    |
| Cortical degeneration             | 0       | 0     | 0       | 0     | 0       | 2     |
| moderate                          | 0       | 0     | 0       | 0     | 0       | 2     |
| Cortical vacuolation              | 7       | 17    | 2       | 11    | 4       | 5     |
| minimal                           | 0       | 2     | 1       | 2     | 0       | 0     |
| mild                              | 4       | 13    | 1       | 5     | 3       | 5     |
| moderate                          | 3       | 2     | 0       | 4     | 0       | 0     |
| marked                            | 0       | 0     | 0       | 0     | 1       | 0     |
| Medullary cell hyperplasia        | 2       | 6     | 1       | 6     | 0       | 3     |
| minimal                           | 0       | 0     | 0       | 2     | 0       | 0     |
| mild                              | 1       | 4     | 1       | 4     | 0       | 3     |
| moderate                          | 1       | 2     | 0       | 0     | 0       | 0     |
| Nodular hyperplasia, cortex       | 0       | 2     | 1       | 5     | 0       | 1     |
| minimal                           | 0       | 0     | 1       | 0     | 0       | 0     |
| mild                              | 0       | 1     | 0       | 7     | 0       | 0     |
| moderate                          | 0       | 1     | 0       | 1     | 0       | 1     |
| Sinusoidal ectasia, cortex        | 4       | 7     | 0       | 16    | 5       | 8     |
| minimal                           | 0       | 2     | 0       | 2     | 0       | 1     |
| mild                              | 2       | 3     | 0       | 10    | 4       | 5     |
| moderate                          | 2       | 2     | 0       | 3     | 1       | 2     |
| marked                            | 0       | 0     | 0       | 1     | 0       | 0     |
| Aorta                             | ( 15)   | ( 34) | ( 6)    | ( 43) | ( 0)    | ( 0)  |
| Within normal limits              | 13      | 34    | 6       | 43    | 0       | 0     |
| Mineralization                    | 1       | 0     | 0       | 0     | 0       | 0     |
| mild                              | 1       | 0     | 0       | 0     | 0       | 0     |
| Necrosis                          | 1       | 0     | 0       | 0     | 0       | 0     |
| moderate                          | 1       | 0     | 0       | 0     | 0       | 0     |
| Bone                              | ( 0)    | ( 2)  | ( 0)    | ( 1)  | ( 0)    | ( 1)  |
| Arthritis, synovitis; joints      | 0       | 2     | 0       | 1     | 0       | 1     |
| moderate                          | 0       | 0     | 0       | 1     | 0       | 1     |
| marked                            | 0       | 2     | 0       | 0     | 0       | 0     |
| Bone Marrow                       | ( 15)   | ( 32) | ( 6)    | ( 42) | ( 0)    | ( 0)  |
| Within normal limits              | 15      | 32    | 5       | 42    | 0       | 0     |
| Brain                             | ( 16)   | ( 34) | ( 6)    | ( 44) | ( 0)    | ( 1)  |
| Within normal limits              | 14      | 33    | 5       | 44    | 0       | 0     |
| Abscess                           | 1       | 0     | 0       | 0     | 0       | 0     |
| mild                              | 1       | 0     | 0       | 0     | 0       | 0     |
| Hemorrhage                        | 1       | 0     | 0       | 0     | 0       | 0     |
| moderate                          | 1       | 0     | 0       | 0     | 0       | 0     |

Titles:

Group 1 CONTROL 0 ppm  
Group 5 FC-143 300 ppm  
Group 6 FC-143 30 ppm

( ) = Total Examined  
DOS= Unscheduled Death(s)  
SAC= Protocol Scheduled Sacrifice(s)

141

Non-Neoplastic Incidence for Males (continued)  
 Riker Laboratories, Inc. 3M  
 FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats

Table: 7

Project Number: 0281CRO012 Species: Rat

| Tissue/<br>Diagnosis/<br>Modifier   | Group 1 |       | Group 5 |       | Group 6 |       |
|-------------------------------------|---------|-------|---------|-------|---------|-------|
|                                     | DOS     | SAC   | DOS     | SAC   | DOS     | SAC   |
| Esophagus                           | ( 15)   | ( 33) | ( 6)    | ( 41) | ( 13)   | ( 32) |
| Within normal limits                | 15      | 33    | 5       | 41    | 13      | 32    |
| Eye                                 | ( 12)   | ( 33) | ( 6)    | ( 44) | ( 2)    | ( 3)  |
| Within normal limits                | 12      | 32    | 4       | 41    | 1       | 0     |
| Cataract                            | 0       | 0     | 0       | 0     | 1       | 2     |
| Keratitis, acute                    | 0       | 0     | 1       | 0     | 0       | 0     |
| marked                              | 0       | 0     | 1       | 0     | 0       | 0     |
| Keratitis, chronic                  | 0       | 0     | 0       | 1     | 0       | 1     |
| mild                                | 0       | 0     | 0       | 0     | 0       | 1     |
| moderate                            | 0       | 0     | 0       | 1     | 0       | 0     |
| Phthisis bulbi                      | 0       | 0     | 0       | 1     | 0       | 0     |
| marked                              | 0       | 0     | 0       | 1     | 0       | 0     |
| Retinal atrophy                     | 0       | 1     | 0       | 1     | 0       | 1     |
| mild                                | 0       | 1     | 0       | 0     | 0       | 0     |
| marked                              | 0       | 0     | 0       | 1     | 0       | 0     |
| Heart                               | ( 16)   | ( 34) | ( 6)    | ( 44) | ( 14)   | ( 36) |
| Within normal limits                | 8       | 23    | 6       | 27    | 9       | 19    |
| Endocarditis, chronic               | 0       | 0     | 0       | 0     | 0       | 1     |
| marked                              | 0       | 0     | 0       | 0     | 0       | 1     |
| Myocardial fibrosis                 | 3       | 2     | 0       | 1     | 1       | 6     |
| mild                                | 3       | 2     | 0       | 1     | 1       | 6     |
| Myocarditis, chronic nonsuppurative | 4       | 10    | 0       | 17    | 5       | 13    |
| minimal                             | 0       | 2     | 0       | 5     | 0       | 1     |
| mild                                | 4       | 7     | 0       | 12    | 4       | 12    |
| moderate                            | 0       | 1     | 0       | 0     | 1       | 0     |
| Kidney                              | ( 16)   | ( 34) | ( 6)    | ( 44) | ( 14)   | ( 36) |
| Within normal limits                | 4       | 0     | 1       | 2     | 3       | 2     |
| Calculus                            | 0       | 1     | 1       | 0     | 0       | 1     |
| minimal                             | 0       | 1     | 0       | 0     | 0       | 0     |
| mild                                | 0       | 0     | 1       | 0     | 0       | 0     |
| Chronic progressive nephropathy     | 10      | 34    | 3       | 40    | 9       | 34    |
| minimal                             | 1       | 4     | 1       | 9     | 2       | 2     |
| mild                                | 5       | 16    | 0       | 23    | 3       | 22    |
| moderate                            | 2       | 11    | 1       | 6     | 2       | 7     |
| marked                              | 2       | 3     | 1       | 2     | 2       | 3     |
| Cyst                                | 1       | 3     | 0       | 1     | 1       | 1     |
| moderate                            | 0       | 1     | 0       | 1     | 1       | 0     |
| marked                              | 1       | 2     | 0       | 0     | 0       | 0     |
| Hydronephrosis                      | 1       | 2     | 0       | 1     | 0       | 0     |
| mild                                | 1       | 0     | 0       | 1     | 0       | 0     |
| moderate                            | 0       | 2     | 0       | 0     | 0       | 0     |

**Titles:**

Group 1 CONTROL 0 ppm  
 Group 5 FC-143 300 ppm  
 Group 6 FC-143 30 ppm

( ) = Total Examined  
 DOS= Unscheduled Death(s)  
 SAC= Protocol Scheduled Sacrifice(s)

142

Microscopic Incidence Page: 17

Non-Neoplastic Incidence for Males (continued)  
 Riker Laboratories, Inc. 3M  
 FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats

Table: 7

Project Number: D281CR0012 Species: Rat

| Tissue/<br>Diagnosis/<br>Modifier  | Group 1 |       | Group 5 |       | Group 6 |       |
|------------------------------------|---------|-------|---------|-------|---------|-------|
|                                    | DOS     | SAC   | DOS     | SAC   | DOS     | SAC   |
| Kidney (continued)                 |         |       |         |       |         |       |
| Hyperplasia, pelvic epithelium     | 0       | 0     | 0       | 3     | 0       | 0     |
| mild                               | 0       | 0     | 0       | 2     | 0       | 0     |
| moderate                           | 0       | 0     | 0       | 1     | 0       | 0     |
| Mineralization                     | 0       | 0     | 0       | 1     | 0       | 0     |
| mild                               | 0       | 0     | 0       | 1     | 0       | 0     |
| Nephrosis                          | 1       | 0     | 0       | 0     | 0       | 0     |
| moderate                           | 1       | 0     | 0       | 0     | 0       | 0     |
| Papillary necrosis                 | 1       | 0     | 0       | 0     | 0       | 0     |
| moderate                           | 1       | 0     | 0       | 0     | 0       | 0     |
| Pelvic mineralization              | 1       | 3     | 0       | 3     | 4       | 6     |
| minimal                            | 0       | 1     | 0       | 1     | 0       | 1     |
| mild                               | 1       | 2     | 0       | 2     | 3       | 3     |
| moderate                           | 0       | 0     | 0       | 0     | 0       | 2     |
| marked                             | 0       | 0     | 0       | 0     | 1       | 0     |
| Protein resorption droplets        | 0       | 0     | 0       | 0     | 1       | 0     |
| mild                               | 0       | 0     | 0       | 0     | 1       | 0     |
| Pyelitis, acute                    | 0       | 0     | 0       | 0     | 1       | 2     |
| mild                               | 0       | 0     | 0       | 0     | 1       | 2     |
| Pyelonephritis, acute              | 1       | 0     | 0       | 3     | 0       | 0     |
| mild                               | 1       | 0     | 0       | 2     | 0       | 0     |
| moderate                           | 0       | 0     | 0       | 1     | 0       | 0     |
| Vacuolation, conv. tub. epithelium | 0       | 0     | 0       | 0     | 1       | 0     |
| minimal                            | 0       | 0     | 0       | 0     | 1       | 0     |
| Large Intestine                    | ( 14)   | ( 34) | ( 6)    | ( 44) | ( 1)    | ( 0)  |
| Within normal limits               | 14      | 28    | 6       | 44    | 1       | 0     |
| Nematodiasis                       | 0       | 6     | 0       | 0     | 0       | 0     |
| Liver                              | ( 16)   | ( 34) | ( 6)    | ( 44) | ( 14)   | ( 36) |
| Within normal limits               | 2       | 0     | 0       | 0     | 1       | 6     |
| Cystoid degeneration               | 0       | 4     | 1       | 27    | 2       | 5     |
| minimal                            | 0       | 1     | 0       | 2     | 0       | 1     |
| mild                               | 0       | 2     | 1       | 22    | 2       | 4     |
| moderate                           | 0       | 1     | 0       | 3     | 0       | 0     |
| Hematopoiesis, extramedullary      | 0       | 0     | 0       | 0     | 1       | 0     |
| mild                               | 0       | 0     | 0       | 0     | 1       | 0     |
| Hepatocyte alteration, basophilic  | 0       | 2     | 0       | 6     | 0       | 1     |
| minimal                            | 0       | 0     | 0       | 1     | 0       | 0     |
| mild                               | 0       | 1     | 0       | 2     | 0       | 1     |
| moderate                           | 0       | 1     | 0       | 3     | 0       | 0     |
| Hepatocyte alteration, vacuolated  | 1       | 9     | 0       | 10    | 1       | 10    |
| mild                               | 1       | 7     | 0       | 8     | 1       | 9     |
| moderate                           | 0       | 2     | 0       | 2     | 0       | 1     |

**Titles:**

Group 1 CONTROL 0 ppm  
 Group 5 FC-143 300 ppm  
 Group 6 FC-143 30 ppm

( ) = Total Examined  
 DOS= Unscheduled Death(s)  
 SAC= Protocol Scheduled Sacrifice(s)

143

Non-Neoplastic Incidence for Males (continued)  
 Riker Laboratories, Inc. 3M  
 FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats

Table: 7

Project Number: 0281CR0012 Species: Rat

| Tissue/<br>Diagnosis/<br>Modifier  | Group 1 |       | Group 5 |       | Group 6 |       |
|------------------------------------|---------|-------|---------|-------|---------|-------|
|                                    | DOS     | SAC   | DOS     | SAC   | DOS     | SAC   |
| Liver (continued)                  |         |       |         |       |         |       |
| Hepatocyte vacuolation             | 8       | 14    | 2       | 10    | 6       | 2     |
| minimal                            | 0       | 1     | 1       | 1     | 0       | 1     |
| mild                               | 4       | 13    | 0       | 8     | 3       | 1     |
| moderate                           | 2       | 0     | 1       | 1     | 3       | 0     |
| marked                             | 2       | 0     | 0       | 0     | 0       | 0     |
| Hyperplasia, Kupffer cell          | 0       | 0     | 0       | 0     | 0       | 1     |
| moderate                           | 0       | 0     | 0       | 0     | 0       | 1     |
| Hyperplastic nodule                | 0       | 0     | 0       | 3     | 0       | 0     |
| Megalocytosis                      | 0       | 0     | 2       | 33    | 0       | 6     |
| minimal                            | 0       | 0     | 2       | 24    | 0       | 6     |
| mild                               | 0       | 0     | 0       | 10    | 0       | 0     |
| moderate                           | 0       | 0     | 0       | 4     | 0       | 0     |
| Mononuclear cell infiltration      | 0       | 0     | 0       | 0     | 0       | 1     |
| mild                               | 0       | 0     | 0       | 0     | 0       | 1     |
| Necrosis                           | 2       | 1     | 2       | 3     | 2       | 3     |
| minimal                            | 0       | 0     | 0       | 1     | 0       | 1     |
| mild                               | 1       | 0     | 1       | 1     | 1       | 2     |
| moderate                           | 1       | 1     | 1       | 1     | 1       | 0     |
| Portal bile duct proliferation     | 6       | 21    | 1       | 14    | 5       | 10    |
| minimal                            | 0       | 0     | 0       | 1     | 0       | 0     |
| mild                               | 5       | 21    | 1       | 13    | 5       | 10    |
| moderate                           | 1       | 0     | 0       | 0     | 0       | 0     |
| Portal mononuclear cell infiltrate | 7       | 30    | 5       | 43    | 7       | 25    |
| minimal                            | 0       | 2     | 0       | 2     | 0       | 0     |
| mild                               | 7       | 26    | 5       | 41    | 7       | 25    |
| Lung                               | ( 16)   | ( 34) | ( 5)    | ( 44) | ( 14)   | ( 35) |
| Within normal limits               | 0       | 1     | 0       | 0     | 1       | 2     |
| Alveolar macrophages               | 5       | 5     | 4       | 27    | 6       | 10    |
| minimal                            | 1       | 2     | 0       | 0     | 0       | 0     |
| mild                               | 4       | 2     | 3       | 25    | 6       | 8     |
| moderate                           | 0       | 1     | 0       | 2     | 0       | 2     |
| marked                             | 0       | 0     | 1       | 0     | 0       | 0     |
| Atelectasis                        | 0       | 0     | 0       | 0     | 1       | 0     |
| moderate                           | 0       | 0     | 0       | 0     | 1       | 0     |
| Edema                              | 3       | 0     | 0       | 0     | 0       | 0     |
| mild                               | 1       | 0     | 0       | 0     | 0       | 0     |
| moderate                           | 1       | 0     | 0       | 0     | 0       | 0     |
| marked                             | 1       | 0     | 0       | 0     | 0       | 0     |
| Fibrosis                           | 1       | 0     | 0       | 1     | 0       | 0     |
| mild                               | 1       | 0     | 0       | 0     | 0       | 0     |
| moderate                           | 0       | 0     | 0       | 1     | 0       | 0     |

**Titles:**

Group 1 CONTROL 0 ppm  
 Group 5 FC-143 300 ppm  
 Group 6 FC-143 30 ppm

( ) = Total Examined  
 DOS= Unscheduled Death(s)  
 SAC= Protocol Scheduled Sacrifice(s)

144

Microscopic Incidence Page: 19

Non-Neoplastic Incidence for Males (continued)  
 Riker Laboratories, Inc. 3M  
 FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats

Table: 7

Project Number: 0261CR0012 Species: Rat

| Tissue/<br>Diagnosis/<br>Modifier  | Group 1 |        | Group 5 |        | Group 6 |       |
|------------------------------------|---------|--------|---------|--------|---------|-------|
|                                    | DOS     | SAC    | DOS     | SAC    | DOS     | SAC   |
| Lung (continued)                   |         |        |         |        |         |       |
| Granuloma                          | 0       | 0      | 0       | 1      | 0       | 0     |
| Hemorrhage                         | 0       | 4      | 2       | 20     | 3       | 5     |
| mild                               | 2       | 1      | 0       | 5      | 0       | 4     |
| moderate                           | 1       | 0      | 1       | 13     | 0       | 2     |
| marked                             | 3       | 1      | 1       | 2      | 0       | 0     |
| Medial hypertrophy, arteries       | 0       | 0      | 1       | 0      | 0       | 0     |
| moderate                           | 0       | 0      | 1       | 0      | 0       | 0     |
| Necrosis                           | 1       | 0      | 0       | 0      | 0       | 0     |
| marked                             | 1       | 0      | 0       | 0      | 0       | 0     |
| Peribronchial lymphoid hyperplasia | 0       | 1      | 0       | 0      | 0       | 0     |
| mild                               | 0       | 1      | 0       | 0      | 0       | 0     |
| Perivascular nonnuclear infiltrate | 2       | 10     | 0       | 7      | 0       | 3     |
| minimal                            | 0       | 2      | 0       | 4      | 0       | 0     |
| mild                               | 2       | 14     | 0       | 2      | 0       | 3     |
| moderate                           | 0       | 3      | 0       | 1      | 0       | 0     |
| Pneumonia, interstitial, acute     | 0       | 0      | 0       | 0      | 1       | 0     |
| moderate                           | 0       | 0      | 0       | 0      | 1       | 0     |
| Pneumonia, interstitial, chronic   | 2       | 14     | 1       | 6      | 0       | 5     |
| mild                               | 1       | 11     | 1       | 6      | 0       | 5     |
| moderate                           | 1       | 3      | 0       | 0      | 0       | 0     |
| Thrombus                           | 1       | 0      | 1       | 0      | 0       | 0     |
| Vascular mineralization            | 10      | 33     | 4       | 43     | 11      | 32    |
| minimal                            | 0       | 2      | 0       | 0      | 0       | 0     |
| mild                               | 10      | 31     | 4       | 41     | 11      | 32    |
| moderate                           | 0       | 0      | 0       | 2      | 0       | 0     |
| Lymph Node (mesenteric)            | ( 12 )  | ( 33 ) | ( 6 )   | ( 44 ) | ( 0 )   | ( 1 ) |
| Within normal limits               | 10      | 29     | 5       | 38     | 0       | 1     |
| Granuloma                          | 0       | 0      | 0       | 1      | 0       | 0     |
| moderate                           | 0       | 0      | 0       | 1      | 0       | 0     |
| Hemorrhage                         | 2       | 4      | 0       | 4      | 0       | 0     |
| minimal                            | 1       | 2      | 0       | 1      | 0       | 0     |
| mild                               | 1       | 1      | 0       | 3      | 0       | 0     |
| Sinusoidal ectasia                 | 0       | 0      | 0       | 1      | 0       | 0     |
| mild                               | 0       | 0      | 0       | 1      | 0       | 0     |
| Mammary Gland                      | ( 0 )   | ( 0 )  | ( 0 )   | ( 0 )  | ( 1 )   | ( 0 ) |
| Within normal limits               | 0       | 0      | 0       | 0      | 1       | 0     |
| Mesentery                          | ( 0 )   | ( 2 )  | ( 0 )   | ( 0 )  | ( 1 )   | ( 1 ) |
| Polyarteritis                      | 0       | 2      | 0       | 0      | 1       | 1     |
| marked                             | 0       | 2      | 0       | 0      | 1       | 1     |

**Titles:**

Group 1 CONTROL 0 ppm  
 Group 5 FC-143 300 ppm  
 Group 6 FC-143 30 ppm

( ) = Total Examined  
 DOS= Unscheduled Death(s)  
 SAC= Protocol Scheduled Sacrifice(s)

145

Microscopic Incidence Page: 20

Non-Neoplastic Incidence for Males (continued)  
 Riker Laboratories, Inc. 3M  
 FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats

Table: 7

Project Number: 0281CR0012 Species: Rat

| Tissue/<br>Diagnosis/<br>Modifier | Group 1 |       | Group 5 |       | Group 6 |       |
|-----------------------------------|---------|-------|---------|-------|---------|-------|
|                                   | DOS     | SAC   | DOS     | SAC   | DOS     | SAC   |
| Pancreas                          | ( 13)   | ( 33) | ( 6)    | ( 43) | ( 12)   | ( 34) |
| Within normal limits              | 10      | 24    | 4       | 27    | 10      | 21    |
| Acinar atrophy                    | 2       | 4     | 0       | 11    | 1       | 8     |
| minimal                           | 0       | 0     | 0       | 1     | 1       | 1     |
| mild                              | 1       | 2     | 0       | 6     | 0       | 5     |
| moderate                          | 1       | 1     | 0       | 4     | 0       | 2     |
| marked                            | 0       | 1     | 0       | 0     | 0       | 0     |
| Hyperplasia, acinar cell          | 0       | 0     | 1       | 1     | 0       | 2     |
| mild                              | 0       | 0     | 0       | 1     | 0       | 1     |
| moderate                          | 0       | 0     | 1       | 0     | 0       | 1     |
| Hyperplasia, islet cell           | 0       | 2     | 1       | 3     | 1       | 1     |
| mild                              | 0       | 0     | 0       | 0     | 1       | 1     |
| moderate                          | 0       | 2     | 1       | 3     | 0       | 0     |
| Polyarteritis                     | 0       | 4     | 0       | 2     | 0       | 3     |
| minimal                           | 0       | 0     | 0       | 0     | 0       | 1     |
| moderate                          | 0       | 2     | 0       | 2     | 0       | 2     |
| marked                            | 0       | 2     | 0       | 0     | 0       | 0     |
| Parathyroid                       | ( 6)    | ( 16) | ( 5)    | ( 31) | ( 7)    | ( 26) |
| Within normal limits              | 6       | 16    | 5       | 29    | 7       | 26    |
| Pituitary                         | ( 15)   | ( 33) | ( 5)    | ( 41) | ( 13)   | ( 34) |
| Within normal limits              | 7       | 13    | 3       | 28    | 3       | 20    |
| Cyst                              | 2       | 2     | 0       | 2     | 1       | 4     |
| Hyperplasia                       | 0       | 2     | 0       | 0     | 0       | 2     |
| mild                              | 0       | 2     | 0       | 0     | 0       | 1     |
| Prostate                          | ( 13)   | ( 33) | ( 6)    | ( 43) | ( 13)   | ( 35) |
| Within normal limits              | 10      | 27    | 5       | 40    | 11      | 35    |
| Edema                             | 1       | 0     | 0       | 0     | 0       | 0     |
| moderate                          | 1       | 0     | 0       | 0     | 0       | 0     |
| Prostatitis, acute                | 3       | 6     | 1       | 3     | 2       | 1     |
| minimal                           | 0       | 0     | 0       | 1     | 0       | 0     |
| mild                              | 1       | 2     | 0       | 0     | 1       | 1     |
| moderate                          | 1       | 3     | 0       | 1     | 0       | 0     |
| marked                            | 1       | 1     | 1       | 1     | 1       | 0     |
| Salivary Gland                    | ( 12)   | ( 32) | ( 5)    | ( 41) | ( 10)   | ( 34) |
| Within normal limits              | 12      | 31    | 4       | 25    | 10      | 21    |
| Sialadenitis, acute               | 0       | 0     | 0       | 1     | 0       | 1     |
| moderate                          | 0       | 0     | 0       | 1     | 0       | 0     |
| marked                            | 0       | 0     | 0       | 0     | 0       | 1     |
| Sialadenitis, chronic             | 0       | 1     | 0       | 14    | 0       | 12    |
| minimal                           | 0       | 1     | 0       | 0     | 0       | 0     |
| mild                              | 0       | 0     | 0       | 0     | 0       | 1     |
| moderate                          | 0       | 0     | 0       | 7     | 0       | 6     |

**Titles:**

Group 1 CONTROL 0 ppm  
 Group 5 FC-143 300 ppm  
 Group 6 FC-143 30 ppm

( ) = Total Examined  
 DOS= Unscheduled Death(s)  
 SAC= Protocol Scheduled Sacrifice(s)

146

Microscopic Incidence Page: 21

Non-Neoplastic Incidence for Males (continued)  
 Riker Laboratories, Inc. 3M  
 FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats

Project Number: 0231CR0012 Species: Rat

Table: 7

| Tissue/<br>Diagnosis/<br>Modifier        | Group 1 |        | Group 5 |        | Group 6 |        |
|------------------------------------------|---------|--------|---------|--------|---------|--------|
|                                          | DOS     | SAC    | DOS     | SAC    | DOS     | SAC    |
| Salivary Gland (continued)               |         |        |         |        |         |        |
| Sialadenitis, chronic                    |         |        |         |        |         |        |
| marked                                   | 0       | 0      | 0       | 7      | 0       | 5      |
| Skin                                     | ( 3 )   | ( 7 )  | ( 0 )   | ( 2 )  | ( 5 )   | ( 4 )  |
| Abscess                                  | 0       | 0      | 0       | 0      | 1       | 0      |
| Pododermatitis, ulcerative               | 3       | 5      | 0       | 1      | 2       | 2      |
| marked                                   | 3       | 5      | 0       | 1      | 2       | 2      |
| Ulcer                                    | 1       | 0      | 0       | 0      | 0       | 1      |
| marked                                   | 1       | 0      | 0       | 0      | 0       | 1      |
| Small Intestine                          | ( 14 )  | ( 34 ) | ( 6 )   | ( 44 ) | ( 1 )   | ( 0 )  |
| Within normal limits                     | 13      | 32     | 5       | 44     | 1       | 0      |
| Polyarteritis                            | 0       | 2      | 0       | 0      | 0       | 0      |
| moderate                                 | 0       | 1      | 0       | 0      | 0       | 0      |
| marked                                   | 0       | 1      | 0       | 0      | 0       | 0      |
| Spinal Cord                              | ( 15 )  | ( 32 ) | ( 6 )   | ( 42 ) | ( 0 )   | ( 0 )  |
| Within normal limits                     | 15      | 32     | 5       | 42     | 0       | 0      |
| Spleen                                   | ( 16 )  | ( 34 ) | ( 6 )   | ( 44 ) | ( 14 )  | ( 35 ) |
| Within normal limits                     | 6       | 20     | 1       | 25     | 8       | 35     |
| Atrophy                                  | 0       | 0      | 1       | 0      | 0       | 0      |
| moderate                                 | 0       | 0      | 1       | 0      | 0       | 0      |
| Fibrosis                                 | 0       | 1      | 0       | 0      | 0       | 0      |
| moderate                                 | 0       | 1      | 0       | 0      | 0       | 0      |
| Hematopoiesis, extramedullary, increased | 4       | 0      | 1       | 1      | 1       | 0      |
| mild                                     | 2       | 0      | 0       | 1      | 0       | 0      |
| moderate                                 | 1       | 0      | 1       | 0      | 0       | 0      |
| marked                                   | 1       | 0      | 0       | 0      | 1       | 0      |
| Hemosiderosis                            | 5       | 11     | 3       | 19     | 4       | 0      |
| mild                                     | 5       | 11     | 3       | 19     | 4       | 0      |
| Necrosis                                 | 0       | 1      | 0       | 0      | 0       | 0      |
| moderate                                 | 0       | 1      | 0       | 0      | 0       | 0      |
| Polyarteritis                            | 0       | 0      | 0       | 0      | 0       | 1      |
| moderate                                 | 0       | 0      | 0       | 0      | 0       | 1      |
| Stomach                                  | ( 16 )  | ( 33 ) | ( 6 )   | ( 44 ) | ( 14 )  | ( 35 ) |
| Within normal limits                     | 11      | 33     | 5       | 43     | 11      | 35     |
| Edema                                    | 3       | 0      | 0       | 0      | 0       | 0      |
| moderate                                 | 2       | 0      | 0       | 0      | 0       | 0      |
| marked                                   | 1       | 0      | 0       | 0      | 0       | 0      |
| Gastritis, acute                         | 0       | 0      | 1       | 0      | 0       | 0      |
| mild                                     | 0       | 0      | 1       | 0      | 0       | 0      |
| Ulcer                                    | 1       | 0      | 0       | 0      | 3       | 0      |
| marked                                   | 1       | 0      | 0       | 0      | 3       | 0      |

**Titles:**

Group 1 CONTROL 0 ppm  
 Group 5 FC-143 300 ppm  
 Group 6 FC-143 30 ppm

( ) = Total Examined  
 DOS= Unscheduled Death(s)  
 SAC= Protocol Scheduled Sacrifice(s)

147

Microscopic Incidence Page: 22

Non-Neoplastic Incidence for Males (continued)  
 Riker Laboratories, Inc. 3M  
 FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats

Project Number: 0281CR0012 Species: Rat

Table: 7

| Tissue/<br>Diagnosis/<br>Modifier | Group 1 |       | Group 5 |       | Group 6 |       |
|-----------------------------------|---------|-------|---------|-------|---------|-------|
|                                   | DOS     | SAC   | DOS     | SAC   | DOS     | SAC   |
| Testis/Epididymis                 | ( 16)   | ( 33) | ( 6)    | ( 44) | ( 14)   | ( 36) |
| Within normal limits              | 13      | 26    | 5       | 23    | 7       | 26    |
| Granuloma, spermatic              | 0       | 0     | 0       | 0     | 1       | 0     |
| Leydig cell hyperplasia           | 0       | 0     | 0       | 1     | 1       | 1     |
| mild                              | 0       | 0     | 0       | 1     | 0       | 1     |
| moderate                          | 0       | 0     | 0       | 0     | 1       | 0     |
| Mineralization                    | 0       | 1     | 0       | 2     | 0       | 0     |
| mild                              | 0       | 1     | 0       | 2     | 0       | 0     |
| Polyarteritis                     | 1       | 5     | 0       | 2     | 1       | 5     |
| mild                              | 1       | 1     | 0       | 0     | 0       | 2     |
| moderate                          | 0       | 1     | 0       | 2     | 1       | 2     |
| marked                            | 0       | 3     | 0       | 0     | 0       | 1     |
| Tubule atrophy, aspermatogenesis  | 3       | 4     | 1       | 10    | 5       | 5     |
| mild                              | 1       | 1     | 0       | 1     | 3       | 0     |
| moderate                          | 1       | 1     | 0       | 3     | 1       | 1     |
| marked                            | 1       | 2     | 1       | 6     | 1       | 4     |
| Vascular mineralization           | 0       | 0     | 0       | 9     | 3       | 0     |
| mild                              | 0       | 0     | 0       | 7     | 3       | 0     |
| moderate                          | 0       | 0     | 0       | 2     | 0       | 0     |
| Thymus                            | ( 1)    | ( 0)  | ( 1)    | ( 1)  | ( 1)    | ( 0)  |
| Hemorrhage                        | 0       | 0     | 0       | 1     | 0       | 0     |
| marked                            | 0       | 0     | 0       | 1     | 0       | 0     |
| Thyroid                           | ( 12)   | ( 31) | ( 5)    | ( 42) | ( 12)   | ( 35) |
| Within normal limits              | 11      | 25    | 4       | 33    | 10      | 26    |
| Cyst, colloid                     | 0       | 1     | 1       | 1     | 0       | 1     |
| mild                              | 0       | 1     | 1       | 0     | 0       | 0     |
| Follicular hyperplasia, cystic    | 0       | 1     | 0       | 1     | 1       | 1     |
| moderate                          | 0       | 1     | 0       | 1     | 0       | 0     |
| marked                            | 0       | 0     | 0       | 0     | 1       | 1     |
| Hyperplasia, C cell               | 0       | 1     | 0       | 1     | 1       | 5     |
| mild                              | 0       | 1     | 0       | 1     | 1       | 3     |
| moderate                          | 0       | 0     | 0       | 0     | 0       | 2     |
| Ultimobranchial cyst              | 1       | 1     | 0       | 3     | 1       | 2     |
| Trachea                           | ( 15)   | ( 34) | ( 6)    | ( 42) | ( 13)   | ( 35) |
| Within normal limits              | 15      | 34    | 6       | 42    | 13      | 35    |
| Urinary Bladder                   | ( 13)   | ( 33) | ( 6)    | ( 44) | ( 14)   | ( 35) |
| Within normal limits              | 10      | 32    | 5       | 41    | 11      | 35    |
| Calculus                          | 0       | 0     | 0       | 0     | 1       | 0     |
| Cystitis, acute                   | 1       | 0     | 0       | 0     | 0       | 0     |
| moderate                          | 1       | 0     | 0       | 0     | 0       | 0     |
| Cystitis, chronic                 | 0       | 0     | 0       | 0     | 1       | 0     |
| minimal                           | 0       | 0     | 0       | 0     | 1       | 0     |

**Titles:**

Group 1 CONTROL 0 ppm  
 Group 5 FC-143 300 ppm  
 Group 6 FC-143 30 ppm

( ) = Total Examined  
 DOS= Unscheduled Death(s)  
 SAC= Protocol Scheduled Sacrifice(s)

148

Microscopic Incidence Page: 23

Non-Neoplastic Incidence for Males (continued)  
 Riker Laboratories, Inc. 3M  
 \*FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats

Project Number: 0281CRO012 Species: Rat

Table: 7

| Tissue/<br>Diagnosis/<br>Modifier | Group 1 |     | Group 5 |     | Group 6 |     |
|-----------------------------------|---------|-----|---------|-----|---------|-----|
|                                   | DOS     | SAC | DOS     | SAC | DOS     | SAC |
| Urinary Bladder (continued)       |         |     |         |     |         |     |
| Epithelial hyperplasia, papillary | 0       | 0   | 0       | 0   | 1       | 0   |
| mild                              | 0       | 0   | 0       | 0   | 1       | 0   |
| Epithelial hyperplasia, simple    | 2       | 1   | 1       | 3   | 3       | 0   |
| minimal                           | 0       | 0   | 0       | 1   | 0       | 0   |
| mild                              | 2       | 1   | 1       | 2   | 3       | 0   |
| Hemorrhage                        | 1       | 0   | 0       | 1   | 0       | 0   |
| minimal                           | 0       | 0   | 0       | 1   | 0       | 0   |
| marked                            | 1       | 0   | 0       | 0   | 0       | 0   |

**Titles:**

Group 1 CONTROL 0 ppm  
 Group 5 FC-143 300 ppm  
 Group 5 FC-143 30 ppm

() = Total Examined  
 DOS= Unscheduled Death(s)  
 SAC= Protocol Scheduled Sacrifice(s)

149

Microscopic Incidence Page: 24

Non-Neoplastic Incidence for Females  
Riker Laboratories, Inc. 3M  
FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats

Table: 8

Project Number: 0281CR0012 Species: Rat

| Tissue/<br>Diagnosis/<br>Modifier | Group 1 |       | Group 5 |       | Group 6 |       |
|-----------------------------------|---------|-------|---------|-------|---------|-------|
|                                   | DOS     | SAC   | DOS     | SAC   | DOS     | SAC   |
| Adrenal                           | ( 25)   | ( 25) | ( 20)   | ( 29) | ( 25)   | ( 24) |
| Within normal limits              | 2       | 0     | 4       | 2     | 3       | 1     |
| Cortical atrophy                  | 0       | 0     | 1       | 2     | 0       | 0     |
| moderate                          | 0       | 0     | 1       | 2     | 0       | 0     |
| Cortical degeneration             | 2       | 5     | 1       | 0     | 4       | 4     |
| mild                              | 1       | 0     | 0       | 0     | 1       | 2     |
| moderate                          | 1       | 3     | 0       | 0     | 3       | 2     |
| marked                            | 0       | 2     | 1       | 0     | 0       | 0     |
| Cortical vacuolation              | 3       | 2     | 1       | 3     | 4       | 1     |
| mild                              | 2       | 1     | 1       | 2     | 1       | 1     |
| moderate                          | 1       | 1     | 0       | 1     | 3       | 0     |
| Hematopoiesis, extramedullary     | 4       | 0     | 0       | 0     | 1       | 1     |
| mild                              | 3       | 0     | 0       | 0     | 0       | 0     |
| moderate                          | 1       | 0     | 0       | 0     | 0       | 1     |
| marked                            | 0       | 0     | 0       | 0     | 1       | 0     |
| Hemosiderosis                     | 0       | 0     | 0       | 0     | 1       | 0     |
| mild                              | 0       | 0     | 0       | 0     | 1       | 0     |
| Medullary cell hyperplasia        | 1       | 2     | 2       | 0     | 0       | 2     |
| mild                              | 1       | 2     | 1       | 0     | 0       | 2     |
| moderate                          | 0       | 0     | 1       | 0     | 0       | 0     |
| Necrosis                          | 3       | 0     | 0       | 0     | 0       | 0     |
| moderate                          | 1       | 0     | 0       | 0     | 0       | 0     |
| marked                            | 2       | 0     | 0       | 0     | 0       | 0     |
| Nodular hyperplasia, cortex       | 0       | 0     | 0       | 1     | 1       | 2     |
| moderate                          | 0       | 0     | 0       | 1     | 1       | 2     |
| Sinusoidal ectasia, cortex        | 19      | 23    | 16      | 25    | 21      | 22    |
| minimal                           | 0       | 1     | 0       | 1     | 1       | 0     |
| mild                              | 3       | 4     | 9       | 6     | 7       | 3     |
| moderate                          | 5       | 3     | 3       | 7     | 7       | 13    |
| marked                            | 5       | 9     | 4       | 11    | 6       | 0     |
| Aorta                             | ( 21)   | ( 23) | ( 19)   | ( 27) | ( 0)    | ( 0)  |
| Within normal limits              | 17      | 23    | 19      | 27    | 0       | 0     |
| Mineralization                    | 2       | 0     | 0       | 0     | 0       | 0     |
| mild                              | 2       | 0     | 0       | 0     | 0       | 0     |
| Bone Marrow                       | ( 25)   | ( 25) | ( 21)   | ( 29) | ( 0)    | ( 0)  |
| Within normal limits              | 23      | 25    | 21      | 29    | 0       | 0     |
| Brain                             | ( 25)   | ( 25) | ( 21)   | ( 29) | ( 0)    | ( 0)  |
| Within normal limits              | 25      | 24    | 21      | 29    | 0       | 0     |
| Esophagus                         | ( 15)   | ( 21) | ( 9)    | ( 15) | ( 23)   | ( 22) |
| Within normal limits              | 14      | 21    | 9       | 15    | 23      | 22    |

**Titles:**

Group 1 CONTROL 0 ppm  
Group 5 FC-143 300 ppm  
Group 6 FC-143 30 ppm

( ) = Total Examined  
DOS= Unscheduled Death(s)  
SAC= Protocol Scheduled Sacrifice(s)

150

Microscopic Incidence Page: 25

Non-Neoplastic Incidence for Females (continued)  
 Riker Laboratories, Inc. 3M  
 FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats

Table: 8

Project Number: 0281CR0012 Species: Rat

| Tissue/<br>Diagnosis/<br>Modifier   | Group 1 |       | Group 5 |       | Group 6 |       |
|-------------------------------------|---------|-------|---------|-------|---------|-------|
|                                     | DOS     | SAC   | DOS     | SAC   | DOS     | SAC   |
| Eye                                 | ( 20)   | ( 23) | ( 16)   | ( 28) | ( 2)    | ( 1)  |
| Within normal limits                | 17      | 21    | 16      | 28    | 1       | 1     |
| Cataract                            | 1       | 0     | 0       | 0     | 0       | 0     |
| Keratitis, acute                    | 1       | 0     | 0       | 0     | 1       | 0     |
| marked                              | 1       | 0     | 0       | 0     | 1       | 0     |
| Panophthalmitis                     | 0       | 1     | 0       | 0     | 0       | 0     |
| marked                              | 0       | 1     | 0       | 0     | 0       | 0     |
| Phthisis bulbi                      | 0       | 1     | 0       | 0     | 0       | 0     |
| moderate                            | 0       | 1     | 0       | 0     | 0       | 0     |
| Heart                               | ( 25)   | ( 25) | ( 21)   | ( 29) | ( 26)   | ( 24) |
| Within normal limits                | 19      | 14    | 15      | 24    | 25      | 20    |
| Myocardial fibrosis                 | 0       | 2     | 1       | 1     | 0       | 0     |
| minimal                             | 0       | 0     | 0       | 1     | 0       | 0     |
| mild                                | 0       | 2     | 1       | 0     | 0       | 0     |
| Myocarditis, chronic nonsuppurative | 6       | 10    | 5       | 5     | 1       | 4     |
| minimal                             | 0       | 0     | 1       | 1     | 0       | 0     |
| mild                                | 4       | 10    | 4       | 4     | 1       | 4     |
| moderate                            | 2       | 0     | 0       | 0     | 0       | 0     |
| Kidney                              | ( 25)   | ( 25) | ( 21)   | ( 29) | ( 26)   | ( 24) |
| Within normal limits                | 3       | 3     | 7       | 4     | 5       | 5     |
| Chronic progressive nephropathy     | 12      | 18    | 7       | 19    | 12      | 9     |
| minimal                             | 3       | 4     | 5       | 4     | 4       | 5     |
| mild                                | 5       | 10    | 1       | 12    | 8       | 4     |
| moderate                            | 2       | 3     | 0       | 2     | 0       | 0     |
| marked                              | 2       | 1     | 1       | 1     | 0       | 0     |
| Cyst                                | 2       | 1     | 0       | 0     | 0       | 0     |
| moderate                            | 2       | 0     | 0       | 0     | 0       | 0     |
| Hydronephrosis                      | 1       | 0     | 0       | 1     | 0       | 0     |
| moderate                            | 1       | 0     | 0       | 0     | 0       | 0     |
| Hyperplasia, pelvic epithelium      | 4       | 1     | 0       | 0     | 0       | 0     |
| mild                                | 4       | 1     | 0       | 0     | 0       | 0     |
| Mineralization                      | 2       | 0     | 0       | 0     | 1       | 0     |
| mild                                | 2       | 0     | 0       | 0     | 0       | 0     |
| moderate                            | 0       | 0     | 0       | 0     | 1       | 0     |
| Nephrosis                           | 7       | 0     | 0       | 0     | 1       | 2     |
| mild                                | 1       | 0     | 0       | 0     | 0       | 1     |
| moderate                            | 3       | 0     | 0       | 0     | 0       | 1     |
| marked                              | 2       | 0     | 0       | 0     | 1       | 0     |
| Pelvic mineralization               | 14      | 16    | 10      | 14    | 12      | 15    |
| minimal                             | 4       | 6     | 4       | 6     | 4       | 6     |
| mild                                | 3       | 8     | 4       | 7     | 6       | 6     |
| moderate                            | 1       | 2     | 1       | 0     | 0       | 2     |

**Titles:**

Group 1 CONTROL 0 ppm  
 Group 5 FC-143 300 ppm  
 Group 6 FC-143 30 ppm

( ) = Total Examined  
 DOS= Unscheduled Death(s)  
 SAC= Protocol Scheduled Sacrifice(s)

151

Non-Neoplastic Incidence for Females (continued)  
 Riker Laboratories, Inc. 3M  
 FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats

Table: 8

Project Number: 0281CR0012 Species: Rat

| Tissue/<br>Diagnosis/<br>Modifier   | Group 1 |       | Group 5 |       | Group 6 |       |
|-------------------------------------|---------|-------|---------|-------|---------|-------|
|                                     | DOS     | SAC   | DOS     | SAC   | DOS     | SAC   |
| Kidney (continued)                  |         |       |         |       |         |       |
| Pelvic mineralization               |         |       |         |       |         |       |
| marked                              | 1       | 0     | 1       | 1     | 2       | 1     |
| Pigment, conv. tub. epithelium      | 0       | 0     | 0       | 1     | 0       | 2     |
| minimal                             | 0       | 0     | 0       | 1     | 0       | 0     |
| moderate                            | 0       | 0     | 0       | 0     | 0       | 2     |
| Polyarteritis                       | 0       | 0     | 0       | 0     | 0       | 1     |
| minimal                             | 0       | 0     | 0       | 0     | 0       | 1     |
| Protein resorption droplets         | 0       | 0     | 1       | 0     | 1       | 1     |
| mild                                | 0       | 0     | 0       | 0     | 0       | 1     |
| marked                              | 0       | 0     | 1       | 0     | 1       | 0     |
| Pyelitis, acute                     | 0       | 0     | 2       | 0     | 0       | 0     |
| mild                                | 0       | 0     | 1       | 0     | 0       | 0     |
| moderate                            | 0       | 0     | 1       | 0     | 0       | 0     |
| Pyelonephritis, acute               | 1       | 0     | 0       | 0     | 0       | 0     |
| moderate                            | 1       | 0     | 0       | 0     | 0       | 0     |
| Vacuolation, conv. tub. epithelium  | 1       | 0     | 0       | 0     | 0       | 0     |
| moderate                            | 1       | 0     | 0       | 0     | 0       | 0     |
| Large Intestine                     | ( 24)   | ( 23) | ( 17)   | ( 29) | ( 0)    | ( 0)  |
| Within normal limits                | 22      | 22    | 17      | 27    | 0       | 0     |
| Nematodiasis                        | 1       | 1     | 0       | 2     | 0       | 0     |
| Liver                               | ( 25)   | ( 25) | ( 21)   | ( 23) | ( 25)   | ( 24) |
| Within normal limits                | 1       | 0     | 4       | 4     | 7       | 7     |
| Atrophy                             | 0       | 0     | 0       | 0     | 1       | 0     |
| moderate                            | 0       | 0     | 0       | 0     | 1       | 0     |
| Cystoid degeneration                | 0       | 0     | 0       | 1     | 1       | 0     |
| minimal                             | 0       | 0     | 0       | 1     | 0       | 0     |
| mild                                | 0       | 0     | 0       | 0     | 1       | 0     |
| Hematopoiesis, extramedullary       | 3       | 0     | 1       | 0     | 5       | 2     |
| minimal                             | 0       | 0     | 0       | 0     | 3       | 1     |
| mild                                | 3       | 0     | 0       | 0     | 2       | 1     |
| moderate                            | 0       | 0     | 1       | 0     | 0       | 0     |
| Hepatocyte alteration, basophilic   | 1       | 7     | 0       | 2     | 5       | 3     |
| minimal                             | 0       | 0     | 0       | 1     | 0       | 0     |
| mild                                | 1       | 5     | 0       | 1     | 5       | 3     |
| moderate                            | 0       | 2     | 0       | 0     | 0       | 0     |
| Hepatocyte alteration, eosinophilic | 1       | 2     | 0       | 0     | 0       | 0     |
| mild                                | 0       | 2     | 0       | 0     | 0       | 0     |
| moderate                            | 1       | 0     | 0       | 0     | 0       | 0     |
| Hepatocyte alteration, vacuolated   | 2       | 11    | 2       | 4     | 1       | 5     |
| minimal                             | 0       | 0     | 1       | 0     | 0       | 1     |
| mild                                | 2       | 11    | 1       | 4     | 0       | 4     |

**Titles:**

Group 1 CONTROL 0 ppm  
 Group 5 FC-143 300 ppm  
 Group 6 FC-143 30 ppm

( ) = Total Examined  
 DOS= Unscheduled Death(s)  
 SAC= Protocol Scheduled Sacrifice(s)

152

Microscopic Incidence Page: 27

Non-Neoplastic Incidence for Females (continued)  
 Riker Laboratories, Inc. 3M  
 FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats

Project Number: 0281CR0012 Species: Rat

Table: 8

| Tissue/<br>Diagnosis/<br>Modifier  | Group 1 |       | Group 5 |       | Group 6 |       |
|------------------------------------|---------|-------|---------|-------|---------|-------|
|                                    | DOS     | SAC   | DOS     | SAC   | DOS     | SAC   |
| Liver (continued)                  |         |       |         |       |         |       |
| Hepatocyte alteration, vacuolated  |         |       |         |       |         |       |
| marked                             | 0       | 0     | 0       | 0     | 1       | 0     |
| Hepatocyte vacuolation             | 15      | 15    | 8       | 13    | 7       | 9     |
| minimal                            | 1       | 1     | 0       | 3     | 2       | 2     |
| mild                               | 9       | 13    | 5       | 10    | 2       | 7     |
| moderate                           | 3       | 1     | 2       | 0     | 2       | 0     |
| marked                             | 2       | 0     | 1       | 0     | 1       | 0     |
| Hyperplastic nodule                | 0       | 1     | 0       | 2     | 0       | 0     |
| Megalocytosis                      | 0       | 0     | 1       | 7     | 0       | 1     |
| minimal                            | 0       | 0     | 1       | 6     | 0       | 1     |
| mild                               | 0       | 0     | 0       | 1     | 0       | 0     |
| Mitotic activity, increased        | 1       | 0     | 0       | 0     | 0       | 0     |
| moderate                           | 1       | 0     | 0       | 0     | 0       | 0     |
| Mononuclear cell infiltration      | 0       | 0     | 1       | 0     | 0       | 0     |
| mild                               | 0       | 0     | 1       | 0     | 0       | 0     |
| Necrosis                           | 4       | 1     | 2       | 0     | 6       | 0     |
| minimal                            | 0       | 0     | 0       | 0     | 1       | 0     |
| mild                               | 1       | 1     | 1       | 0     | 3       | 0     |
| moderate                           | 1       | 0     | 0       | 0     | 0       | 0     |
| marked                             | 2       | 0     | 1       | 0     | 2       | 0     |
| Pigment, Kupfer cell               | 0       | 0     | 1       | 0     | 0       | 0     |
| mild                               | 0       | 0     | 1       | 0     | 0       | 0     |
| Portal bile duct proliferation     | 4       | 13    | 5       | 9     | 1       | 4     |
| mild                               | 3       | 12    | 5       | 8     | 1       | 4     |
| moderate                           | 0       | 1     | 0       | 1     | 0       | 0     |
| marked                             | 1       | 0     | 0       | 0     | 0       | 0     |
| Portal mononuclear cell infiltrate | 10      | 9     | 4       | 15    | 5       | 5     |
| minimal                            | 1       | 0     | 0       | 2     | 0       | 2     |
| mild                               | 8       | 9     | 4       | 12    | 5       | 4     |
| moderate                           | 1       | 0     | 0       | 1     | 0       | 0     |
| Telangiectasis                     | 1       | 0     | 0       | 0     | 0       | 0     |
| mild                               | 1       | 0     | 0       | 0     | 0       | 0     |
| Lung                               | ( 25)   | ( 25) | ( 21)   | ( 29) | ( 25)   | ( 24) |
| Within normal limits               | 2       | 3     | 1       | 3     | 2       | 2     |
| Abscess                            | 1       | 0     | 0       | 0     | 0       | 0     |
| Alveolar macrophages               | 5       | 9     | 6       | 13    | 3       | 7     |
| minimal                            | 1       | 0     | 2       | 0     | 0       | 1     |
| mild                               | 4       | 9     | 4       | 12    | 3       | 6     |
| moderate                           | 0       | 0     | 0       | 1     | 0       | 0     |
| Atelectasis                        | 0       | 0     | 0       | 0     | 1       | 0     |
| mild                               | 0       | 0     | 0       | 0     | 1       | 0     |

**Titles:**

Group 1 CONTROL 0 ppm  
 Group 5 FC-143 300 ppm  
 Group 6 FC-143 30 ppm

( ) = Total Examined  
 DOS= Unscheduled Death(s)  
 SAC= Protocol Scheduled Sacrifice(s)

153

Microscopic Incidence Page: 20

Non-Neoplastic Incidence for Females (continued)  
 Riker Laboratories, Inc. 3M  
 FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats

Table: 3

Project Number: 0281CR0012 Species: Rat

| Tissue/<br>Diagnosis/<br>Modifier   | Group 1 |        | Group 5 |        | Group 6 |       |
|-------------------------------------|---------|--------|---------|--------|---------|-------|
|                                     | DOS     | SAC    | DOS     | SAC    | DOS     | SAC   |
| Lung (continued)                    |         |        |         |        |         |       |
| Edema                               | 0       | 0      | 0       | 0      | 1       | 0     |
| mild                                | 0       | 0      | 0       | 0      | 1       | 0     |
| Granuloma                           | 0       | 0      | 0       | 4      | 0       | 1     |
| mild                                | 0       | 0      | 0       | 2      | 0       | 1     |
| marked                              | 0       | 0      | 0       | 1      | 0       | 0     |
| Hemorrhage                          | 9       | 5      | 9       | 10     | 9       | 4     |
| minimal                             | 0       | 0      | 0       | 0      | 0       | 1     |
| mild                                | 8       | 3      | 6       | 6      | 8       | 0     |
| moderate                            | 1       | 1      | 2       | 4      | 0       | 2     |
| marked                              | 0       | 1      | 1       | 0      | 1       | 1     |
| Hyperplasia, septal cell            | 0       | 0      | 0       | 0      | 0       | 1     |
| mild                                | 0       | 0      | 0       | 0      | 0       | 1     |
| Perivascular mononuclear infiltrate | 4       | 9      | 5       | 9      | 0       | 2     |
| minimal                             | 0       | 1      | 3       | 4      | 0       | 0     |
| mild                                | 4       | 7      | 2       | 5      | 0       | 2     |
| moderate                            | 0       | 1      | 0       | 0      | 0       | 0     |
| Pigment                             | 0       | 1      | 0       | 0      | 0       | 0     |
| moderate                            | 0       | 1      | 0       | 0      | 0       | 0     |
| Pneumonia, acute exudative          | 1       | 0      | 0       | 0      | 1       | 0     |
| mild                                | 0       | 0      | 0       | 0      | 1       | 0     |
| moderate                            | 1       | 0      | 0       | 0      | 0       | 0     |
| Pneumonia, foreign body             | 0       | 0      | 0       | 0      | 1       | 0     |
| marked                              | 0       | 0      | 0       | 0      | 1       | 0     |
| Pneumonia, interstitial, chronic    | 4       | 3      | 3       | 6      | 0       | 3     |
| minimal                             | 0       | 0      | 1       | 1      | 0       | 0     |
| mild                                | 4       | 3      | 1       | 5      | 0       | 3     |
| marked                              | 0       | 0      | 1       | 0      | 0       | 0     |
| Vascular mineralization             | 12      | 10     | 15      | 11     | 18      | 20    |
| minimal                             | 0       | 0      | 0       | 0      | 7       | 8     |
| mild                                | 12      | 10     | 15      | 10     | 11      | 12    |
| moderate                            | 0       | 0      | 0       | 1      | 0       | 0     |
| Lymph Node                          | ( 0 )   | ( 0 )  | ( 0 )   | ( 0 )  | ( 1 )   | ( 1 ) |
| Hyperplasia, reactive               | 0       | 0      | 0       | 0      | 1       | 1     |
| moderate                            | 0       | 0      | 0       | 0      | 1       | 1     |
| Lymph Node (mesenteric)             | ( 19 )  | ( 23 ) | ( 14 )  | ( 29 ) | ( 0 )   | ( 0 ) |
| Within normal limits                | 14      | 22     | 14      | 21     | 0       | 0     |
| Granuloma                           | 0       | 0      | 0       | 1      | 0       | 0     |
| Hemorrhage                          | 2       | 1      | 0       | 2      | 0       | 0     |
| mild                                | 1       | 1      | 0       | 0      | 0       | 0     |
| moderate                            | 1       | 0      | 0       | 1      | 0       | 0     |
| marked                              | 0       | 0      | 0       | 1      | 0       | 0     |

**Titles:**

Group 1 CONTROL 0 ppm  
 Group 5 FC-143 300 ppm  
 Group 6 FC-143 30 ppm

( ) = Total Examined  
 DOS= Unscheduled Death(s)  
 SAC= Protocol Scheduled Sacrifice(s)

154

Microscopic Incidence Page: 29

Non-Neoplastic Incidence for Females (continued)  
 Riker Laboratories, Inc. 3M  
 FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats

Project Number: 0281CR0012 Species: Rat

Table: 8

| Tissue/<br>Diagnosis/<br>Modifier   | Group 1 |        | Group 5 |        | Group 6 |        |
|-------------------------------------|---------|--------|---------|--------|---------|--------|
|                                     | DOS     | SAC    | DOS     | SAC    | DOS     | SAC    |
| Lymph Node (mesenteric) (continued) |         |        |         |        |         |        |
| Pigment, brown                      | 0       | 0      | 0       | 5      | 0       | 0      |
| minimal                             | 0       | 0      | 0       | 1      | 0       | 0      |
| mild                                | 0       | 0      | 0       | 2      | 0       | 0      |
| moderate                            | 0       | 0      | 0       | 2      | 0       | 0      |
| Sinusoidal ectasia                  | 1       | 0      | 0       | 2      | 0       | 0      |
| moderate                            | 1       | 0      | 0       | 1      | 0       | 0      |
| marked                              | 0       | 0      | 0       | 1      | 0       | 0      |
| Mammary Gland                       | ( 23 )  | ( 23 ) | ( 17 )  | ( 27 ) | ( 23 )  | ( 22 ) |
| Within normal limits                | 4       | 9      | 7       | 9      | 4       | 7      |
| Fibrosis                            | 0       | 0      | 0       | 1      | 0       | 0      |
| mild                                | 0       | 0      | 0       | 1      | 0       | 0      |
| Galactoceles                        | 5       | 4      | 2       | 1      | 7       | 2      |
| Lobular hyperplasia                 | 4       | 3      | 2       | 1      | 2       | 1      |
| moderate                            | 1       | 0      | 2       | 0      | 0       | 0      |
| Ovary                               | ( 25 )  | ( 23 ) | ( 18 )  | ( 29 ) | ( 25 )  | ( 24 ) |
| Within normal limits                | 19      | 17     | 11      | 16     | 23      | 11     |
| Cyst                                | 3       | 3      | 0       | 5      | 2       | 7      |
| Tubular hyperplasia                 | 0       | 0      | 7       | 8      | 0       | 7      |
| mild                                | 0       | 0      | 0       | 2      | 0       | 1      |
| moderate                            | 0       | 0      | 5       | 6      | 0       | 5      |
| marked                              | 0       | 0      | 1       | 0      | 0       | 0      |
| Pancreas                            | ( 24 )  | ( 25 ) | ( 19 )  | ( 25 ) | ( 22 )  | ( 21 ) |
| Within normal limits                | 22      | 16     | 15      | 24     | 18      | 17     |
| Acinar atrophy                      | 0       | 6      | 2       | 2      | 3       | 2      |
| minimal                             | 0       | 1      | 0       | 1      | 1       | 1      |
| mild                                | 0       | 2      | 2       | 1      | 1       | 0      |
| moderate                            | 0       | 3      | 0       | 0      | 0       | 1      |
| marked                              | 0       | 0      | 0       | 0      | 1       | 0      |
| Cyst                                | 0       | 1      | 0       | 0      | 0       | 0      |
| Edema                               | 0       | 0      | 1       | 0      | 0       | 0      |
| moderate                            | 0       | 0      | 1       | 0      | 0       | 0      |
| Hyperplasia, islet cell             | 0       | 0      | 0       | 1      | 0       | 1      |
| mild                                | 0       | 0      | 0       | 1      | 0       | 1      |
| Pancreatitis, chronic               | 0       | 0      | 1       | 0      | 0       | 0      |
| moderate                            | 0       | 0      | 1       | 0      | 0       | 0      |
| Polyarteritis                       | 0       | 0      | 0       | 0      | 0       | 1      |
| minimal                             | 0       | 0      | 0       | 0      | 0       | 1      |
| Parathyroid                         | ( 5 )   | ( 0 )  | ( 9 )   | ( 14 ) | ( 15 )  | ( 15 ) |
| Within normal limits                | 5       | 0      | 9       | 14     | 15      | 15     |

**Titles:**

Group 1 CONTROL 0 ppm  
 Group 5 FC-143 300 ppm  
 Group 6 FC-143 30 ppm

( ) = Total Examined  
 DOS= Unscheduled Death(s)  
 SAC= Protocol Scheduled Sacrifice(s)

155

Microscopic Incidence Page: 30

Non-Neoplastic Incidence for Females (continued)  
 Riker Laboratories, Inc. 3M  
 FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats

Table: 3

Project Number: 0201CR0012 Species: Rat

| Tissue/<br>Diagnosis/<br>Modifier        | Group 1 |       | Group 5 |       | Group 6 |       |
|------------------------------------------|---------|-------|---------|-------|---------|-------|
|                                          | DOS     | SAC   | DOS     | SAC   | DOS     | SAC   |
| Pituitary                                | ( 22)   | ( 24) | ( 21)   | ( 29) | ( 23)   | ( 24) |
| Within normal limits                     | 5       | 7     | 7       | 7     | 3       | 4     |
| Cyst                                     | 0       | 0     | 0       | 0     | 0       | 1     |
| Hemorrhage                               | 1       | 0     | 0       | 0     | 0       | 0     |
| marked                                   | 1       | 0     | 0       | 0     | 0       | 0     |
| Necrosis                                 | 1       | 0     | 0       | 0     | 0       | 0     |
| moderate                                 | 1       | 0     | 0       | 0     | 0       | 0     |
| Salivary Gland                           | ( 19)   | ( 24) | ( 15)   | ( 25) | ( 22)   | ( 24) |
| Within normal limits                     | 13      | 24    | 15      | 23    | 22      | 23    |
| Sialadenitis, chronic                    | 1       | 0     | 0       | 2     | 0       | 1     |
| mild                                     | 0       | 0     | 0       | 0     | 0       | 1     |
| moderate                                 | 1       | 0     | 0       | 2     | 0       | 0     |
| Skin                                     | ( 3)    | ( 3)  | ( 2)    | ( 0)  | ( 6)    | ( 4)  |
| Within normal limits                     | 0       | 0     | 0       | 0     | 2       | 2     |
| Acanthosis                               | 0       | 1     | 0       | 0     | 0       | 0     |
| mild                                     | 0       | 1     | 0       | 0     | 0       | 0     |
| Pododermatitis, ulcerative               | 0       | 0     | 1       | 0     | 0       | 0     |
| marked                                   | 0       | 0     | 1       | 0     | 0       | 0     |
| Ulcer                                    | 2       | 0     | 0       | 0     | 0       | 0     |
| moderate                                 | 1       | 0     | 0       | 0     | 0       | 0     |
| marked                                   | 1       | 0     | 0       | 0     | 0       | 0     |
| Small Intestine                          | ( 24)   | ( 25) | ( 13)   | ( 29) | ( 1)    | ( 1)  |
| Within normal limits                     | 24      | 25    | 17      | 28    | 0       | 0     |
| Edema                                    | 0       | 0     | 1       | 0     | 0       | 0     |
| mild                                     | 0       | 0     | 1       | 0     | 0       | 0     |
| Granuloma                                | 0       | 0     | 0       | 1     | 0       | 0     |
| Ulcer                                    | 0       | 0     | 0       | 0     | 1       | 0     |
| marked                                   | 0       | 0     | 0       | 0     | 1       | 0     |
| Spinal Cord                              | ( 25)   | ( 23) | ( 21)   | ( 29) | ( 0)    | ( 0)  |
| Within normal limits                     | 23      | 23    | 21      | 29    | 0       | 0     |
| Malacia                                  | 1       | 0     | 0       | 0     | 0       | 0     |
| moderate                                 | 1       | 0     | 0       | 0     | 0       | 0     |
| Spleen                                   | ( 25)   | ( 25) | ( 21)   | ( 29) | ( 24)   | ( 23) |
| Within normal limits                     | 4       | 11    | 12      | 23    | 10      | 17    |
| Hematopoiesis, extramedullary, increased | 7       | 2     | 2       | 1     | 11      | 5     |
| mild                                     | 1       | 1     | 1       | 0     | 5       | 2     |
| moderate                                 | 4       | 1     | 1       | 0     | 4       | 2     |
| marked                                   | 2       | 0     | 0       | 1     | 2       | 1     |
| Hemosiderosis                            | 12      | 13    | 7       | 5     | 2       | 1     |
| minimal                                  | 0       | 0     | 0       | 1     | 0       | 0     |
| mild                                     | 8       | 13    | 6       | 3     | 0       | 1     |
| moderate                                 | 4       | 0     | 1       | 1     | 1       | 0     |

Titles:

Group 1 CONTROL 0 ppm  
 Group 5 FC-143 300 ppm  
 Group 6 FC-143 30 ppm

( ) = Total Examined  
 DOS= Unscheduled Death(s)  
 SAC= Protocol Scheduled Sacrifice(s)

156

Microscopic Incidence Page: 31

Non-Neoplastic Incidence for Females (continued)  
 Riker Laboratories, Inc. 3M  
 FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats

Table: 9

Project Number: 0281CR0012 Species: Rat

| Tissue/<br>Diagnosis/<br>Modifier | Group 1 |       | Group 5 |       | Group 6 |       |
|-----------------------------------|---------|-------|---------|-------|---------|-------|
|                                   | DOS     | SAC   | DOS     | SAC   | DOS     | SAC   |
| Spleen (continued)                |         |       |         |       |         |       |
| Hemosiderosis                     |         |       |         |       |         |       |
| marked                            | 0       | 0     | 0       | 0     | 1       | 0     |
| Stomach                           | ( 25)   | ( 25) | ( 20)   | ( 29) | ( 25)   | ( 24) |
| Within normal limits              | 20      | 25    | 13      | 29    | 20      | 24    |
| Edema                             | 0       | 0     | 2       | 0     | 0       | 0     |
| moderate                          | 0       | 0     | 2       | 0     | 0       | 0     |
| Hemorrhage                        | 1       | 0     | 0       | 0     | 1       | 0     |
| mild                              | 0       | 0     | 0       | 0     | 1       | 0     |
| moderate                          | 1       | 0     | 0       | 0     | 0       | 0     |
| Mineralization                    | 1       | 0     | 0       | 0     | 0       | 0     |
| mild                              | 1       | 0     | 0       | 0     | 0       | 0     |
| Necrosis                          | 2       | 0     | 0       | 0     | 1       | 0     |
| mild                              | 1       | 0     | 0       | 0     | 1       | 0     |
| moderate                          | 1       | 0     | 0       | 0     | 0       | 0     |
| Ulcer                             | 1       | 0     | 0       | 0     | 4       | 0     |
| mild                              | 0       | 0     | 0       | 0     | 2       | 0     |
| Thyroid                           | ( 25)   | ( 25) | ( 15)   | ( 26) | ( 23)   | ( 22) |
| Within normal limits              | 20      | 23    | 14      | 22    | 22      | 21    |
| Follicular hyperplasia, cystic    | 1       | 0     | 0       | 0     | 0       | 0     |
| mild                              | 1       | 0     | 0       | 0     | 0       | 0     |
| Hyperplasia, C cell               | 0       | 0     | 1       | 2     | 1       | 0     |
| mild                              | 0       | 0     | 1       | 2     | 1       | 0     |
| Ultimobranchial cyst              | 2       | 1     | 0       | 2     | 0       | 1     |
| Trachea                           | ( 25)   | ( 25) | ( 20)   | ( 25) | ( 24)   | ( 23) |
| Within normal limits              | 25      | 25    | 20      | 25    | 24      | 23    |
| Urinary Bladder                   | ( 25)   | ( 25) | ( 16)   | ( 26) | ( 25)   | ( 22) |
| Within normal limits              | 17      | 25    | 15      | 25    | 22      | 22    |
| Calculus                          | 1       | 0     | 0       | 0     | 0       | 0     |
| Epithelial hyperplasia, papillary | 1       | 0     | 0       | 0     | 0       | 0     |
| marked                            | 1       | 0     | 0       | 0     | 0       | 0     |
| Epithelial hyperplasia, simple    | 7       | 0     | 0       | 1     | 2       | 0     |
| mild                              | 6       | 0     | 0       | 1     | 2       | 0     |
| moderate                          | 1       | 0     | 0       | 0     | 0       | 0     |
| Hypertrophy                       | 0       | 0     | 0       | 1     | 0       | 0     |
| mild                              | 0       | 0     | 0       | 1     | 0       | 0     |
| Uterus                            | ( 25)   | ( 25) | ( 19)   | ( 29) | ( 26)   | ( 23) |
| Within normal limits              | 21      | 17    | 17      | 24    | 17      | 17    |
| Cystic glands                     | 2       | 5     | 1       | 4     | 7       | 5     |
| minimal                           | 0       | 0     | 0       | 1     | 0       | 0     |
| mild                              | 0       | 1     | 1       | 2     | 1       | 1     |
| moderate                          | 2       | 1     | 0       | 1     | 2       | 1     |

**Titles:**

Group 1 CONTROL 0 ppm  
 Group 5 FC-143 300 ppm  
 Group 6 FC-143 30 ppm

( ) = Total Examined

DOS= Unscheduled Death(s)

SAC= Protocol Scheduled Sacrifice(s)

157

Microscopic Incidence Page: 32

Neoplastic Incidence for Females

Riker Laboratories, Inc. 3M

FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats - One Year Interim

Table: 10

Project Number: 0281CR0012 Species: Rat

| Tissue/<br>Diagnosis/<br>Modifier | Group 1<br>----- | Group 5<br>----- |
|-----------------------------------|------------------|------------------|
| Mammary Gland                     | ( 15)            | ( 13)            |
| Fibroadenoma                      | 0                | 2                |
| Pituitary                         | ( 15)            | ( 14)            |
| Adenoma                           | 1                | 0                |

Titles:

Group 1 CONTROL 0 ppm  
Group 5 FC-143 300 ppm

() = Total Examined

160

Microscopic Incidence Page: 35

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Neoplastic Incidence for Males  
Riker Laboratories, Inc. 3M  
FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats

Table: 11

Project Number: 0281CR0012 Species: Rat

| Tissue/<br>Diagnosis/<br>Modifier    | Group 1 |        | Group 5 |        | Group 6 |        |
|--------------------------------------|---------|--------|---------|--------|---------|--------|
|                                      | DOS     | SAC    | DOS     | SAC    | DOS     | SAC    |
| Adrenal                              | ( 15 )  | ( 34 ) | ( 6 )   | ( 44 ) | ( 14 )  | ( 36 ) |
| Carcinoma, cortical                  | 0       | 1      | 0       | 0      | 0       | 0      |
| Ganglioneuroma                       | 0       | 0      | 0       | 1      | 0       | 0      |
| Pheochromocytoma, benign             | 1       | 1      | 0       | 4      | 0       | 4      |
| Pheochromocytoma, malignant          | 0       | 0      | 0       | 0      | 0       | 1      |
| Hemolymphoreticular neoplasm present | 0       | 0      | 1       | 0      | 0       | 0      |
| Bone Marrow                          | ( 15 )  | ( 32 ) | ( 6 )   | ( 42 ) | ( 0 )   | ( 0 )  |
| Hemolymphoreticular neoplasm present | 0       | 0      | 1       | 0      | 0       | 0      |
| Brain                                | ( 16 )  | ( 34 ) | ( 6 )   | ( 44 ) | ( 0 )   | ( 1 )  |
| Astrocytoma, benign                  | 0       | 1      | 0       | 0      | 0       | 1      |
| Oligodendroglioma, benign            | 1       | 0      | 0       | 0      | 0       | 0      |
| Hemolymphoreticular neoplasm present | 0       | 0      | 1       | 0      | 0       | 0      |
| Eye                                  | ( 12 )  | ( 33 ) | ( 6 )   | ( 44 ) | ( 2 )   | ( 3 )  |
| Hemolymphoreticular neoplasm present | 0       | 0      | 1       | 0      | 0       | 0      |
| Heart                                | ( 15 )  | ( 34 ) | ( 6 )   | ( 44 ) | ( 14 )  | ( 36 ) |
| Hemolymphoreticular neoplasm present | 1       | 0      | 0       | 0      | 0       | 0      |
| Kidney                               | ( 16 )  | ( 34 ) | ( 6 )   | ( 44 ) | ( 14 )  | ( 36 ) |
| Hemolymphoreticular neoplasm present | 1       | 0      | 1       | 0      | 1       | 0      |
| Liver                                | ( 16 )  | ( 34 ) | ( 6 )   | ( 44 ) | ( 14 )  | ( 36 ) |
| Hepatocellular carcinoma             | 2       | 1      | 1       | 4      | 1       | 0      |
| Hemolymphoreticular neoplasm present | 2       | 1      | 1       | 1      | 1       | 0      |
| Lung                                 | ( 16 )  | ( 34 ) | ( 6 )   | ( 44 ) | ( 14 )  | ( 36 ) |
| Hemolymphoreticular neoplasm present | 3       | 1      | 1       | 0      | 1       | 0      |
| Lymph Node (abdominal)               | ( 0 )   | ( 0 )  | ( 1 )   | ( 0 )  | ( 1 )   | ( 0 )  |
| Hemolymphoreticular neoplasm present | 0       | 0      | 1       | 0      | 1       | 0      |
| Lymph Node (mesenteric)              | ( 12 )  | ( 33 ) | ( 6 )   | ( 44 ) | ( 0 )   | ( 1 )  |
| Hemangiosarcoma                      | 0       | 0      | 0       | 1      | 0       | 0      |
| Hemolymphoreticular neoplasm present | 1       | 0      | 1       | 0      | 0       | 0      |
| Pancreas                             | ( 13 )  | ( 33 ) | ( 6 )   | ( 43 ) | ( 12 )  | ( 34 ) |
| Adenocarcinoma                       | 0       | 0      | 0       | 1      | 0       | 1      |
| Islet cell adenoma                   | 0       | 1      | 0       | 1      | 0       | 0      |
| Hemolymphoreticular neoplasm present | 1       | 0      | 0       | 0      | 0       | 0      |
| Parathyroid                          | ( 6 )   | ( 16 ) | ( 5 )   | ( 31 ) | ( 7 )   | ( 26 ) |
| Adenoma                              | 0       | 0      | 0       | 2      | 0       | 0      |
| Pituitary                            | ( 15 )  | ( 33 ) | ( 5 )   | ( 41 ) | ( 13 )  | ( 34 ) |
| Adenoma                              | 6       | 11     | 2       | 11     | 9       | 8      |
| Salivary Gland                       | ( 12 )  | ( 32 ) | ( 5 )   | ( 41 ) | ( 10 )  | ( 34 ) |
| Carcinoma                            | 0       | 0      | 1       | 0      | 0       | 0      |
| Skin                                 | ( 8 )   | ( 7 )  | ( 0 )   | ( 2 )  | ( 5 )   | ( 4 )  |
| Fibroma                              | 1       | 0      | 0       | 0      | 0       | 0      |
| Fibrosarcoma                         | 1       | 0      | 0       | 0      | 2       | 1      |

**Titles:**

Group 1 CONTROL 0 ppm  
Group 5 FC-143 300 ppm  
Group 6 FC-143 30 ppm

( ) = Total Examined  
DOS= Unscheduled Death(s)  
SAC= Protocol Scheduled Sacrifice(s)

161

Microscopic Incidence Page: 36

Neoplastic Incidence for Males (continued)  
 Riker Laboratories, Inc. 3M  
 FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats

Table: 11

Project Number: 0281CR0012 Species: Rat

| Tissue/<br>Diagnosis/<br>Modifier       | Group 1 |        | Group 5 |        | Group 6 |        |
|-----------------------------------------|---------|--------|---------|--------|---------|--------|
|                                         | DOS     | SAC    | DOS     | SAC    | DOS     | SAC    |
| Skin (continued)                        |         |        |         |        |         |        |
| Keratoacanthoma                         | 1       | 2      | 0       | 1      | 0       | 0      |
| Liposarcoma                             | 1       | 0      | 0       | 0      | 0       | 0      |
| Papilloma                               | 0       | 1      | 0       | 0      | 0       | 0      |
| Hemolymphoreticular neoplasm present    | 1       | 0      | 0       | 0      | 0       | 0      |
| Small Intestine                         | ( 14 )  | ( 34 ) | ( 6 )   | ( 44 ) | ( 1 )   | ( 0 )  |
| Hemolymphoreticular neoplasm present    | 1       | 0      | 1       | 0      | 0       | 0      |
| Soft Tissues (abdomen)                  | ( 0 )   | ( 0 )  | ( 0 )   | ( 0 )  | ( 0 )   | ( 1 )  |
| Fibroma                                 | 0       | 0      | 0       | 0      | 0       | 1      |
| Soft Tissues (thorax)                   | ( 0 )   | ( 0 )  | ( 0 )   | ( 1 )  | ( 0 )   | ( 0 )  |
| Histiocytoma, malignant                 | 0       | 0      | 0       | 1      | 0       | 0      |
| Spleen                                  | ( 16 )  | ( 34 ) | ( 6 )   | ( 44 ) | ( 14 )  | ( 36 ) |
| Hemangiosarcoma                         | 0       | 1      | 0       | 0      | 0       | 0      |
| Hemolymphoreticular neoplasm present    | 1       | 1      | 1       | 0      | 1       | 0      |
| Stomach                                 | ( 16 )  | ( 33 ) | ( 6 )   | ( 44 ) | ( 14 )  | ( 36 ) |
| Adenocarcinoma                          | 0       | 0      | 0       | 1      | 0       | 0      |
| Hemolymphoreticular neoplasm present    | 1       | 0      | 0       | 0      | 0       | 0      |
| Testis/Epididymis                       | ( 16 )  | ( 33 ) | ( 6 )   | ( 44 ) | ( 14 )  | ( 36 ) |
| Leydig cell adenoma                     | 0       | 0      | 0       | 7      | 0       | 2      |
| Thymus                                  | ( 1 )   | ( 0 )  | ( 1 )   | ( 1 )  | ( 1 )   | ( 0 )  |
| Hemolymphoreticular neoplasm present    | 1       | 0      | 1       | 0      | 1       | 0      |
| Thyroid                                 | ( 12 )  | ( 31 ) | ( 5 )   | ( 42 ) | ( 12 )  | ( 35 ) |
| C cell adenoma                          | 0       | 0      | 0       | 4      | 0       | 2      |
| C cell carcinoma                        | 0       | 2      | 0       | 0      | 0       | 0      |
| Follicular adenoma                      | 0       | 0      | 0       | 0      | 0       | 1      |
| Urinary Bladder                         | ( 13 )  | ( 33 ) | ( 6 )   | ( 44 ) | ( 14 )  | ( 35 ) |
| Hemolymphoreticular neoplasm present    | 1       | 0      | 1       | 0      | 0       | 0      |
| Hemolymphoreticular System [# affected] | [ 3 ]   | [ 1 ]  | [ 1 ]   | [ 1 ]  | [ 1 ]   | [ 0 ]  |
| Malignant lymphoma, lymphocytic         | 0       | 0      | 1       | 1      | 0       | 0      |
| Malignant lymphoma, histiocytic         | 3       | 1      | 1       | 0      | 0       | 0      |
| Leukemia, myeloid                       | 0       | 0      | 0       | 0      | 1       | 0      |

Titles:

Group 1 CONTROL 0 ppm  
 Group 5 FC-143 300 ppm  
 Group 6 FC-143 30 ppm

( ) = Total Examined  
 DOS= Unscheduled Death(s)  
 SAC= Protocol Scheduled Sacrifice(s)

162

Microscopic Incidence Page: 37

Neoplastic Incidence for Females  
Riker Laboratories, Inc. 3M  
FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats

Table: 12

Project Number: 0281CR0012 Species: Rat

| Tissue/<br>Diagnosis/<br>Modifier    | Group 1 |       | Group 5 |       | Group 6 |       |
|--------------------------------------|---------|-------|---------|-------|---------|-------|
|                                      | DOS     | SAC   | DOS     | SAC   | DOS     | SAC   |
| Adrenal                              | ( 25)   | ( 25) | ( 20)   | ( 29) | ( 25)   | ( 24) |
| Adenoma, cortical                    | 0       | 0     | 0       | 1     | 0       | 1     |
| Carcinoma, cortical                  | 0       | 0     | 0       | 0     | 1       | 0     |
| Pheochromocytoma, benign             | 0       | 2     | 0       | 0     | 0       | 0     |
| Pheochromocytoma, malignant          | 0       | 0     | 1       | 0     | 0       | 0     |
| Hemolymphoreticular neoplasm present | 2       | 0     | 0       | 0     | 0       | 0     |
| Aorta                                | ( 21)   | ( 23) | ( 19)   | ( 27) | ( 0)    | ( 0)  |
| Hemolymphoreticular neoplasm present | 2       | 0     | 0       | 0     | 0       | 0     |
| Bone Marrow                          | ( 25)   | ( 25) | ( 21)   | ( 29) | ( 0)    | ( 0)  |
| Hemolymphoreticular neoplasm present | 2       | 0     | 0       | 0     | 0       | 0     |
| Brain                                | ( 25)   | ( 25) | ( 21)   | ( 29) | ( 0)    | ( 0)  |
| Oligodendroglioma, benign            | 0       | 1     | 0       | 0     | 0       | 0     |
| Esophagus                            | ( 15)   | ( 21) | ( 9)    | ( 15) | ( 23)   | ( 22) |
| Hemolymphoreticular neoplasm present | 1       | 0     | 0       | 0     | 0       | 0     |
| Eye                                  | ( 20)   | ( 23) | ( 15)   | ( 28) | ( 2)    | ( 1)  |
| Hemolymphoreticular neoplasm present | 1       | 0     | 0       | 0     | 0       | 0     |
| Harderian Gland                      | ( 0)    | ( 0)  | ( 0)    | ( 0)  | ( 1)    | ( 0)  |
| Adenocarcinoma                       | 0       | 0     | 0       | 0     | 1       | 0     |
| Heart                                | ( 25)   | ( 25) | ( 21)   | ( 29) | ( 26)   | ( 24) |
| Hemolymphoreticular neoplasm present | 1       | 0     | 0       | 0     | 0       | 0     |
| Kidney                               | ( 25)   | ( 25) | ( 21)   | ( 29) | ( 26)   | ( 24) |
| Hemolymphoreticular neoplasm present | 3       | 0     | 0       | 0     | 0       | 0     |
| Large Intestine                      | ( 24)   | ( 23) | ( 17)   | ( 29) | ( 0)    | ( 0)  |
| Hemolymphoreticular neoplasm present | 1       | 0     | 0       | 0     | 0       | 0     |
| Liver                                | ( 25)   | ( 25) | ( 21)   | ( 29) | ( 25)   | ( 24) |
| Hepatocellular carcinoma             | 0       | 0     | 0       | 1     | 0       | 0     |
| Hemolymphoreticular neoplasm present | 5       | 0     | 1       | 0     | 1       | 0     |
| Lung                                 | ( 25)   | ( 25) | ( 21)   | ( 29) | ( 26)   | ( 24) |
| Hemolymphoreticular neoplasm present | 5       | 0     | 1       | 0     | 1       | 0     |
| Lymph Node (mesenteric)              | ( 19)   | ( 23) | ( 14)   | ( 29) | ( 0)    | ( 0)  |
| Hemolymphoreticular neoplasm present | 3       | 0     | 0       | 0     | 0       | 0     |
| Lymph Node (thoracic)                | ( 0)    | ( 0)  | ( 0)    | ( 0)  | ( 1)    | ( 0)  |
| Hemolymphoreticular neoplasm present | 0       | 0     | 0       | 0     | 1       | 0     |
| Mammary Gland                        | ( 23)   | ( 23) | ( 17)   | ( 27) | ( 23)   | ( 22) |
| Adenocarcinoma                       | 4       | 3     | 2       | 3     | 9       | 5     |
| Adenoma                              | 2       | 1     | 0       | 0     | 0       | 0     |
| Carcinoma                            | 0       | 1     | 0       | 0     | 0       | 0     |
| Fibroadenoma                         | 6       | 4     | 5       | 16    | 8       | 11    |
| Lymphangiosarcoma                    | 0       | 0     | 1       | 0     | 0       | 0     |
| Hemolymphoreticular neoplasm present | 2       | 0     | 0       | 0     | 0       | 0     |

**Titles:**

Group 1 CONTROL 0 ppm  
Group 5 FC-143 300 ppm  
Group 6 FC-143 30 ppm

( ) = Total Examined  
DOS= Unscheduled Death(s)  
SAC= Protocol Scheduled Sacrifice(s)

163

Microscopic Incidence Page: 38

|   |          |   |   |         |   |   |
|---|----------|---|---|---------|---|---|
| ♀ | Acima Ad |   |   | Salt Ad |   |   |
|   | C        | 0 | 0 | 1       | 0 | 0 |
|   | Ca       | 0 | 0 | Ca      | 0 | 0 |
|   | Hyper    | 0 | 0 | Hyper   | 0 | 0 |
|   | 6        | 0 | 0 | 1       | 0 | 0 |
|   | 5        | 0 | 0 | 1       | 0 | 0 |

Neoplastic Incidence for Females (continued)  
 Riker Laboratories, Inc. 3M  
 FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats

Table: 12

Project Number: 0281CRO012 Species: Rat

| Tissue/<br>Diagnosis/<br>Modifier       | Group 1 |        | Group 5 |        | Group 6 |        |
|-----------------------------------------|---------|--------|---------|--------|---------|--------|
|                                         | DOS     | SAC    | DOS     | SAC    | DOS     | SAC    |
| Mesentery                               | ( 0 )   | ( 0 )  | ( 0 )   | ( 0 )  | ( 2 )   | ( 0 )  |
| Mesothelioma, malignant                 | 0       | 0      | 0       | 0      | 1       | 0      |
| Hemolymphoreticular neoplasm present    | 0       | 0      | 0       | 0      | 1       | 0      |
| Ovary                                   | ( 25 )  | ( 23 ) | ( 18 )  | ( 29 ) | ( 26 )  | ( 24 ) |
| Granulosa cell tumor, benign            | 0       | 0      | 0       | 0      | 0       | 1      |
| Leiomyoma                               | 1       | 0      | 0       | 0      | 0       | 0      |
| Tubular adenoma                         | 0       | 4      | 0       | 1      | 0       | 0      |
| Hemolymphoreticular neoplasm present    | 2       | 0      | 0       | 0      | 1       | 0      |
| Pancreas                                | ( 24 )  | ( 25 ) | ( 19 )  | ( 28 ) | ( 22 )  | ( 21 ) |
| Islet cell adenoma                      | 0       | 1      | 0       | 1      | 1       | 0      |
| Islet cell carcinoma                    | 0       | 1      | 0       | 1      | 0       | 0      |
| Hemolymphoreticular neoplasm present    | 2       | 0      | 0       | 0      | 1       | 0      |
| Pituitary                               | ( 22 )  | ( 24 ) | ( 21 )  | ( 29 ) | ( 23 )  | ( 24 ) |
| Adenoma                                 | 16      | 17     | 14      | 22     | 20      | 19     |
| Skin                                    | ( 3 )   | ( 3 )  | ( 2 )   | ( 0 )  | ( 6 )   | ( 4 )  |
| Fibroma                                 | 1       | 2      | 1       | 0      | 4       | 1      |
| Fibrosarcoma                            | 0       | 0      | 0       | 0      | 1       | 1      |
| Small Intestine                         | ( 24 )  | ( 25 ) | ( 18 )  | ( 29 ) | ( 1 )   | ( 1 )  |
| Leiomyosarcoma                          | 0       | 0      | 0       | 0      | 0       | 1      |
| Spinal Cord                             | ( 25 )  | ( 23 ) | ( 21 )  | ( 29 ) | ( 0 )   | ( 0 )  |
| Hemolymphoreticular neoplasm present    | 1       | 0      | 0       | 0      | 0       | 0      |
| Spleen                                  | ( 25 )  | ( 25 ) | ( 21 )  | ( 29 ) | ( 24 )  | ( 23 ) |
| Hemolymphoreticular neoplasm present    | 3       | 0      | 0       | 0      | 1       | 0      |
| Stomach                                 | ( 25 )  | ( 25 ) | ( 20 )  | ( 29 ) | ( 26 )  | ( 24 ) |
| Hemolymphoreticular neoplasm present    | 1       | 0      | 0       | 0      | 0       | 0      |
| Thyroid                                 | ( 25 )  | ( 25 ) | ( 15 )  | ( 26 ) | ( 23 )  | ( 22 ) |
| C cell adenoma                          | 0       | 1      | 0       | 0      | 0       | 0      |
| Hemolymphoreticular neoplasm present    | 2       | 0      | 0       | 0      | 0       | 0      |
| Unidentified Tissue                     | ( 0 )   | ( 0 )  | ( 1 )   | ( 0 )  | ( 0 )   | ( 0 )  |
| Lipoma                                  | 0       | 0      | 1       | 0      | 0       | 0      |
| Urinary Bladder                         | ( 25 )  | ( 25 ) | ( 16 )  | ( 26 ) | ( 25 )  | ( 22 ) |
| Hemolymphoreticular neoplasm present    | 1       | 0      | 1       | 0      | 1       | 0      |
| Uterus                                  | ( 25 )  | ( 25 ) | ( 19 )  | ( 29 ) | ( 26 )  | ( 23 ) |
| Adenoma                                 | 0       | 1      | 0       | 0      | 0       | 0      |
| Hemangioma                              | 0       | 0      | 0       | 0      | 1       | 0      |
| Leiomyoma                               | 0       | 0      | 0       | 0      | 0       | 1      |
| Polyp                                   | 0       | 1      | 0       | 1      | 2       | 1      |
| Hemolymphoreticular neoplasm present    | 2       | 0      | 0       | 0      | 0       | 0      |
| Hemolymphoreticular System [# affected] | [ 5 ]   | [ 0 ]  | [ 1 ]   | [ 0 ]  | [ 1 ]   | [ 0 ]  |
| Malignant lymphoma, histiocytic         | 2       | 0      | 1       | 0      | 1       | 0      |
| Malignant lymphoma, lymphocytic         | 3       | 0      | 0       | 0      | 0       | 0      |

Titles:

Group 1 CONTROL 0 ppm  
 Group 5 FC-143 300 ppm  
 Group 6 FC-143 30 ppm

( ) = Total Examined  
 DOS= Unscheduled Death(s)  
 SAC= Protocol Scheduled Sacrifice(s)

164

Microscopic Incidence Page: 33

1 YR CONTROL

1 YR CONTROL

Summarized Single Tabulated Animal Report  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M

FD-143: Two Year Oral Toxicity-Oncogenicity Study in Rats - One Year Interim

Table: 1

Animal Number: 1R-3516 Sex: Male Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 53) 1 Year Interim Sacrifice

Macroscopic Observations:

-No visible lesions.

Microscopic Observations:

|                         |                                        |
|-------------------------|----------------------------------------|
| Kidney                  | -Chronic progressive nephropathy, mild |
| Lung                    | -Vascular mineralization, minimal      |
| Lymph Node (mesenteric) | -Not examined, missing                 |
| Pancreas                | -Acinar atrophy, mild                  |
| Parathyroid             | -Not examined, missing                 |
| Small Intestine         | -Within normal limits                  |
|                         | Fewer than protocol number             |
| Thyroid                 | -Not examined, missing                 |

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Spleen, Liver, Heart, Stomach, Large Intestine,  
Urinary Bladder, Aorta, Testis/Epididymis, Prostate, Mammary Gland, Pituitary, Adrenal, Trachea,  
Esophagus, Salivary Gland, Eye.

Animal Number: 1R-3517 Sex: Male Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 53) 1 Year Interim Sacrifice

Macroscopic Observations:

-No visible lesions.

Microscopic Observations:

|             |                                           |
|-------------|-------------------------------------------|
| Kidney      | -Chronic progressive nephropathy, minimal |
| Lung        | -Vascular mineralization, mild            |
| Parathyroid | -Not examined, missing                    |
| Thyroid     | -Not examined, missing                    |

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Spleen, Liver, Heart, Stomach, Small Intestine,  
Large Intestine, Urinary Bladder, Aorta, Testis/Epididymis, Prostate, Mammary Gland, Pituitary,  
Adrenal, Trachea, Esophagus, Lymph Node (mesenteric), Pancreas, Salivary Gland, Eye.

Animal Number: 1R-3520 Sex: Male Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 53) 1 Year Interim Sacrifice

Macroscopic Observations:

-No visible lesions.

Microscopic Observations:

|         |                                                     |
|---------|-----------------------------------------------------|
| Adrenal | -Sinusoidal ectasia, cortex, bilateral,<br>moderate |
| Kidney  | -Chronic progressive nephropathy, minimal           |

Species: Rat  
Project Number: 0281CR0012

Summarized STAR Page: 1

165

Summarized Single Tabulated Animal Report (continued)  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M  
FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats - One Year Interim

Table: 1

Animal Number: 1R-3520 Sex: Male Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 53) 1 Year Interim Sacrifice

Microscopic Observations (continued):

|                         |                                                    |
|-------------------------|----------------------------------------------------|
| Liver                   | -Hepatocyte alteration, vacuolated, focal, minimal |
| Lung                    | -Vascular mineralization, minimal                  |
| Lymph Node (mesenteric) | -Not examined, missing                             |
| Parathyroid             | -Not examined, not in plane of section             |
| Pituitary               | -Not examined, missing                             |

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Spleen, Heart, Stomach, Small Intestine, Large Intestine, Urinary Bladder, Aorta, Testis/Epididymis, Prostate, Thyroid, Trachea, Esophagus, Pancreas, Salivary Gland, Eye.

Animal Number: 1R-3522 Sex: Male Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 53) 1 Year Interim Sacrifice

Macroscopic Observations:

|       |                             |
|-------|-----------------------------|
| Liver | -Light (pale) tan in color. |
|-------|-----------------------------|

Microscopic Observations:

|             |                                                                                                             |
|-------------|-------------------------------------------------------------------------------------------------------------|
| Kidney      | -Chronic progressive nephropathy, minimal                                                                   |
| Liver       | -Portal mononuclear cell infiltrate, minimal                                                                |
| Lung        | -Vascular mineralization, mild<br>Hemorrhage, multifocal, mild<br>Perivascular mononuclear infiltrate, mild |
| Parathyroid | -Not examined, missing                                                                                      |
| Thyroid     | -Not examined, missing                                                                                      |

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Spleen, Heart, Stomach, Small Intestine, Large Intestine, Urinary Bladder, Aorta, Testis/Epididymis, Prostate, Mammary Gland, Pituitary, Adrenal, Trachea, Esophagus, Lymph Node (mesenteric), Pancreas, Salivary Gland, Eye.

Animal Number: 1R-3527 Sex: Male Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 53) 1 Year Interim Sacrifice

Macroscopic Observations:

-No visible lesions.

Microscopic Observations:

|       |                                                                                   |
|-------|-----------------------------------------------------------------------------------|
| Liver | -Portal mononuclear cell infiltrate, mild<br>Portal bile duct proliferation, mild |
| Lung  | -Hemorrhage, multifocal, mild                                                     |

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Spleen, Kidney, Heart, Stomach, Small Intestine,

Species: Rat  
Project Number: 0281CR0012

Summarized STAR Page: 2

166

Summarized Single Tabulated Animal Report (continued)  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M

FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats - One Year Interim

Table: 1

Animal Number: 1R-3527 Sex: Male Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 53) 1 Year Interim Sacrifice

Microscopic Observations (continued):

The following tissues were found to be within normal limits (continued):

Large Intestine, Urinary Bladder, Aorta, Testis/Epididymis, Prostate, Pituitary, Adrenal,  
Thyroid, Parathyroid, Trachea, Esophagus, Lymph Node (mesenteric), Pancreas, Salivary Gland, Eye.

Animal Number: 1R-3535 Sex: Male Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 53) 1 Year Interim Sacrifice

Macroscopic Observations:

Mesentary -Area of fat necrosis, 2 x 3 x 0.5 cm.

Microscopic Observations:

Lung -Alveolar macrophages, multifocal, mild

✓ Atelectasis, focal, mild

Mesentary -Necrosis, fat, marked

Steatitis, chronic, moderate

Parathyroid -Not examined, missing

Thyroid -Not examined, missing

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Liver, Kidney, Heart, Stomach, Small Intestine,  
Large Intestine, Urinary Bladder, Aorta, Testis/Epididymis, Prostate, Pituitary, Adrenal,  
Trachea, Esophagus, Lymph Node (mesenteric), Pancreas, Salivary Gland, Eye, Spleen.

Animal Number: 1R-3543 Sex: Male Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 53) 1 Year Interim Sacrifice

Macroscopic Observations:

-No visible lesions.

Microscopic Observations:

Kidney -Chronic progressive nephropathy, minimal

Liver -Portal mononuclear cell infiltrate, mild  
Portal bile duct proliferation, focal,  
minimal

Lung -Vascular mineralization, minimal

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Spleen, Heart, Stomach, Small Intestine, Large Intestine,  
Urinary Bladder, Aorta, Testis/Epididymis, Prostate, Pituitary, Adrenal, Thyroid, Parathyroid,  
Trachea, Esophagus, Lymph Node (mesenteric), Pancreas, Salivary Gland, Eye.

Species: Rat  
Project Number: 0281CR0012

Summarized STAR Page: 3

167

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1337.0172

Summarized Single Tabulated Animal Report (continued)  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M  
FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats - One Year Interim

Table: 1

Animal Number: 1R-3546 Sex: Male Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 53) 1 Year Interim Sacrifice

Macroscopic Observations:

-No visible lesions.

Microscopic Observations:

Adrenal

-Nodular hyperplasia, cortex, unilateral, moderate

Liver

-Portal mononuclear cell infiltrate, mild  
Portal bile duct proliferation, mild  
Hepatocyte alteration, vacuolated, multifocal, mild

Lung

-Perivascular mononuclear infiltrate, mild

Stomach

-Not examined, missing

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Spleen, Kidney, Heart, Small Intestine, Large Intestine, Urinary Bladder, Aorta, Testis/Epididymis, Prostate, Pituitary, Thyroid, Parathyroid, Trachea, Esophagus, Lymph Node (mesenteric), Pancreas, Salivary Gland, Eye.

Animal Number: 1R-3550 Sex: Male Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 53) 1 Year Interim Sacrifice

Macroscopic Observations:

Kidney

-Bilateral hydronephrosis

Microscopic Observations:

Heart

-Myocarditis, chronic nonsuppurative, focal, mild

Kidney

-Hydronephrosis, bilateral, moderate  
Calculus, pelvic

Liver

-Portal mononuclear cell infiltrate, mild

Lung

-Vascular mineralization, mild

Pancreas

-Acinar atrophy, focal, moderate  
Pancreatitis, chronic, focal, mild

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Spleen, Stomach, Small Intestine, Large Intestine, Urinary Bladder, Aorta, Testis/Epididymis, Prostate, Pituitary, Adrenal, Thyroid, Parathyroid, Trachea, Esophagus, Lymph Node (mesenteric), Salivary Gland, Eye.

Species: Rat  
Project Number: 0281CR0012

Summarized STAR Page: 4

168

Summarized Single Tabulated Animal Report (continued)  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M  
FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats - One Year Interim

Table: 1

Animal Number: 1R-3551 Sex: Male Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 53) 1 Year Interim Sacrifice

Macroscopic Observations:

Liver -Pale tan

Microscopic Observations:

Liver -Portal mononuclear cell infiltrate, mild  
Portal bile duct proliferation, mild  
Lung -Pneumonia, interstitial, chronic, focal, mild  
Hemorrhage, multifocal, mild  
Hyperplasia, septal cell, focal, mild

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Spleen, Kidney, Heart, Stomach, Small Intestine,  
Large Intestine, Urinary Bladder, Aorta, Testis/Epididymis, Prostate, Pituitary, Adrenal,  
Thyroid, Parathyroid, Trachea, Esophagus, Lymph Node (mesenteric), Pancreas, Salivary Gland, Eye.

Animal Number: 1R-3559 Sex: Male Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 53) 1 Year Interim Sacrifice

Macroscopic Observations:

-No visible lesions.

Microscopic Observations:

Kidney -Pyelitis, acute, bilateral, minimal  
Nephritis, interstitial, chronic, focal,  
unilateral, mild  
Liver -Portal mononuclear cell infiltrate, mild  
Portal bile duct proliferation, mild  
Lung -Hemorrhage, multifocal, mild

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Spleen, Heart, Stomach, Small Intestine, Large Intestine,  
Urinary Bladder, Aorta, Testis/Epididymis, Prostate, Pituitary, Adrenal, Thyroid, Parathyroid,  
Trachea, Esophagus, Lymph Node (mesenteric), Pancreas, Salivary Gland, Eye.

Animal Number: 1R-3568 Sex: Male Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 53) 1 Year Interim Sacrifice

Macroscopic Observations:

-No visible lesions.

Microscopic Observations:

Kidney -Chronic progressive nephropathy, mild  
Pancreas -Pancreatitis, chronic, focal, mild  
Acinar atrophy, focal, mild  
Parathyroid -Not examined, not in plane of section

Species: Rat  
Project Number: 0281CR0012

Summarized STAR Page: 5

169

Summarized Single Tabulated Animal Report (continued)  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M  
FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats - One Year Interim

Table: 1

Animal Number: 1R-3568 Sex: Male Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 53) 1 Year Interim Sacrifice

Microscopic Observations (continued):

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Spleen, Liver, Heart, Lung, Stomach, Small Intestine,  
Large Intestine, Urinary Bladder, Aorta, Testis/Epididymis, Prostate, Pituitary, Adrenal,  
Thyroid, Trachea, Esophagus, Lymph Node (mesenteric), Salivary Gland, Eye.

Animal Number: 1R-3570 Sex: Male Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 53) 1 Year Interim Sacrifice

Macroscopic Observations:

-No visible lesions.

Microscopic Observations:

Adrenal

-Cortical vacuolation, multifocal, mild

Lung

-Pneumonia, interstitial, chronic, focal,  
minimal

Hemorrhage, multifocal, mild

Parathyroid

-Not examined, not in plane of section

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Spleen, Liver, Kidney, Heart, Stomach, Small Intestine,  
Large Intestine, Urinary Bladder, Aorta, Testis/Epididymis, Prostate, Pituitary, Thyroid,  
Trachea, Esophagus, Lymph Node (mesenteric), Pancreas, Salivary Gland, Eye.

Animal Number: 1R-3575 Sex: Male Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 53) 1 Year Interim Sacrifice

Macroscopic Observations:

Soft Tissues (leg)

-Swollen left hind foot at the hock joint.

Microscopic Observations:

Kidney

-Chronic progressive nephropathy, minimal

Lung

-Vascular mineralization, minimal

Alveolar macrophages, multifocal, mild

Hemorrhage, focal, mild

Pituitary

-Cyst, pars distalis

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Spleen, Liver, Heart, Stomach, Small Intestine,  
Large Intestine, Urinary Bladder, Aorta, Testis/Epididymis, Prostate, Adrenal, Thyroid,  
Parathyroid, Trachea, Esophagus, Lymph Node (mesenteric), Pancreas, Salivary Gland, Eye.

Species: Rat  
Project Number: 0281CR0012

Summarized STAR Page: 6

170

3MA00027300

1337.0175

Summarized Single Tabulated Animal Report (continued)  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M  
FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats - One Year Interim

Table: 1

Animal Number: 1R-3580 Sex: Male Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 53) 1 Year Interim Sacrifice

Macroscopic Observations:

Kidney -Dark cystic lesion, 0.4 cm dia., left.

Microscopic Observations:

Bone Marrow -Not examined, missing

Kidney -Chronic progressive nephropathy, mild  
Cyst, cortical, unilateral

Lung -Alveolar macrophages, multifocal, mild  
Pneumonia, interstitial, chronic, multifocal,  
mild

Pancreas -Pancreatitis, chronic, focal, mild

Parathyroid -Not examined, not in plane of section

Spinal Cord -Not examined, missing

The following tissues were found to be within normal limits:

Brain, Spleen, Liver, Heart, Stomach, Small Intestine, Large Intestine, Urinary Bladder, Aorta,  
Testis/Epididymis, Prostate, Pituitary, Adrenal, Thyroid, Trachea, Esophagus,  
Lymph Node (mesenteric), Salivary Gland, Eye.

Animal Number: 1R-4578 Sex: Female Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 53) 1 Year Interim Sacrifice

Macroscopic Observations:

-No visible lesions.

Microscopic Observations:

Kidney -Pelvic mineralization, minimal

Lymph Node (mesenteric) -Not examined, missing

Parathyroid -Not examined, not in plane of section

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Spleen, Liver, Heart, Lung, Stomach, Small Intestine,  
Large Intestine, Urinary Bladder, Aorta, Uterus, Ovary, Mammary Gland, Pituitary, Adrenal,  
Thyroid, Trachea, Esophagus, Pancreas, Salivary Gland, Eye.

Animal Number: 1R-4582 Sex: Female Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 53) 1 Year Interim Sacrifice

Macroscopic Observations:

Mesentary -Yellow nodular mass, 1 x 0.5 cm.

Microscopic Observations:

Heart -Myocarditis, chronic nonsuppurative, focal,  
minimal

Kidney -Calculus, pelvic, unilateral

Species: Rat  
Project Number: 0281CR0012

Summarized STAR Page: 7

171

♀ Eye Control

Summarized Single Tabulated Animal Report (continued)  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M  
FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats - One Year Interim

Table: 1

Animal Number: 1R-4582 Sex: Female Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 53) 1 Year Interim Sacrifice

Microscopic Observations (continued):

|                 |                                                                                                                                   |
|-----------------|-----------------------------------------------------------------------------------------------------------------------------------|
| Large Intestine | -Not examined, missing                                                                                                            |
| Lung            | -Pneumonia, interstitial, chronic, multifocal, mild<br>Hemorrhage, local areas, mild<br>Perivascular mononuclear infiltrate, mild |
| Mesentery       | -Necrosis, fat, nodular, moderate<br>Steatitis, chronic, moderate                                                                 |
| Parathyroid     | -Not examined, not in plane of section                                                                                            |
| Urinary Bladder | -Not examined, missing                                                                                                            |
| Uterus          | -Hyperplasia, glandular epithelium, mild<br>Metaplasia, squamous, glandular, mild                                                 |

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Spleen, Liver, Stomach, Small Intestine, Aorta, Ovary, Mammary Gland, Pituitary, Adrenal, Thyroid, Trachea, Esophagus, Lymph Node (mesenteric), Pancreas, Salivary Gland, Eye.

Animal Number: 1R-4585 Sex: Female Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 53) 1 Year Interim Sacrifice

Macroscopic Observations:

-No visible lesions.

Microscopic Observations:

|             |                                                                |
|-------------|----------------------------------------------------------------|
| Adrenal     | -Sinusoidal ectasia, cortex, focal, unilateral, mild           |
| Kidney      | -Pelvic mineralization, minimal                                |
| Liver       | -Portal mononuclear cell infiltrate, minimal                   |
| Lung        | -Vascular mineralization, mild<br>Hemorrhage, multifocal, mild |
| Parathyroid | -Not examined, not in plane of section                         |

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Spleen, Heart, Stomach, Small Intestine, Large Intestine, Urinary Bladder, Aorta, Uterus, Ovary, Mammary Gland, Pituitary, Thyroid, Trachea, Esophagus, Lymph Node (mesenteric), Pancreas, Salivary Gland, Eye.

Species: Rat  
Project Number: 0281CR0012

Summarized STAR Page: 8

172

Summarized Single Tabulated Animal Report (continued)  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M

FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats - One Year Interim

Table: 1

Animal Number: 1R-4588 Sex: Female Group: ( 1 ) CONTROL 0 ppm  
Fate: (Week= 53) 1 Year Interim Sacrifice

Macroscopic Observations:

Skin -Hair loss, neck.  
Adrenal -Left enlarged

Microscopic Observations:

Adrenal -Sinusoidal ectasia, cortex, unilateral,  
marked  
Cortical degeneration, unilateral, mild  
Kidney -Hyperplasia, pelvic epithelium, mild  
Calculus, pelvic, unilateral  
Cyst, medullary, mild  
Liver -Hepatocyte vacuolation, multifocal, mild  
Lung -Hemorrhage, diffuse, moderate  
Spinal Cord -Not examined, missing  
Spleen -Hemosiderosis, mild

The following tissues were found to be within normal limits:

Brain, Bone Marrow, Heart, Stomach, Small Intestine, Large Intestine, Urinary Bladder, Aorta,  
Uterus, Ovary, Mammary Gland, Pituitary, Thyroid, Parathyroid, Trachea, Esophagus,  
Lymph Node (mesenteric), Pancreas, Salivary Gland, Eye, Skin.

Animal Number: 1R-4589 Sex: Female Group: ( 1 ) CONTROL 0 ppm  
Fate: (Week= 53) 1 Year Interim Sacrifice

Macroscopic Observations:

Pituitary -Slightly enlarged

Microscopic Observations:

Liver -Portal mononuclear cell infiltrate, mild  
Portal bile duct proliferation, mild  
Mammary Gland -Galactoceles  
Parathyroid -Not examined, not in plane of section

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Spleen, Kidney, Heart, Lung, Stomach, Small Intestine,  
Large Intestine, Urinary Bladder, Aorta, Uterus, Ovary, Pituitary, Adrenal, Thyroid, Trachea,  
Esophagus, Lymph Node (mesenteric), Pancreas, Salivary Gland, Eye.

Species: Rat  
Project Number: 0281CR0012

Summarized STAR Page: 9

173

3MA00027304

1337.0179

Summarized Single Tabulated Animal Report (continued)  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M  
FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats - One Year Interim

Table: 1

Animal Number: 1R-4590 Sex: Female Group: ( 1 ) CONTROL 0 ppm  
Fate: (Week= 53) 1 Year Interim Sacrifice

Macroscopic Observations:

-No visible lesions.

Microscopic Observations:

Lung

-Hemorrhage, local areas, moderate

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Spleen, Liver, Kidney, Heart, Stomach, Small Intestine,  
Large Intestine, Urinary Bladder, Aorta, Uterus, Ovary, Mammary Gland, Pituitary, Adrenal,  
Thyroid, Parathyroid, Trachea, Esophagus, Lymph Node (mesenteric), Pancreas, Salivary Gland, Eye.

Animal Number: 1R-4601 Sex: Female Group: ( 1 ) CONTROL 0 ppm  
Fate: (Week= 53) 1 Year Interim Sacrifice

Macroscopic Observations:

Kidney

-Hydronephrosis, unilateral

Microscopic Observations:

Kidney

-Hydronephrosis, unilateral, moderate

Calculus, unilateral, mild

Liver

-Hepatocyte vacuolation, multifocal, minimal

Lung

-Hemorrhage, multifocal, mild

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Spleen, Heart, Stomach, Small Intestine, Large Intestine,  
Urinary Bladder, Aorta, Uterus, Ovary, Mammary Gland, Pituitary, Adrenal, Thyroid, Parathyroid,  
Trachea, Esophagus, Lymph Node (mesenteric), Pancreas, Salivary Gland, Eye.

Animal Number: 1R-4608 Sex: Female Group: ( 1 ) CONTROL 0 ppm  
Fate: (Week= 53) 1 Year Interim Sacrifice

Macroscopic Observations:

Uterus

-Left horn cystic looking lesion, 1 x 0.6 cm.

Microscopic Observations:

Liver

-Hepatocyte vacuolation, multifocal, minimal

Lung

-Hemorrhage, multifocal, mild

Lymph Node (mesenteric)

-Not examined, missing

Uterus

-Cystic glands, focal, marked

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Spleen, Kidney, Heart, Stomach, Small Intestine,  
Large Intestine, Urinary Bladder, Aorta, Ovary, Mammary Gland, Pituitary, Adrenal, Thyroid,  
Parathyroid, Trachea, Esophagus, Pancreas, Salivary Gland, Eye.

Species: Rat  
Project Number: 0281CR0012

Summarized STAR Page: 10

174

Summarized Single Tabulated Animal Report (continued)  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M  
FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats - One Year Interim

Table: 1

Animal Number: 1R-4610 Sex: Female Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 53) 1 Year Interim Sacrifice

Macroscopic Observations:

Pituitary -Slightly enlarged

Uterus -Slightly enlarged

Microscopic Observations:

Adrenal -Sinusoidal ectasia, cortex, mild

Large Intestine -Nematodiasis

Lung -Alveolar macrophages, multifocal, mild

Pancreas -Pancreatitis, chronic, focal, mild

Parathyroid -Not examined, not in plane of section

Uterus -Hyperplasia, glandular epithelium, mild

Metaplasia, squamous, glandular, mild

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Spleen, Liver, Kidney, Heart, Stomach, Small Intestine,  
Urinary Bladder, Aorta, Ovary, Mammary Gland, Pituitary, Thyroid, Trachea, Esophagus,  
Lymph Node (mesenteric), Salivary Gland, Eye.

Animal Number: 1R-4620 Sex: Female Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 53) 1 Year Interim Sacrifice

Macroscopic Observations:

Eye -Atrophy, right eye.

Microscopic Observations:

Eye -Panophthalmitis, unilateral, marked

Atrophy, unilateral, marked

Kidney -Pelvic mineralization, minimal

Lung -Hemorrhage, multifocal, mild

Urinary Bladder -Not examined, missing

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Spleen, Liver, Heart, Stomach, Small Intestine,  
Large Intestine, Aorta, Uterus, Ovary, Mammary Gland, Pituitary, Adrenal, Thyroid, Parathyroid,  
Trachea, Esophagus, Lymph Node (mesenteric), Pancreas, Salivary Gland.

Animal Number: 1R-4629 Sex: Female Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 53) 1 Year Interim Sacrifice

Macroscopic Observations:

Skin -Hair loss, head, neck, face.

Microscopic Observations:

Adrenal -Cortical degeneration, focal, unilateral,  
mild

Species: Rat  
Project Number: 0281CR0012

Summarized STAR Page: 11

175

Summarized Single Tabulated Animal Report (continued)  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M  
FD-143: Two Year Oral Toxicity-Oncogenicity Study in Rats - One Year Interim

Table: 1

Animal Number: 1R-4629 Sex: Female Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 53) 1 Year Interim Sacrifice

Microscopic Observations (continued):

|                 |                                        |
|-----------------|----------------------------------------|
| Aorta           | -Not examined, missing                 |
| Large Intestine | -Nematodiasis                          |
| Liver           | -Portal bile duct proliferation, mild  |
| Parathyroid     | -Not examined, not in plane of section |

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Spleen, Kidney, Heart, Lung, Stomach, Small Intestine, Urinary Bladder, Uterus, Ovary, Mammary Gland, Pituitary, Thyroid, Trachea, Esophagus, Lymph Node (mesenteric), Pancreas, Salivary Gland, Eye, Skin.

Animal Number: 1R-4630 Sex: Female Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 53) 1 Year Interim Sacrifice

Macroscopic Observations:

|       |                                   |
|-------|-----------------------------------|
| Liver | -Possibly slightly pale in color. |
|-------|-----------------------------------|

Microscopic Observations:

|             |                                                      |
|-------------|------------------------------------------------------|
| Kidney      | -Calculus, pelvic, unilateral, moderate              |
| Liver       | -Hepatocyte alteration, vacuolated, multifocal, mild |
| Lung        | -Hemorrhage, multifocal, mild                        |
| Parathyroid | -Not examined, missing                               |
| Thyroid     | -Not examined, missing                               |

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Spleen, Heart, Stomach, Small Intestine, Large Intestine, Urinary Bladder, Aorta, Uterus, Ovary, Mammary Gland, Pituitary, Adrenal, Trachea, Esophagus, Lymph Node (mesenteric), Pancreas, Salivary Gland, Eye.

Animal Number: 1R-4631 Sex: Female Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 53) 1 Year Interim Sacrifice

Macroscopic Observations:

-No visible lesions.

Microscopic Observations:

|                         |                                        |
|-------------------------|----------------------------------------|
| Kidney                  | -Pelvic mineralization, minimal        |
| Lung                    | -Hemorrhage, local areas, mild         |
| Lymph Node (mesenteric) | -Not examined, missing                 |
| Parathyroid             | -Not examined, not in plane of section |
| Urinary Bladder         | -Not examined, missing                 |

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Spleen, Liver, Heart, Stomach, Small Intestine,

Species: Rat  
Project Number: 0261CR0012

Summarized STAR Page: 12

176

3MA00027307

1337.0182

Summarized Single Tabulated Animal Report (continued)  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M

FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats - One Year Interim

Table: 1

Animal Number: 1R-4631 Sex: Female Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 53) 1 Year Interim Sacrifice

Microscopic Observations (continued):

The following tissues were found to be within normal limits (continued):

Large Intestine, Aorta, Uterus, Ovary, Mammary Gland, Pituitary, Adrenal, Thyroid, Trachea, Esophagus, Pancreas, Salivary Gland, Eye.

Animal Number: 1R-4632 Sex: Female Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 53) 1 Year Interim Sacrifice

Macroscopic Observations:

Pituitary

-Slightly enlarged with a dark red focus on surface.

Mammary Gland

-Small spherical mass, 1.2 cm dia., containing dark red fluid, left inguinal.

Microscopic Observations:

Adrenal

-Sinusoidal ectasia, cortex, focal, unilateral, mild

Kidney

-Chronic progressive nephropathy, mild

Liver

-Hepatocyte vacuolation, multifocal, mild

Lung

-Hemorrhage, multifocal, mild

Mammary Gland

-Galactoceles

Chronic inflammation and hemorrhage in cysts.

Ovary

-Cyst, unilateral

Pituitary

-Adenoma

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Spleen, Heart, Stomach, Small Intestine, Large Intestine, Urinary Bladder, Aorta, Uterus, Thyroid, Parathyroid, Trachea, Esophagus, Lymph Node (mesenteric), Pancreas, Salivary Gland, Eye.

Animal Number: 1R-4640 Sex: Female Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 53) 1 Year Interim Sacrifice

Macroscopic Observations:

-No visible lesions.

Microscopic Observations:

Liver

-Hepatocyte vacuolation, multifocal, minimal

Lung

-Hemorrhage, mild

Parathyroid

-Not examined, not in plane of section

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Spleen, Kidney, Heart, Stomach, Small Intestine, Large Intestine, Urinary Bladder, Aorta, Uterus, Ovary, Mammary Gland, Pituitary, Adrenal, Thyroid, Trachea, Esophagus, Lymph Node (mesenteric), Pancreas, Salivary Gland, Eye.

Species: Rat  
Project Number: 02B1CR0012

Summarized STAR Page: 13

177

71 14R 300 ppm

Summarized Single Tabulated Animal Report  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M  
FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats - One Year Interim

Table: 1

Animal Number: 1R-3584 Sex: Male Group: ( 5) FC-143 300 ppm  
Fate: (Week= 53) 1 Year Interim Sacrifice

Macroscopic Observations:

Liver -Pale

Microscopic Observations:

Aorta -Not examined, missing  
Kidney -Chronic progressive nephropathy, mild  
Liver -Portal mononuclear cell infiltrate, mild  
Portal bile duct proliferation, mild  
Megalocytosis, moderate  
Necrosis, focal, minimal  
Lung -Vascular mineralization, mild  
Alveolar macrophages, multifocal, mild  
Parathyroid -Not examined, not in plane of section

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Spleen, Heart, Stomach, Small Intestine, Large Intestine,  
Urinary Bladder, Testis/Epididymis, Prostate, Pituitary, Adrenal, Thyroid, Trachea, Esophagus,  
Lymph Node (mesenteric), Pancreas, Salivary Gland, Eye.

Animal Number: 1R-3588 Sex: Male Group: ( 5) FC-143 300 ppm  
Fate: (Week= 53) 1 Year Interim Sacrifice

Macroscopic Observations:

-No visible lesions.

Microscopic Observations:

Kidney -Chronic progressive nephropathy, minimal  
Liver -Portal mononuclear cell infiltrate, mild  
Megalocytosis, mild  
Necrosis, multifocal, mild  
Lung -Vascular mineralization, mild  
Spleen -Hemosiderosis, mild

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Heart, Stomach, Small Intestine, Large Intestine,  
Urinary Bladder, Aorta, Testis/Epididymis, Prostate, Pituitary, Adrenal, Thyroid, Parathyroid,  
Trachea, Esophagus, Lymph Node (mesenteric), Pancreas, Salivary Gland, Eye.

Species: Rat  
Project Number: 0281CR0012

Summarized STAR Page: 14

178

Summarized Single Tabulated Animal Report (continued)  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M  
FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats - One Year Interim

Table: 1

Animal Number: 1R-3589 Sex: Male Group: ( 5) FC-143 300 ppm  
Fate: (Week= 53) 1 Year Interim Sacrifice

Macroscopic Observations:

-No visible lesions.

Microscopic Observations:

|             |                                                                  |
|-------------|------------------------------------------------------------------|
| Aorta       | -Not examined, missing                                           |
| Liver       | -Portal mononuclear cell infiltrate, mild<br>Megalocytosis, mild |
| Lung        | -Vascular mineralization, mild                                   |
| Parathyroid | -Not examined, missing                                           |
| Thyroid     | -Not examined, missing                                           |

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Spleen, Kidney, Heart, Stomach, Small Intestine,  
Large Intestine, Urinary Bladder, Testis/Epididymis, Prostate, Pituitary, Adrenal, Trachea,  
Esophagus, Lymph Node (mesenteric), Pancreas, Salivary Gland, Eye.

Animal Number: 1R-3592 Sex: Male Group: ( 5) FC-143 300 ppm  
Fate: (Week= 53) 1 Year Interim Sacrifice

Macroscopic Observations:

Pituitary -Small dark red mass, 0.3 cm dia.

Microscopic Observations:

|                 |                                                                                                                                           |
|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------|
| Kidney          | -Chronic progressive nephropathy, minimal                                                                                                 |
| Liver           | -Portal mononuclear cell infiltrate, minimal<br>Hepatocyte vacuolation, multifocal, mild<br>Pigment, Kupfer cell, multifocal, brown, mild |
| Lung            | -Vascular mineralization, mild<br>Alveolar macrophages, multifocal, mild                                                                  |
| Parathyroid     | -Not examined, not in plane of section                                                                                                    |
| Urinary Bladder | -Not examined, missing                                                                                                                    |

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Spleen, Heart, Stomach, Small Intestine, Large Intestine,  
Aorta, Testis/Epididymis, Prostate, Pituitary, Adrenal, Thyroid, Trachea, Esophagus,  
Lymph Node (mesenteric), Pancreas, Salivary Gland, Eye.

Animal Number: 1R-3598 Sex: Male Group: ( 5) FC-143 300 ppm  
Fate: (Week= 53) 1 Year Interim Sacrifice

Macroscopic Observations:

-No visible lesions.

Microscopic Observations:

|       |                                                              |
|-------|--------------------------------------------------------------|
| Heart | -Myocarditis, chronic nonsuppurative,<br>multifocal, minimal |
|-------|--------------------------------------------------------------|

Species: Rat  
Project Number: 0281CR0012

Summarized STAR Page: 15

179

Summarized Single Tabulated Animal Report (continued)  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M

FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats - One Year Interim

Table: 1

Animal Number: 1R-3598 Sex: Male Group: ( 5) FC-143 300 ppm  
Fate: (Week= 53) 1 Year Interim Sacrifice

Microscopic Observations (continued):

|             |                                                                                                      |
|-------------|------------------------------------------------------------------------------------------------------|
| Kidney      | -Chronic progressive nephropathy, minimal                                                            |
| Liver       | -Portal mononuclear cell infiltrate, mild<br>Megalocytosis, minimal<br>Necrosis, multifocal, minimal |
| Lung        | -Alveolar macrophages, multifocal, mild                                                              |
| Parathyroid | -Not examined, not in plane of section                                                               |
| Pituitary   | -Not examined, missing                                                                               |

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Spleen, Stomach, Small Intestine, Large Intestine,  
Urinary Bladder, Aorta, Testis/Epididymis, Prostate, Adrenal, Thyroid, Trachea, Esophagus,  
Lymph Node (mesenteric), Pancreas, Salivary Gland, Eye.

Animal Number: 1R-3604 Sex: Male Group: ( 5) FC-143 300 ppm  
Fate: (Week= 53) 1 Year Interim Sacrifice

Macroscopic Observations:

-No visible lesions.

Microscopic Observations:

|                |                                                                                                           |
|----------------|-----------------------------------------------------------------------------------------------------------|
| Aorta          | -Not examined, missing                                                                                    |
| Heart          | -Myocardial fibrosis, focal, mild                                                                         |
| Kidney         | -Chronic progressive nephropathy, mild                                                                    |
| Liver          | -Portal mononuclear cell infiltrate, mild<br>Megalocytosis, minimal<br>Necrosis, multifocal, mild         |
| Lung           | -Vascular mineralization, mild<br>Alveolar macrophages, multifocal, mild<br>Hemorrhage, local areas, mild |
| Parathyroid    | -Not examined, not in plane of section                                                                    |
| Salivary Gland | -Not examined, missing                                                                                    |

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Spleen, Stomach, Small Intestine, Large Intestine,  
Urinary Bladder, Testis/Epididymis, Prostate, Pituitary, Adrenal, Thyroid, Trachea, Esophagus,  
Lymph Node (mesenteric), Pancreas, Eye.

Species: Rat  
Project Number: 0281CR0012

Summarized STAR Page: 16

180

Summarized Single Tabulated Animal Report (continued)  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M

FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats - One Year Interim

Table: 1

Animal Number: 1R-3613 Sex: Male Group: ( 5) FC-143 300 ppm  
Fate: (Week= 53) 1 Year Interim Sacrifice

Macroscopic Observations:

|        |                                                   |
|--------|---------------------------------------------------|
| Liver  | -Pale tan color.                                  |
| Kidney | -Small depressed area, 0.2 cm dia., right kidney. |

Microscopic Observations:

|                   |                                                                     |
|-------------------|---------------------------------------------------------------------|
| Eye               | -Retinal atrophy, focal, minimal                                    |
| Liver             | -Portal mononuclear cell infiltrate, mild<br>Megalocytosis, minimal |
| Lung              | -Vascular mineralization, mild                                      |
| Parathyroid       | -Not examined, not in plane of section                              |
| Testis/Epididymis | -Tubule atrophy, aspermatogenesis, unilateral, marked               |

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Spleen, Kidney, Heart, Stomach, Small Intestine, Large Intestine, Urinary Bladder, Aorta, Prostate, Pituitary, Adrenal, Thyroid, Trachea, Esophagus, Lymph Node (mesenteric), Pancreas, Salivary Gland.

Animal Number: 1R-3617 Sex: Male Group: ( 5) FC-143 300 ppm  
Fate: (Week= 53) 1 Year Interim Sacrifice

Macroscopic Observations:

|      |                                                   |
|------|---------------------------------------------------|
| Skin | -Ulcerated nodule in the dorsal area, 1.5 cm dia. |
|------|---------------------------------------------------|

Microscopic Observations:

|                         |                                                                            |
|-------------------------|----------------------------------------------------------------------------|
| Kidney                  | -Mineralization, multifocal, cortical<br>Pyelitis, acute, unilateral, mild |
| Liver                   | -Megalocytosis, minimal                                                    |
| Lung                    | -Alveolar macrophages, multifocal, mild                                    |
| Lymph Node (mesenteric) | -Hemorrhage, minimal                                                       |
| Skin                    | -Keratoacanthoma                                                           |

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Spleen, Heart, Stomach, Small Intestine, Large Intestine, Urinary Bladder, Aorta, Testis/Epididymis, Prostate, Pituitary, Adrenal, Thyroid, Parathyroid, Trachea, Esophagus, Pancreas, Salivary Gland, Eye.

Species: Rat  
Project Number: 02B1CR0012

Summarized STAR Page: 17

181

Summarized Single Tabulated Animal Report (continued)

Individual Macroscopic and Microscopic Observations

Riker Laboratories, Inc. 3M

FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats - One Year Interim

Table: 1

Animal Number: 1R-3620 Sex: Male Group: ( 5) FC-143 300 ppm

Fate: (Week= 53) 1 Year Interim Sacrifice

Macroscopic Observations:

-No visible lesions.

Microscopic Observations:

Aorta

-Not examined, missing

Kidney

-Chronic progressive nephropathy, minimal

Liver

-Portal mononuclear cell infiltrate, mild

Hepatocyte vacuolation, multifocal, minimal

Megalocytosis, minimal

Parathyroid

-Not examined, not in plane of section

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Spleen, Heart, Lung, Stomach, Small Intestine, Large Intestine, Urinary Bladder, Testis/Epididymis, Prostate, Pituitary, Adrenal, Thyroid, Trachea, Esophagus, Lymph Node (mesenteric), Pancreas, Salivary Gland, Eye.

Animal Number: 1R-3622 Sex: Male Group: ( 5) FC-143 300 ppm

Fate: (Week= 53) 1 Year Interim Sacrifice

Macroscopic Observations:

Eye

-Ocular opacity, bilateral.

Testis

-Left testis small.

Microscopic Observations:

Eye

-Cataract, bilateral

Kidney

-Chronic progressive nephropathy, mild

Liver

-Portal mononuclear cell infiltrate, minimal

Megalocytosis, minimal

Pigment, Kupfer cell, brown, minimal

Lung

-Vascular mineralization, minimal

Pneumonia, interstitial, chronic, multifocal,

mild

Lymph Node (mesenteric)

-Hemorrhage, mild

Parathyroid

-Not examined, not in plane of section

Prostate

-Not examined, missing

Testis/Epididymis

-Tubule atrophy, aspermatogenesis, unilateral, marked

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Spleen, Heart, Stomach, Small Intestine, Large Intestine, Urinary Bladder, Aorta, Pituitary, Adrenal, Thyroid, Trachea, Esophagus, Pancreas, Salivary Gland.

Species: Rat

Project Number: 0281CR0012

Summarized STAR Page: 18

182

Summarized Single Tabulated Animal Report (continued)  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M

FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats - One Year Interim

Table: 1

Animal Number: 1R-3626 Sex: Male Group: ( 5) FC-143 300 ppm  
Fate: (Week= 53) 1 Year Interim Sacrifice

Macroscopic Observations:

-No visible lesions.

Microscopic Observations:

Kidney

-Chronic progressive nephropathy, minimal

Liver

-Portal mononuclear cell infiltrate, mild  
Megalocytosis, minimal

Lung

-Alveolar macrophages, multifocal, mild

Parathyroid

-Not examined, not in plane of section

Pituitary

-Not examined, missing

Prostate

-Prostatitis, chronic, focal, interstitial,  
minimal

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Spleen, Heart, Stomach, Small Intestine, Large Intestine,  
Urinary Bladder, Aorta, Testis/Epididymis, Adrenal, Thyroid, Trachea, Esophagus,  
Lymph Node (mesenteric), Pancreas, Salivary Gland, Eye.

Animal Number: 1R-3627 Sex: Male Group: ( 5) FC-143 300 ppm  
Fate: (Week= 53) 1 Year Interim Sacrifice

Macroscopic Observations:

Liver

-Slightly pale tan in color.

Microscopic Observations:

Liver

-Portal mononuclear cell infiltrate, minimal

Lung

-Hemorrhage, local areas, mild

Parathyroid

-Not examined, not in plane of section

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Spleen, Kidney, Heart, Stomach, Small Intestine,  
Large Intestine, Urinary Bladder, Aorta, Testis/Epididymis, Prostate, Pituitary, Adrenal,  
Thyroid, Trachea, Esophagus, Lymph Node (mesenteric), Pancreas, Salivary Gland, Eye.

Animal Number: 1R-3638 Sex: Male Group: ( 5) FC-143 300 ppm  
Fate: (Week= 53) 1 Year Interim Sacrifice

Macroscopic Observations:

-No visible lesions.

Microscopic Observations:

Liver

-Portal mononuclear cell infiltrate, minimal  
Necrosis, multifocal, mild

Lung

-Hemorrhage, local areas, moderate

Lymph Node (mesenteric)

-Not examined, missing

Species: Rat  
Project Number: 02B1CR0012

Summarized STAR Page: 19

183

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Summarized Single Tabulated Animal Report (continued)  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M  
FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats - One Year Interim

Table: 1

Animal Number: 1R-3638 Sex: Male Group: ( 5) FC-143 300 ppm  
Fate: (Week= 53) 1 Year Interim Sacrifice

Microscopic Observations (continued):

|                 |                        |
|-----------------|------------------------|
| Pituitary       | -Not examined, missing |
| Prostate        | -Not examined, missing |
| Urinary Bladder | -Not examined, missing |

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Spleen, Kidney, Heart, Stomach, Small Intestine,  
Large Intestine, Aorta, Testis/Epididymis, Adrenal, Thyroid, Parathyroid, Trachea, Esophagus,  
Pancreas, Salivary Gland, Eye.

Animal Number: 1R-3642 Sex: Male Group: ( 5) FC-143 300 ppm  
Fate: (Week= 53) 1 Year Interim Sacrifice

Macroscopic Observations:

-No visible lesions.

Microscopic Observations:

|                         |                                           |
|-------------------------|-------------------------------------------|
| Kidney                  | -Chronic progressive nephropathy, minimal |
| Large Intestine         | -Nematodiasis                             |
| Liver                   | -Megalocytosis, mild                      |
| Lymph Node (mesenteric) | -Not examined, missing                    |
| Parathyroid             | -Not examined, missing                    |
| Thyroid                 | -Not examined, missing                    |

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Spleen, Heart, Lung, Stomach, Small Intestine, Urinary Bladder,  
Aorta, Testis/Epididymis, Prostate, Pituitary, Adrenal, Trachea, Esophagus, Pancreas,  
Salivary Gland, Eye.

Animal Number: 1R-3643 Sex: Male Group: ( 5) FC-143 300 ppm  
Fate: (Week= 53) 1 Year Interim Sacrifice

Macroscopic Observations:

-No visible lesions.

Microscopic Observations:

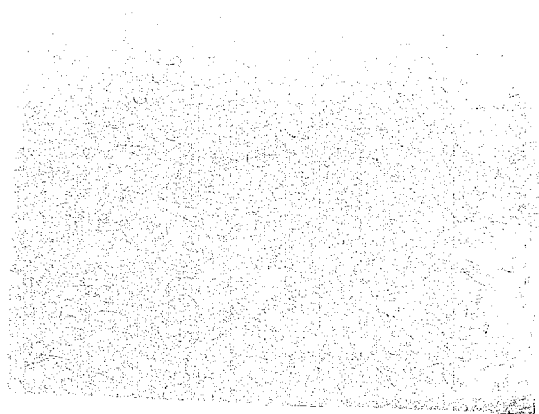
|        |                                                                                                                                      |
|--------|--------------------------------------------------------------------------------------------------------------------------------------|
| Heart  | -Myocardial fibrosis, focal, minimal<br>Myocarditis, chronic nonsuppurative, focal,<br>minimal                                       |
| Kidney | -Chronic progressive nephropathy, mild                                                                                               |
| Liver  | -Portal mononuclear cell infiltrate, mild<br>Megalocytosis, moderate<br>Necrosis, multifocal, mild                                   |
| Lung   | -Vascular mineralization, mild<br>Pneumonia, interstitial, chronic, multifocal,<br>mild<br>Perivascular mononuclear infiltrate, mild |

Species: Rat  
Project Number: 0281CR0012

Summarized STAR Page: 20

184

♀ 1 YR 300 ppm



Summarized Single Tabulated Animal Report (continued)  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M  
FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats - One Year Interim

Table: 1

Animal Number: 1R-3643 Sex: Male Group: ( 5) FC-143 300 ppm  
Fate: (Week= 53) 1 Year Interim Sacrifice

Microscopic Observations (continued):

Parathyroid

-Not examined, not in plane of section

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Spleen, Stomach, Small Intestine, Large Intestine,  
Urinary Bladder, Aorta, Testis/Epididymis, Prostate, Pituitary, Adrenal, Thyroid, Trachea,  
Esophagus, Lymph Node (mesenteric), Pancreas, Salivary Gland, Eye.

Animal Number: 1R-4642 Sex: Female Group: ( 5) FC-143 300 ppm  
Fate: (Week= 53) 1 Year Interim Sacrifice

Macroscopic Observations:

Eye

-Atrophy, right eye.

Uterus

-Both horns enlarged, filled with clear fluid.

Microscopic Observations:

Eye

-Panophthalmitis, unilateral, marked

Atrophy, unilateral, marked

Kidney

-Chronic progressive nephropathy, mild

Large Intestine

-Nematodiasis

Liver

-Hepatocyte vacuolation, multifocal, mild

Parathyroid

-Not examined, not in plane of section

Uterus

-Hydrometra, moderate

Endometritis, chronic, mild

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Spleen, Heart, Lung, Stomach, Small Intestine, Urinary Bladder,  
Aorta, Ovary, Mammary Gland, Pituitary, Adrenal, Thyroid, Trachea, Esophagus,  
Lymph Node (mesenteric), Pancreas, Salivary Gland.

Animal Number: 1R-4652 Sex: Female Group: ( 5) FC-143 300 ppm  
Fate: (Week= 53) 1 Year Interim Sacrifice

Macroscopic Observations:

-No visible lesions.

Microscopic Observations:

Kidney

-Chronic progressive nephropathy, mild

Liver

-Hepatocyte vacuolation, multifocal, mild

Parathyroid

-Not examined, not in plane of section

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Spleen, Heart, Lung, Stomach, Small Intestine, Large Intestine,  
Urinary Bladder, Aorta, Uterus, Ovary, Mammary Gland, Pituitary, Adrenal, Thyroid, Trachea,  
Esophagus, Lymph Node (mesenteric), Pancreas, Salivary Gland, Eye.

Species: Rat

Project Number: 0281CR0012

Summarized STAR Page: 21

185

Summarized Single Tabulated Animal Report (continued)  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M

FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats - One Year Interim

Table: 1

Animal Number: 1R-4655 Sex: Female Group: ( 5) FC-143 300 ppm  
Fate: (Week= 53) 1 Year Interim Sacrifice

Macroscopic Observations:

-No visible lesions.

Microscopic Observations:

|           |                                           |
|-----------|-------------------------------------------|
| Aorta     | -Not examined, missing                    |
| Liver     | -Hepatocyte vacuolation, multifocal, mild |
| Lung      | -Hemorrhage, local areas, mild            |
| Pituitary | -Not examined, missing                    |

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Spleen, Kidney, Heart, Stomach, Small Intestine, Large Intestine, Urinary Bladder, Uterus, Ovary, Mammary Gland, Adrenal, Thyroid, Parathyroid, Trachea, Esophagus, Lymph Node (mesenteric), Pancreas, Salivary Gland, Eye.

Animal Number: 1R-4656 Sex: Female Group: ( 5) FC-143 300 ppm  
Fate: (Week= 53) 1 Year Interim Sacrifice

Macroscopic Observations:

-No visible lesions.

Microscopic Observations:

|                         |                                                                                      |
|-------------------------|--------------------------------------------------------------------------------------|
| Kidney                  | -Chronic progressive nephropathy, mild<br>Mineralization, multifocal, cortical, mild |
| Liver                   | -Hepatocyte vacuolation, multifocal, mild                                            |
| Lung                    | -Hemorrhage, multifocal, mild                                                        |
| Lymph Node (mesenteric) | -Not examined, missing                                                               |

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Spleen, Heart, Stomach, Small Intestine, Large Intestine, Urinary Bladder, Aorta, Uterus, Ovary, Mammary Gland, Pituitary, Adrenal, Thyroid, Parathyroid, Trachea, Esophagus, Pancreas, Salivary Gland, Eye.

Animal Number: 1R-4664 Sex: Female Group: ( 5) FC-143 300 ppm  
Fate: (Week= 53) 1 Year Interim Sacrifice

Macroscopic Observations:

|               |                                                      |
|---------------|------------------------------------------------------|
| Mammary Gland | -Subcutaneous mass, 3.5 cm dia., left inguinal area. |
|---------------|------------------------------------------------------|

Microscopic Observations:

|               |                                           |
|---------------|-------------------------------------------|
| Liver         | -Hepatocyte vacuolation, multifocal, mild |
| Mammary Gland | -Fibroadenoma                             |

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Spleen, Kidney, Heart, Lung, Stomach, Small Intestine, Large Intestine, Urinary Bladder, Aorta, Uterus, Ovary, Pituitary, Adrenal, Thyroid,

Species: Rat  
Project Number: 0281CR0012

Summarized STAR Page: 22

186

Summarized Single Tabulated Animal Report (continued)  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M  
FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats - One Year Interim

Table: 1

Animal Number: 1R-4664 Sex: Female Group: ( 5) FC-143 300 ppm  
Fate: (Week= 53) 1 Year Interim Sacrifice

Microscopic Observations (continued):

The following tissues were found to be within normal limits (continued):

Parathyroid, Trachea, Esophagus, Lymph Node (mesenteric), Pancreas, Salivary Gland, Eye.

Animal Number: 1R-4666 Sex: Female Group: ( 5) FC-143 300 ppm  
Fate: (Week= 53) 1 Year Interim Sacrifice

Macroscopic Observations:

-No visible lesions.

Microscopic Observations:

Liver

-Portal mononuclear cell infiltrate, mild  
Portal bile duct proliferation, mild

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Spleen, Kidney, Heart, Lung, Stomach, Small Intestine,  
Large Intestine, Urinary Bladder, Aorta, Uterus, Ovary, Mammary Gland, Pituitary, Adrenal,  
Thyroid, Parathyroid, Trachea, Esophagus, Lymph Node (mesenteric), Pancreas, Salivary Gland, Eye.

Animal Number: 1R-4669 Sex: Female Group: ( 5) FC-143 300 ppm  
Fate: (Week= 53) 1 Year Interim Sacrifice

Macroscopic Observations:

-No visible lesions.

Microscopic Observations:

Liver

-Hepatocyte vacuolation, multifocal, mild

Lung

-Hemorrhage, multifocal, mild

Mammary Gland

-Not examined, missing

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Spleen, Kidney, Heart, Stomach, Small Intestine,  
Large Intestine, Urinary Bladder, Aorta, Uterus, Ovary, Pituitary, Adrenal, Thyroid,  
Parathyroid, Trachea, Esophagus, Lymph Node (mesenteric), Pancreas, Salivary Gland, Eye.

Animal Number: 1R-4671 Sex: Female Group: ( 5) FC-143 300 ppm  
Fate: (Week= 53) 1 Year Interim Sacrifice

Macroscopic Observations:

Mammary Gland

-Subcutaneous mass, 5 cm dia., behind left  
shoulder.

Microscopic Observations:

Kidney

-Pelvic mineralization, mild  
Calculus, pelvic, mild

Species: Rat  
Project Number: 0281CR0012

Summarized STAR Page: 23

187

Summarized Single Tabulated Animal Report (continued)  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M

FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats - One Year Interim

Table: 1

Animal Number: 1R-4671 Sex: Female Group: ( 5) FC-143 300 ppm  
Fate: (Week= 53) 1 Year Interim Sacrifice

Microscopic Observations (continued):

|               |                                              |
|---------------|----------------------------------------------|
| Liver         | -Hepatocyte vacuolation, multifocal, minimal |
| Lung          | -Hemorrhage, multifocal, mild                |
| Mammary Gland | -Fibroadenoma                                |
| Parathyroid   | -Not examined, not in plane of section       |

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Spleen, Heart, Stomach, Small Intestine, Large Intestine, Urinary Bladder, Aorta, Uterus, Ovary, Pituitary, Adrenal, Thyroid, Trachea, Esophagus, Lymph Node (mesenteric), Pancreas, Salivary Gland, Eye.

Animal Number: 1R-4674 Sex: Female Group: ( 5) FC-143 300 ppm  
Fate: (Week= 53) 1 Year Interim Sacrifice

Macroscopic Observations:

-No visible lesions.

Microscopic Observations:

|                 |                                        |
|-----------------|----------------------------------------|
| Aorta           | -Not examined, missing                 |
| Esophagus       | -Not examined, missing                 |
| Large Intestine | -Not examined, missing                 |
| Lung            | -Hemorrhage, multifocal, mild          |
| Parathyroid     | -Not examined, not in plane of section |

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Spleen, Liver, Kidney, Heart, Stomach, Small Intestine, Urinary Bladder, Uterus, Ovary, Mammary Gland, Pituitary, Adrenal, Thyroid, Trachea, Lymph Node (mesenteric), Pancreas, Salivary Gland, Eye.

Animal Number: 1R-4676 Sex: Female Group: ( 5) FC-143 300 ppm  
Fate: (Week= 53) 1 Year Interim Sacrifice

Macroscopic Observations:

|               |                                                                                                                                         |
|---------------|-----------------------------------------------------------------------------------------------------------------------------------------|
| Mammary Gland | -Two subcutaneous masses in both inguinal areas, 1.5 and 2 cm dia. Left side milk cyst, right side cyst filled with rust colored fluid. |
|---------------|-----------------------------------------------------------------------------------------------------------------------------------------|

Microscopic Observations:

|         |                                                   |
|---------|---------------------------------------------------|
| Adrenal | -Sinusoidal ectasia, cortex, mild                 |
| Heart   | -Myocarditis, chronic nonsuppurative, focal, mild |
| Kidney  | -Calculus, pelvic                                 |
| Liver   | -Hepatocyte vacuolation, multifocal, mild         |

Species: Rat  
Project Number: 0281CR0012

Summarized STAR Page: 24

188

Summarized Single Tabulated Animal Report (continued)  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M  
FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats - One Year Interim

Table: 1

Animal Number: 1R-4676 Sex: Female Group: ( 5) FC-143 300 ppm  
Fate: (Week= 53) 1 Year Interim Sacrifice

Microscopic Observations (continued):

|               |                                                                                                                           |
|---------------|---------------------------------------------------------------------------------------------------------------------------|
| Lung          | -Alveolar macrophages, multifocal, mild                                                                                   |
| Mammary Gland | -Galactoceles<br>Galactoceles<br>One cyst involved with chronic inflammatory process with extensive hemorrhage into cyst. |

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Spleen, Stomach, Small Intestine, Large Intestine, Urinary Bladder, Aorta, Uterus, Ovary, Pituitary, Thyroid, Parathyroid, Trachea, Esophagus, Lymph Node (mesenteric), Pancreas, Salivary Gland, Eye.

Animal Number: 1R-4687 Sex: Female Group: ( 5) FC-143 300 ppm  
Fate: (Week= 53) 1 Year Interim Sacrifice

Macroscopic Observations:

|                 |                                                                                    |
|-----------------|------------------------------------------------------------------------------------|
| Urinary Bladder | -Distended with urine and containing greenish spherical calculi, 0.6 cm dia.       |
| Ureter          | -Bilateral dilatation of ureters; filled with calculi near the end of the bladder. |
| Kidney          | -Bilateral marked hydronephrosis with numerous calculi in the pelvic area.         |

Microscopic Observations:

|                 |                                                                                        |
|-----------------|----------------------------------------------------------------------------------------|
| Esophagus       | -No diagnosis, inadequate section                                                      |
| Kidney          | -Hydronephrosis, bilateral, marked<br>Pyelitis, chronic, moderate                      |
| Mammary Gland   | -Not examined, missing                                                                 |
| Parathyroid     | -Not examined, not in plane of section                                                 |
| Ureter          | -Calculus<br>Inflammation, chronic, diffuse, moderate<br>Dilatation, marked            |
| Urinary Bladder | -Epithelial hyperplasia, simple, diffuse, mild<br>Cystitis, chronic, diffuse, moderate |
| Uterus          | -Hydrometra                                                                            |

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Spleen, Liver, Heart, Lung, Stomach, Small Intestine, Large Intestine, Aorta, Ovary, Pituitary, Adrenal, Thyroid, Trachea, Lymph Node (mesenteric), Pancreas, Salivary Gland, Eye.

Species: Rat  
Project Number: 02B1CR0012

Summarized STAR Page: 25

189

Summarized Single Tabulated Animal Report (continued)  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M

FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats - One Year Interim

Table: 1

Animal Number: 1R-4689 Sex: Female Group: ( 5) FC-143 300 ppm  
Fate: (Week= 53) 1 Year Interim Sacrifice

Macroscopic Observations:

Eye -Right eye atrophied.  
Liver -Pale tan in color.  
Lymph Node (mesenteric) -Hemorrhagic

Microscopic Observations:

Adrenal -Sinusoidal ectasia, cortex, mild  
Eye -Atrophy, unilateral, marked  
Panophthalmitis, chronic, unilateral, marked  
Liver -Hepatocyte vacuolation, multifocal, mild  
Lung -Hemorrhage, local areas, mild  
Lymph Node (mesenteric) -Hemorrhage, marked  
Parathyroid -Not examined, not in plane of section  
Thyroid -No diagnosis, inadequate section

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Spleen, Kidney, Heart, Stomach, Small Intestine,  
Large Intestine, Urinary Bladder, Aorta, Uterus, Ovary, Mammary Gland, Pituitary, Trachea,  
Esophagus, Pancreas, Salivary Gland.

Animal Number: 1R-4692 Sex: Female Group: ( 5) FC-143 300 ppm  
Fate: (Week= 53) 1 Year Interim Sacrifice

Macroscopic Observations:

-No visible lesions.

Microscopic Observations:

Lung -Hemorrhage, local areas, moderate  
Lymph Node (mesenteric) -Not examined, missing

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Spleen, Liver, Kidney, Heart, Stomach, Small Intestine,  
Large Intestine, Urinary Bladder, Aorta, Uterus, Ovary, Mammary Gland, Pituitary, Adrenal,  
Thyroid, Parathyroid, Trachea, Esophagus, Pancreas, Salivary Gland, Eye.

Animal Number: 1R-4699 Sex: Female Group: ( 5) FC-143 300 ppm  
Fate: (Week= 53) 1 Year Interim Sacrifice

Macroscopic Observations:

-No visible lesions.

Microscopic Observations:

Adrenal -Sinusoidal ectasia, cortex, mild  
Large Intestine -Nematodiasis  
Liver -Hepatocyte vacuolation, multifocal, mild

Species: Rat  
Project Number: 0281CR0012

Summarized STAR Page: 26

190

Summarized Single Tabulated Animal Report (continued)  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M  
FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats - One Year Interim

Table: 1

Animal Number: 1R-4699 Sex: Female Group: ( 5) FC-143 300 ppm  
Fate: (Week= 53) 1 Year Interim Sacrifice

Microscopic Observations (continued):

Lung

-Hemorrhage, local areas, moderate

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Spleen, Kidney, Heart, Stomach, Small Intestine,  
Urinary Bladder, Aorta, Uterus, Ovary, Mammary Gland, Pituitary, Thyroid, Parathyroid, Trachea,  
Esophagus, Lymph Node (mesenteric), Pancreas, Salivary Gland, Eye.

Animal Number: 1R-4704 Sex: Female Group: ( 5) FC-143 300 ppm  
Fate: (Week= 53) 1 Year Interim Sacrifice

Macroscopic Observations:

-No visible lesions.

Microscopic Observations:

Adrenal

-Cortical degeneration, focal, unilateral,  
mild

Liver

-Portal mononuclear cell infiltrate, mild  
Hepatocyte vacuolation, multifocal, mild

Lung

-Vascular mineralization, mild  
Hemorrhage, multifocal, mild

Thyroid

-Not examined, not in plane of section

The following tissues were found to be within normal limits:

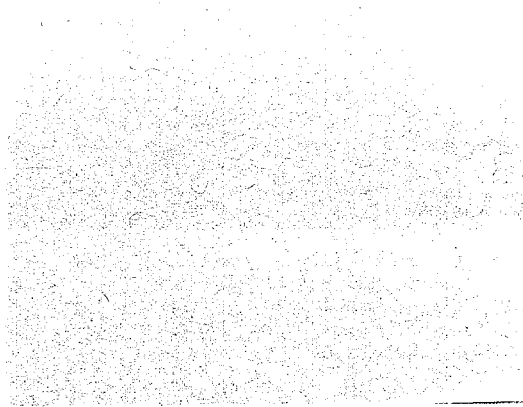
Brain, Spinal Cord, Bone Marrow, Spleen, Kidney, Heart, Stomach, Small Intestine,  
Large Intestine, Urinary Bladder, Aorta, Uterus, Ovary, Mammary Gland, Pituitary, Parathyroid,  
Trachea, Esophagus, Lymph Node (mesenteric), Pancreas, Salivary Gland, Eye.

Species: Rat  
Project Number: 02B1CR0012

Summarized STAR Page: 27

191

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Summarized Single Tabulated Animal Report  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M  
FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats

Table: 2

Animal Number: 1R-3518 Sex: Male Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 106) Terminal Sacrifice

Macroscopic Observations:

Skin

-Raised inflamed lesion on right rear  
footpad.

Microscopic Observations:

Adrenal

-Cortical vacuolation, multifocal, mild  
Medullary cell hyperplasia, multifocal, mild

Heart

-Myocarditis, chronic nonsuppurative,  
local areas, moderate

Kidney

-Chronic progressive nephropathy, minimal  
Pelvic mineralization, minimal

Liver

-Portal mononuclear cell infiltrate, minimal  
Portal bile duct proliferation, mild

Lung

-Vascular mineralization, minimal  
Pneumonia, interstitial, chronic, multifocal,  
mild

Parathyroid

Perivascular mononuclear infiltrate, moderate

Pituitary

-Not examined, missing

Skin

-Adenoma

Thyroid

-Pododermatitis, ulcerative, hindleg, marked  
-Not examined, missing

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Spleen, Stomach, Small Intestine, Large Intestine,  
Urinary Bladder, Aorta, Testis/Epididymis, Prostate, Trachea, Esophagus,  
Lymph Node (mesenteric), Pancreas, Salivary Gland, Eye.

Animal Number: 1R-3519 Sex: Male Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 106) Terminal Sacrifice

Macroscopic Observations:

-No visible lesions.

Microscopic Observations:

Adrenal

-Sinusoidal ectasia, cortex, multifocal, mild  
Cortical vacuolation, multifocal, mild

Esophagus

-Not examined, missing

Heart

-Myocarditis, chronic nonsuppurative,  
multifocal, mild

Kidney

-Chronic progressive nephropathy, mild

Liver

-Portal mononuclear cell infiltrate, mild  
Portal bile duct proliferation, mild  
Hepatocyte alteration, vacuolated, multifocal,  
mild

Species: Rat  
Project Number: 0281CR0012

Summarized STAR Page: 28

192

Summarized Single Tabulated Animal Report (continued)  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M  
FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats

Table: 2

Animal Number: 1R-3519 Sex: Male Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 106) Terminal Sacrifice

Microscopic Observations (continued):

Lung

-Vascular mineralization, mild  
Perivascular mononuclear infiltrate, moderate  
Pneumonia, interstitial, chronic, multifocal,  
moderate

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Spleen, Stomach, Small Intestine, Large Intestine,  
Urinary Bladder, Aorta, Testis/Epididymis, Prostate, Pituitary, Thyroid, Parathyroid, Trachea,  
Lymph Node (mesenteric), Pancreas, Salivary Gland, Eye.

Animal Number: 1R-3521 Sex: Male Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 92) Sacrificed in extremis

Macroscopic Observations:

Skin

-Both hind footpads ulcerated.

Liver

-Pale

Spleen

-Enlarged

Microscopic Observations:

Adrenal

-Cortical vacuolation, local areas, mild  
Medullary cell hyperplasia, multifocal, mild

Heart

-Myocardial fibrosis, multifocal, mild

Kidney

-Chronic progressive nephropathy, moderate

Liver

-Hepatocyte vacuolation, centrilobular,  
moderate

Lung

-Vascular mineralization, mild  
Pneumonia, interstitial, chronic, local areas,  
mild

Edema, local areas, mild

Fibrosis, pleural, mild

Thrombus

Parathyroid

-Not examined, missing

Skin

-Pododermatitis, ulcerative, hindleg, marked

Spleen

-Hematopoiesis, extramedullary, increased,  
moderate

Stomach

-Edema, submucosal, marked

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Small Intestine, Large Intestine, Urinary Bladder, Aorta,  
Testis/Epididymis, Prostate, Pituitary, Thyroid, Trachea, Esophagus, Lymph Node (mesenteric),  
Pancreas, Salivary Gland, Eye.

Species: Rat  
Project Number: 0281CR0012

Summarized STAR Page: 29

193

Summarized Single Tabulated Animal Report (continued)  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M  
FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats

Table: 2

Animal Number: 1R-3523 Sex: Male Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 95) Sacrificed in extremis

Macroscopic Observations:

Soft Tissues (thorax)

-Mass, 10 x 9 x 4 cm in left axilla involving muscle and rib, extending into left thoracic cavity, collapsing left lung. Mass soft and fatty.

Stomach

-Wall edematous with possible ulceration in cardia.

Microscopic Observations:

Adrenal

-Cortical vacuolation, multifocal, mild  
Sinusoidal ectasia, cortex, diffuse, mild

Heart

-Myocardial fibrosis, multifocal, mild

Kidney

-Chronic progressive nephropathy, mild

Liver

-Portal mononuclear cell infiltrate, mild  
Portal bile duct proliferation, mild  
Hepatocyte alteration, vacuolated, mild

Lung

-Vascular mineralization, mild  
Hemorrhage, focal, mild  
Alveolar macrophages, mild

Prostate

-Prostatitis, acute, suppurative, marked

Skin

-Fibrosarcoma, thorax  
Well differentiated, highly cellular with moderate collagen formation.

Stomach

-Ulcer, marked

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Spleen, Small Intestine, Large Intestine, Urinary Bladder, Aorta, Testis/Epididymis, Pituitary, Thyroid, Parathyroid, Trachea, Esophagus, Lymph Node (mesenteric), Pancreas, Salivary Gland, Eye.

Animal Number: 1R-3524 Sex: Male Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 106) Terminal Sacrifice

Macroscopic Observations:

Pituitary

-Small red lesion.

Microscopic Observations:

Adrenal

-Medullary cell hyperplasia, multifocal, mild

Kidney

-Chronic progressive nephropathy, moderate  
Pelvic mineralization, mild

Large Intestine

-Nematodiasis, colon

Liver

-Hepatocyte alteration, vacuolated, moderate  
Portal mononuclear cell infiltrate, mild  
Portal bile duct proliferation, mild

Species: Rat  
Project Number: 0281CR0012

Summarized STAR Page: 30

Summarized Single Tabulated Animal Report (continued)  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M  
FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats

Table: 2

Animal Number: 1R-3524 Sex: Male Group: (1) CONTROL 0 ppm  
Fate: (Week= 106) Terminal Sacrifice

Microscopic Observations (continued):

|                         |                                                                                                                  |
|-------------------------|------------------------------------------------------------------------------------------------------------------|
| Lung                    | -Vascular mineralization, mild                                                                                   |
| Lymph Node (mesenteric) | -Not examined, missing                                                                                           |
| Parathyroid             | -Not examined, not in plane of section                                                                           |
| Pituitary               | -Adenoma                                                                                                         |
| Thyroid                 | -Follicular hyperplasia, cystic, unilateral, moderate<br>Large cystic lesion occupying much of one thyroid lobe. |

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Spleen, Heart, Stomach, Small Intestine, Urinary Bladder, Aorta, Testis/Epididymis, Prostate, Trachea, Esophagus, Pancreas, Salivary Gland, Eye.

Animal Number: 1R-3525 Sex: Male Group: (1) CONTROL 0 ppm  
Fate: (Week= 106) Terminal Sacrifice

Macroscopic Observations:

|       |                                                          |
|-------|----------------------------------------------------------|
| Bone  | -Joints of right forelimb and right hindlimb swollen.    |
| Liver | -Raised pale circular lesion, 2 cm dia., in medial lobe. |

Microscopic Observations:

|                   |                                                                                                                                                                                                                        |
|-------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Adrenal           | -Cortical vacuolation, local areas, moderate                                                                                                                                                                           |
| Bone              | -Arthritis, synovitis; joints, foreleg, hindleg, marked                                                                                                                                                                |
| Heart             | -Myocarditis, chronic nonsuppurative, local areas, mild                                                                                                                                                                |
| Kidney            | -Chronic progressive nephropathy, moderate                                                                                                                                                                             |
| Liver             | -Portal mononuclear cell infiltrate, mild<br>Portal bile duct proliferation, mild<br>Hepatocellular carcinoma<br>Large, poorly differentiated, anaplastic, infiltrative. Adenoid areas. Multiple tumor emboli in lung. |
| Lung              | -Vascular mineralization, mild<br>Metastatic neoplasm                                                                                                                                                                  |
| Parathyroid       | -Not examined, not in plane of section                                                                                                                                                                                 |
| Spleen            | -Hemosiderosis, mild                                                                                                                                                                                                   |
| Testis/Epididymis | -Tubule atrophy, aspermatogenesis, mild                                                                                                                                                                                |

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Stomach, Small Intestine, Large Intestine, Urinary Bladder,

Species: Rat  
Project Number: 02B1CR0012

Summarized STAR Page: 31

195

3MA00027329

1337.0204

Summarized Single Tabulated Animal Report (continued)  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M  
FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats

Table: 2

Animal Number: 1R-3525 Sex: Male Group: ( 1 ) CONTROL 0 ppm  
Fate: (Week= 106) Terminal Sacrifice

Microscopic Observations (continued):

The following tissues were found to be within normal limits (continued):  
Aorta, Prostate, Pituitary, Thyroid, Trachea, Esophagus, Lymph Node (mesenteric), Pancreas,  
Salivary Gland, Eye.

Animal Number: 1R-3526 Sex: Male Group: ( 1 ) CONTROL 0 ppm  
Fate: (Week= 106) Terminal Sacrifice

Macroscopic Observations:

-No visible lesions.

Microscopic Observations:

Kidney

-Chronic progressive nephropathy, mild

Liver

-Portal mononuclear cell infiltrate, mild

Portal bile duct proliferation, mild

Cystoid degeneration, focal, mild

Hepatocyte alteration, vacuolated, mild

Lung

-Vascular mineralization, mild

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Spleen, Heart, Stomach, Small Intestine, Large Intestine,  
Urinary Bladder, Aorta, Testis/Epididymis, Prostate, Pituitary, Adrenal, Thyroid, Parathyroid,  
Trachea, Esophagus, Lymph Node (mesenteric), Pancreas, Salivary Gland, Eye.

Animal Number: 1R-3528 Sex: Male Group: ( 1 ) CONTROL 0 ppm  
Fate: (Week= 106) Terminal Sacrifice

Macroscopic Observations:

Kidney

-Hydronephrosis

Microscopic Observations:

Adrenal

-Cortical vacuolation, focal, mild

Kidney

-Chronic progressive nephropathy, moderate

Hydronephrosis, unilateral, moderate

Liver

-Portal mononuclear cell infiltrate, mild

Portal bile duct proliferation, mild

Hepatocyte vacuolation, multifocal, mild

Lung

-Vascular mineralization, mild

Pneumonia, interstitial, chronic, multifocal,  
mild

Pituitary

-Hyperplasia, focal, pars distalis, mild

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Spleen, Heart, Stomach, Small Intestine, Large Intestine,  
Urinary Bladder, Aorta, Testis/Epididymis, Prostate, Thyroid, Parathyroid, Trachea, Esophagus,

Species: Rat  
Project Number: 0281CR0012

Summarized STAR Page: 32

196

Summarized Single Tabulated Animal Report (continued)  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M  
FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats

Table: 2

Animal Number: 1R-3528 Sex: Male Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 106) Terminal Sacrifice

Microscopic Observations (continued):

The following tissues were found to be within normal limits (continued):  
Lymph Node (mesenteric), Pancreas, Salivary Gland, Eye.

Animal Number: 1R-3529 Sex: Male Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 96) Sacrificed in extremis

Macroscopic Observations:

|       |                                                                         |
|-------|-------------------------------------------------------------------------|
| Skin  | -Areas of dermatitis with hair loss, some scabbed; back, side, abdomen. |
| Liver | -Raised pale mass, 1.2 cm dia. in left lateral lobe.                    |

Microscopic Observations:

|                 |                                                                                                                          |
|-----------------|--------------------------------------------------------------------------------------------------------------------------|
| Adrenal         | -Cortical vacuolation, multifocal, mild                                                                                  |
| Kidney          | -Chronic progressive nephropathy, mild                                                                                   |
| Liver           | -Portal mononuclear cell infiltrate, mild<br>Hepatocellular carcinoma<br>Trabecular pattern, fairly well differentiated. |
| Lung            | -Vascular mineralization, mild<br>Edema, subpleural, moderate                                                            |
| Parathyroid     | -Not examined, not in plane of section                                                                                   |
| Prostate        | -Not examined, missing                                                                                                   |
| Salivary Gland  | -Not examined, missing                                                                                                   |
| Skin            | -Ulcer, back, abdomen, marked                                                                                            |
| Urinary Bladder | -Epithelial hyperplasia, simple, diffuse, mild                                                                           |

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Spleen, Heart, Stomach, Small Intestine, Large Intestine, Aorta, Testis/Epididymis, Pituitary, Thyroid, Trachea, Esophagus, Lymph Node (mesenteric), Pancreas, Eye.

Animal Number: 1R-3530 Sex: Male Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 106) Terminal Sacrifice

Macroscopic Observations:

-No visible lesions.

Microscopic Observations:

|        |                                                                                                                                                                       |
|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Heart  | -Myocarditis, chronic nonsuppurative, focal, minimal                                                                                                                  |
| Kidney | -Chronic progressive nephropathy, mild                                                                                                                                |
| Liver  | -Portal mononuclear cell infiltrate, mild<br>Portal bile duct proliferation, mild<br>Cystoid degeneration, focal, moderate<br>Hepatocyte alteration, vacuolated, mild |

Species: Rat  
Project Number: 0281CR0012

Summarized STAR Page: 33

197

3MA00027331

1337.0206

Summarized Single Tabulated Animal Report (continued)  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M  
FC-143: Two Year Oral Toxicity-Uncogenicity Study in Rats

Table: 2

Animal Number: 1R-3530 Sex: Male Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 106) Terminal Sacrifice

Microscopic Observations (continued):

|        |                                          |
|--------|------------------------------------------|
| Lung   | -Vascular mineralization, mild           |
|        | Peribronchial lymphoid hyperplasia, mild |
| Spleen | -Hemosiderosis, mild                     |

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Stomach, Small Intestine, Large Intestine, Urinary Bladder,  
Aorta, Testis/Epididymis, Prostate, Pituitary, Adrenal, Thyroid, Parathyroid, Trachea,  
Esophagus, Lymph Node (mesenteric), Pancreas, Salivary Gland, Eye.

Animal Number: 1R-3531 Sex: Male Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 106) Terminal Sacrifice

Macroscopic Observations:

-No visible lesions.

Microscopic Observations:

|        |                                                            |
|--------|------------------------------------------------------------|
| Kidney | -Chronic progressive nephropathy, mild                     |
| Liver  | -Hepatocyte vacuolation, multifocal, mild                  |
|        | Portal mononuclear cell infiltrate, minimal                |
| Lung   | -Vascular mineralization, mild                             |
|        | Pneumonia, interstitial, chronic, local areas,<br>moderate |

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Spleen, Heart, Stomach, Small Intestine, Large Intestine,  
Urinary Bladder, Aorta, Testis/Epididymis, Prostate, Pituitary, Adrenal, Thyroid, Parathyroid,  
Trachea, Esophagus, Lymph Node (mesenteric), Pancreas, Salivary Gland, Eye.

Animal Number: 1R-3532 Sex: Male Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 106) Terminal Sacrifice

Macroscopic Observations:

|           |                                                |
|-----------|------------------------------------------------|
| Pituitary | -Raised red mass, 0.4 cm dia.                  |
| Kidney    | -Fluid filled cyst, 1 cm dia., in right kidney |

Microscopic Observations:

|        |                                                       |
|--------|-------------------------------------------------------|
| Eye    | -Retinal atrophy, focal, mild                         |
| Heart  | -Myocardial fibrosis, focal, mild                     |
| Kidney | -Chronic progressive nephropathy, moderate            |
|        | Cyst, cortical, marked                                |
| Liver  | -Portal mononuclear cell infiltrate, mild             |
|        | Portal bile duct proliferation, mild                  |
| Lung   | -Vascular mineralization, mild                        |
|        | Pneumonia, interstitial, chronic, multifocal,<br>mild |
|        | Hemorrhage, local areas, mild                         |
|        | Perivascular mononuclear infiltrate, mild             |

Species: Rat  
Project Number: 0281CR0012

Summarized STAR Page: 34

198

3MA00027332

1337.0207

Summarized Single Tabulated Animal Report (continued)  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M  
FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats

Table: 2

Animal Number: 1R-3532 Sex: Male Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 106) Terminal Sacrifice

Microscopic Observations (continued):

|                         |                      |
|-------------------------|----------------------|
| Lymph Node (mesenteric) | -Hemorrhage, mild    |
| Pituitary               | -Adenoma             |
| Spleen                  | -Hemosiderosis, mild |

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Stomach, Small Intestine, Large Intestine, Urinary Bladder, Aorta, Testis/Epididymis, Prostate, Adrenal, Thyroid, Parathyroid, Trachea, Esophagus, Pancreas, Salivary Gland.

Animal Number: 1R-3533 Sex: Male Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 106) Terminal Sacrifice

Macroscopic Observations:

|        |                                            |
|--------|--------------------------------------------|
| Spleen | -Pale circular depressed area, 0.4 cm dia. |
|--------|--------------------------------------------|

Microscopic Observations:

|          |                                                                                                                                   |
|----------|-----------------------------------------------------------------------------------------------------------------------------------|
| Eye      | -No diagnosis, inadequate section                                                                                                 |
| Heart    | -Myocarditis, chronic nonsuppurative, multifocal, mild                                                                            |
| Kidney   | -Chronic progressive nephropathy, mild                                                                                            |
| Liver    | -Portal mononuclear cell infiltrate, mild<br>Hepatocyte vacuolation, multifocal, mild                                             |
| Lung     | -Vascular mineralization, mild<br>Pneumonia, interstitial, chronic, multifocal, mild<br>Perivascular mononuclear infiltrate, mild |
| Prostate | -Prostatitis, acute, suppurative, mild                                                                                            |
| Spleen   | -Hemosiderosis, mild<br>Fibrosis, local areas, moderate                                                                           |

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Stomach, Small Intestine, Large Intestine, Urinary Bladder, Aorta, Testis/Epididymis, Pituitary, Adrenal, Thyroid, Parathyroid, Trachea, Esophagus, Lymph Node (mesenteric), Pancreas, Salivary Gland.

Animal Number: 1R-3534 Sex: Male Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 105) Sacrificed in extremis

Macroscopic Observations:

|          |                                                                                                                                                     |
|----------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| Thymus   | -Enlarged                                                                                                                                           |
| Pancreas | -Massive beige colored mass, 7.5 x 3 cm in area of pancreas completely surrounding spleen and adhering to posterior areas of right and left lateral |

Species: Rat  
Project Number: 0281CR0012

Summarized STAR Page: 35

199

Summarized Single Tabulated Animal Report (continued)  
 Individual Macroscopic and Microscopic Observations  
 Riker Laboratories, Inc. 3M  
 FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats

Table: 2

Animal Number: 1R-3534 Sex: Male Group: ( 1) CONTROL 0 ppm  
 Fate: (Week= 105) Sacrificed in extremis

Macroscopic Observations (continued):

|                      |                                                                             |
|----------------------|-----------------------------------------------------------------------------|
| Pancreas (continued) | -liver lobes.                                                               |
| Kidney               | -Pale and pitted.                                                           |
| Testis/Epididymis    | -Right testis small.                                                        |
| Liver                | -Pale with yellowish circular lesion 0.3 cm diameter in right anterior lobe |

Microscopic Observations:

|                         |                                                                                                   |
|-------------------------|---------------------------------------------------------------------------------------------------|
| Adrenal                 | -Cortical vacuolation, diffuse, moderate<br>Medullary cell hyperplasia, local areas, moderate     |
| Kidney                  | -Chronic progressive nephropathy, moderate<br>Malignant lymphoma, histiocytic                     |
| Liver                   | -Hepatocyte vacuolation, diffuse, marked                                                          |
| Lung                    | -Hemorrhage, diffuse, marked<br>Malignant lymphoma, histiocytic                                   |
| Lymph Node (mesenteric) | -Hemorrhage, mild<br>Malignant lymphoma, histiocytic                                              |
| Pancreas                | -Malignant lymphoma, histiocytic                                                                  |
| Parathyroid             | -Not examined, missing                                                                            |
| Pituitary               | -Adenoma                                                                                          |
| Small Intestine         | -Malignant lymphoma, histiocytic                                                                  |
| Spleen                  | -Malignant lymphoma, histiocytic                                                                  |
| Stomach                 | -Malignant lymphoma, histiocytic                                                                  |
| Testis/Epididymis       | -Tubule atrophy, aspermatogenesis, unilateral, marked                                             |
| Thymus                  | -Malignant lymphoma, histiocytic<br>Multiple sections of tumor from thymic and mediastinal areas. |
| Thyroid                 | -Not examined, missing                                                                            |
| Urinary Bladder         | -Malignant lymphoma, histiocytic                                                                  |

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Heart, Trachea, Esophagus, Salivary Gland, Eye, Large Intestine, Aorta, Prostate.

Species: Rat  
 Project Number: 0281CR0012

Summarized STAR Page: 36

200

Summarized Single Tabulated Animal Report (continued)  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M  
FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats

Table: 2

Animal Number: 1R-3536 Sex: Male Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 106) Terminal Sacrifice

Macroscopic Observations:

Skin -Raised lesion, 1.5 cm dia., appears to be abscess.

Microscopic Observations:

Adrenal -Cortical vacuolation, focal, mild  
Sinusoidal ectasia, cortex, focal, moderate  
Kidney -Chronic progressive nephropathy, minimal  
Large Intestine -Mucositis, colon  
Liver -Portal bile duct proliferation, multifocal, mild  
Portal mononuclear cell infiltrate, mild  
Hepatocyte vacuolation, multifocal, minimal  
Lung -Vascular mineralization, mild  
Perivascular mononuclear infiltrate, mild  
Skin -Keratoacanthoma  
Raised lesion from back.

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Spleen, Heart, Stomach, Small Intestine, Aorta, Testis/Epididymis, Prostate, Pituitary, Thyroid, Parathyroid, Trachea, Esophagus, Lymph Node (mesenteric), Pancreas, Salivary Gland, Eye, Urinary Bladder.

Animal Number: 1R-3537 Sex: Male Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 73) Found Dead

Macroscopic Observations:

Liver -Very pale  
Lymph Node (abdominal) -Renal lymph nodes enlarged.  
Abdomen (internal) -Multilobular, fleshy mass, 4 x 3.5 x 3.5  
attached to omentum, left inguinal area.  
Pituitary -Hemorrhagic mass, 0.7 cm dia.

Microscopic Observations:

Eye -Not examined, missing  
Heart -Malignant lymphoma, histiocytic  
Liver -Hepatocyte vacuolation, diffuse, marked  
Malignant lymphoma, histiocytic  
Lung -Malignant lymphoma, histiocytic  
Hemorrhage, local areas, moderate  
Lymph Node (mesenteric) -Not examined, missing  
Pancreas -Not examined, missing  
Parathyroid -Not examined, missing

Species: Rat  
Project Number: 0281CR0012

Summarized STAR Page: 37

201

3MA00027335

1337.0210

Summarized Single Tabulated Animal Report (continued)  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M  
FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats

Table: 2

Animal Number: 1R-3537 Sex: Male Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 73) Found Dead

Microscopic Observations (continued):

|           |                                                                                                                                  |
|-----------|----------------------------------------------------------------------------------------------------------------------------------|
| Pituitary | -Adenoma                                                                                                                         |
| Skin      | -Malignant lymphoma, histiocytic<br>Mass from inguinal area was malignant<br>lymphoma. There was extensive necrosis in<br>tumor. |
| Spleen    | -Hemosiderosis, mild                                                                                                             |
| Thyroid   | -Not examined, missing                                                                                                           |

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Kidney, Stomach, Small Intestine, Large Intestine,  
Urinary Bladder, Aorta, Testis/Epididymis, Prostate, Adrenal, Trachea, Esophagus, Salivary Gland.

Animal Number: 1R-3538 Sex: Male Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 106) Terminal Sacrifice

Macroscopic Observations:

|           |                                      |
|-----------|--------------------------------------|
| Pituitary | -Small hemorrhagic area, 0.2 cm dia. |
| Liver     | -Multiple pale foci, all lobes.      |
| Spleen    | -Enlarged                            |

Microscopic Observations:

|                         |                                                                                                                                              |
|-------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|
| Adrenal                 | -Cortical vacuolation, focal, mild                                                                                                           |
| Kidney                  | -Chronic progressive nephropathy, mild                                                                                                       |
| Liver                   | -Malignant lymphoma, histiocytic                                                                                                             |
| Lung                    | -Vascular mineralization, mild<br>Alveolar macrophages, mild<br>Malignant lymphoma, histiocytic<br>Perivascular mononuclear infiltrate, mild |
| Lymph Node (mesenteric) | -Hemorrhage, minimal                                                                                                                         |
| Parathyroid             | -Not examined, not in plane of section                                                                                                       |
| Prostate                | -Prostatitis, acute, suppurative, marked                                                                                                     |
| Spleen                  | -Malignant lymphoma, histiocytic                                                                                                             |
| Urinary Bladder         | -Epithelial hyperplasia, simple, diffuse, mild                                                                                               |

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Heart, Stomach, Small Intestine, Large Intestine, Aorta,  
Testis/Epididymis, Pituitary, Thyroid, Trachea, Esophagus, Pancreas, Salivary Gland, Eye.

Species: Rat  
Project Number: 0281CR0012

Summarized STAR Page: 38

202

Summarized Single Tabulated Animal Report (continued)  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M  
FC-143: Two Year Oral Toxicity-Uncarcinogenicity Study in Rats

Table: 2

Animal Number: 1R-3539 Sex: Male Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 106) Terminal Sacrifice

Macroscopic Observations:

-No visible lesions.

Microscopic Observations:

Kidney

-Chronic progressive nephropathy, mild

Large Intestine

-Nematodiasis, colon

Liver

-Portal mononuclear cell infiltrate, mild

Hepatocyte vacuolation, multifocal, mild

Lung

-Vascular mineralization, mild

Pneumonia, interstitial, chronic, multifocal, mild

Perivascular mononuclear infiltrate, mild

Parathyroid

-Not examined, not in plane of section

Pituitary

-Cyst, pars distalis

Spleen

-Hemosiderosis, mild

Thyroid

-Ultimobranchial cyst

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Heart, Stomach, Small Intestine, Urinary Bladder, Aorta,  
Testis/Epididymis, Prostate, Adrenal, Trachea, Esophagus, Lymph Node (mesenteric), Pancreas,  
Salivary Gland, Eye.

Animal Number: 1R-3540 Sex: Male Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 64) Found Dead

Macroscopic Observations:

-No visible lesions.

Microscopic Observations:

Bone Marrow

-Not examined, missing

Liver

-Portal mononuclear cell infiltrate, mild

Portal bile duct proliferation, mild

Lung

-Vascular mineralization, mild

Alveolar macrophages, mild

Prostate

-Not examined, missing

Spinal Cord

-Not examined, missing

Thyroid

-Ultimobranchial cyst

Urinary Bladder

-Not examined, missing

The following tissues were found to be within normal limits:

Brain, Spleen, Kidney, Heart, Stomach, Small Intestine, Large Intestine, Aorta,  
Testis/Epididymis, Pituitary, Adrenal, Parathyroid, Trachea, Esophagus, Lymph Node (mesenteric),  
Pancreas, Salivary Gland, Eye.

Species: Rat  
Project Number: 0281CR0012

Summarized STAR Page: 39

203

Summarized Single Tabulated Animal Report (continued)  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M  
FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats

Table: 2

Animal Number: 1R-3541 Sex: Male Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 106) Terminal Sacrifice

Macroscopic Observations:

Skin

-Raised lesion on left rear footpad.

Microscopic Observations:

Adrenal

-Cortical vacuolation, focal, mild  
Sinusoidal ectasia, cortex, minimal

Kidney

-Chronic progressive nephropathy, minimal

Liver

-Portal mononuclear cell infiltrate, mild  
Portal bile duct proliferation, mild

Lung

-Vascular mineralization, mild  
Pneumonia, interstitial, chronic, multifocal, mild

Prostate

Hemorrhage, diffuse, marked  
Perivascular mononuclear infiltrate, mild

Skin

-Not examined, missing

Testis/Epididymis

-Pododermatitis, ulcerative, hindleg, marked

Urinary Bladder

-Not examined, missing

-Not examined, missing

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Spleen, Heart, Stomach, Small Intestine, Large Intestine,  
Aorta, Pituitary, Thyroid, Parathyroid, Trachea, Esophagus, Lymph Node (mesenteric), Pancreas,  
Salivary Gland, Eye.

Animal Number: 1R-3542 Sex: Male Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 106) Terminal Sacrifice

Macroscopic Observations:

Testis/Epididymis

-Both testes small.

Microscopic Observations:

Kidney

-Chronic progressive nephropathy, moderate

Liver

-Hepatocyte vacuolation, multifocal, mild

Lung

-Vascular mineralization, minimal

Lymph Node (mesenteric)

-Hemorrhage, minimal

Pancreas

-Hyperplasia, islet cell, moderate

Testis/Epididymis

-Tubule atrophy, aspermatogenesis, bilateral, marked

Thyroid

Polyarteritis, mild

-Not examined, missing

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Spleen, Heart, Stomach, Small Intestine, Large Intestine,  
Urinary Bladder, Aorta, Prostate, Pituitary, Adrenal, Parathyroid, Trachea, Salivary Gland, Eye,  
Esophagus.

Species: Rat  
Project Number: 02B1CR0012

Summarized STAR Page: 40

204

3MA00027338

1337.0213

Summarized Single Tabulated Animal Report (continued)  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M  
FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats

Table: 2

Animal Number: 1R-3544 Sex: Male Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 106) Terminal Sacrifice

Macroscopic Observations:

Pituitary -Hemorrhagic lesion, 0.7 cm dia.  
Kidney -Both enlarged, pale and pitted.  
Testis/Epididymis -Left testis small.

Microscopic Observations:

Adrenal -Cortical vacuolation, multifocal, moderate  
Sinusoidal ectasia, cortex, moderate  
Kidney -Chronic progressive nephropathy, marked  
Liver -Hepatocyte vacuolation, multifocal, mild  
Lung -Vascular mineralization, mild  
Alveolar macrophages, mild  
Pancreas -Acinar atrophy, mild  
Polyarteritis, moderate  
Parathyroid -Not examined, not in plane of section  
Pituitary -Adenoma  
Spleen -Hemosiderosis, mild  
Testis/Epididymis -Tubule atrophy, aspermatogenesis, unilateral,  
marked  
Polyarteritis, marked

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Stomach, Small Intestine, Large Intestine, Urinary Bladder,  
Aorta, Prostate, Thyroid, Trachea, Esophagus, Lymph Node (mesenteric), Salivary Gland, Eye,  
Heart.

Animal Number: 1R-3545 Sex: Male Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 104) Found Dead

Macroscopic Observations:

Skin -Circular lesions, 2.5 cm dia. on both hind  
footpads.  
Liver -Slightly pale

Microscopic Observations:

Adrenal -Sinusoidal ectasia, cortex, moderate  
Cortical vacuolation, multifocal, moderate  
Eye -Not examined, missing  
Heart -Myocardial fibrosis, local areas, mild  
Kidney -Chronic progressive nephropathy, mild  
Lung -Vascular mineralization, mild  
Alveolar macrophages, mild  
Pancreas -Acinar atrophy, moderate  
Pituitary -Adenoma

Species: Rat  
Project Number: 0281CR0012

Summarized STAR Page: 41

205

Summarized Single Tabulated Animal Report (continued)  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M  
FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats

Table: 2

Animal Number: 1R-3545 Sex: Male Group: ( 1 ) CONTROL 0 ppm  
Fate: (Week= 104) Found Dead

Microscopic Observations (continued):

|        |                                                            |
|--------|------------------------------------------------------------|
| Skin   | -Pododermatitis, ulcerative, hindleg,<br>bilateral, marked |
| Spleen | -Hematopoiesis, extramedullary, increased,<br>mild         |

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Liver, Stomach, Small Intestine, Large Intestine,  
Urinary Bladder, Aorta, Testis/Epididymis, Prostate, Thyroid, Parathyroid, Trachea, Esophagus,  
Lymph Node (mesenteric), Salivary Gland.

Animal Number: 1R-3547 Sex: Male Group: ( 1 ) CONTROL 0 ppm  
Fate: (Week= 85) Sacrificed in extremis

Macroscopic Observations:

|           |                    |
|-----------|--------------------|
| Pituitary | -Mass, 0.4 cm dia. |
| Liver     | -Pale              |

Microscopic Observations:

|           |                                                                                                                        |
|-----------|------------------------------------------------------------------------------------------------------------------------|
| Adrenal   | -Sinusoidal ectasia, cortex, moderate                                                                                  |
| Brain     | -Oligodendroglioma, benign<br>Large neoplasm composed of large, fairly<br>uniform polyhedral cells in cerebral cortex. |
| Kidney    | -Chronic progressive nephropathy, minimal<br>Pyelonephritis, acute, mild                                               |
| Liver     | -Portal mononuclear cell infiltrate, mild<br>Hepatocyte vacuolation, periportal, moderate                              |
| Lung      | -Vascular mineralization, mild                                                                                         |
| Pituitary | -Adenoma                                                                                                               |
| Stomach   | -Edema, submucosal, moderate                                                                                           |

The following tissues were found to be within normal limits:

Spinal Cord, Bone Marrow, Spleen, Heart, Small Intestine, Large Intestine, Urinary Bladder,  
Aorta, Testis/Epididymis, Prostate, Thyroid, Parathyroid, Trachea, Esophagus,  
Lymph Node (mesenteric), Pancreas, Salivary Gland, Eye.

Animal Number: 1R-3548 Sex: Male Group: ( 1 ) CONTROL 0 ppm  
Fate: (Week= 106) Terminal Sacrifice

Macroscopic Observations:

-No visible lesions.

Microscopic Observations:

|         |                                         |
|---------|-----------------------------------------|
| Adrenal | -Cortical vacuolation, multifocal, mild |
|---------|-----------------------------------------|

Species: Rat  
Project Number: 0281CR0012

Summarized STAR Page: 42

206

3MA00027340

1337.0215

Summarized Single Tabulated Animal Report (continued)  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M  
FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats

Table: 2

Animal Number: 1R-3548 Sex: Male Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 106) Terminal Sacrifice

Microscopic Observations (continued):

|                         |                                                                                                                                               |
|-------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| Kidney                  | -Chronic progressive nephropathy, mild                                                                                                        |
| Liver                   | -Portal mononuclear cell infiltrate, mild<br>Hepatocyte vacuolation, periportal, mild<br>Hepatocyte vacuolation limited to one area of liver. |
| Lung                    | -Vascular mineralization, mild<br>Alveolar macrophages, minimal<br>Perivascular mononuclear infiltrate, mild                                  |
| Lymph Node (mesenteric) | -Hemorrhage, mild                                                                                                                             |
| Parathyroid             | -Not examined, not in plane of section                                                                                                        |
| Pituitary               | -Cyst, pars distalis                                                                                                                          |
| Thyroid                 | -C cell carcinoma                                                                                                                             |

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Spleen, Heart, Stomach, Small Intestine, Large Intestine, Urinary Bladder, Aorta, Testis/Epididymis, Prostate, Trachea, Esophagus, Pancreas, Salivary Gland, Eye.

Animal Number: 1R-3549 Sex: Male Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 86) Sacrificed in extremis

Macroscopic Observations:

|           |                                  |
|-----------|----------------------------------|
| Pituitary | -Hemorrhagic mass, 1.4 x 0.8 cm. |
| Liver     | -Slightly pale                   |

Microscopic Observations:

|             |                                                                 |
|-------------|-----------------------------------------------------------------|
| Heart       | -Myocarditis, chronic nonsuppurative, multifocal, mild          |
| Liver       | -Hepatocyte vacuolation, multifocal, mild                       |
| Lung        | -Vascular mineralization, mild<br>Alveolar macrophages, minimal |
| Parathyroid | -Not examined, missing                                          |
| Pituitary   | -Adenoma                                                        |
| Spleen      | -Hemosiderosis, mild                                            |
| Thyroid     | -Not examined, missing                                          |

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Kidney, Stomach, Small Intestine, Large Intestine, Urinary Bladder, Aorta, Testis/Epididymis, Prostate, Adrenal, Trachea, Esophagus, Lymph Node (mesenteric), Pancreas, Salivary Gland, Eye.

Species: Rat  
Project Number: 02B1CR0012

Summarized STAR Page: 43

207

Summarized Single Tabulated Animal Report (continued)  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M  
FD-143: Two Year Oral Toxicity-Oncogenicity Study in Rats

Table: 2

Animal Number: 1R-3552 Sex: Male Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 106) Terminal Sacrifice

Macroscopic Observations:

Spleen

-Circular raised lesion, 1.2 cm dia.

Microscopic Observations:

Adrenal

-Cortical vacuolation, multifocal, mild  
Medullary cell hyperplasia, local areas,  
moderate

Kidney

-Chronic progressive nephropathy, moderate

Liver

-Portal mononuclear cell infiltrate, mild  
Portal bile duct proliferation, mild

Lung

-Vascular mineralization, mild  
Pneumonia, interstitial, chronic, multifocal,  
mild

Pancreas

-Acinar atrophy, mild

Parathyroid

-Not examined, not in plane of section

Pituitary

-Adenoma

Prostate

-Prostatitis, acute, suppurative, mild

Spleen

-Hemangiosarcoma

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Heart, Stomach, Small Intestine, Large Intestine,  
Urinary Bladder, Aorta, Testis/Epididymis, Thyroid, Trachea, Esophagus, Lymph Node (mesenteric),  
Salivary Gland, Eye.

Animal Number: 1R-3553 Sex: Male Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 88) Found Dead

Macroscopic Observations:

Adrenal

-Left enlarged by a 1 cm dia. mass.

Microscopic Observations:

Adrenal

-Sinusoidal ectasia, cortex, mild  
Pheochromocytoma, benign, unilateral

Eye

-Not examined, missing

Heart

-Myocarditis, chronic nonsuppurative,  
multifocal, mild

Kidney

-Chronic progressive nephropathy, mild

Large Intestine

-Not examined, missing

Liver

-Portal mononuclear cell infiltrate, mild  
Portal bile duct proliferation, moderate  
Hepatocyte vacuolation, multifocal, mild  
Necrosis, multifocal, mild

Lung

-Vascular mineralization, mild

Lymph Node (mesenteric)

-Not examined, missing

Species: Rat  
Project Number: 0281CR0012

Summarized STAR Page: 44

208

Summarized Single Tabulated Animal Report (continued)  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M  
FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats

Table: 2

Animal Number: 1R-3553 Sex: Male Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 88) Found Dead

Microscopic Observations (continued):

|                 |                        |
|-----------------|------------------------|
| Pancreas        | -Not examined, missing |
| Pituitary       | -Cyst, pars distalis   |
| Salivary Gland  | -Not examined, missing |
| Small Intestine | -Not examined, missing |

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Spleen, Stomach, Urinary Bladder, Aorta, Testis/Epididymis, Prostate, Thyroid, Parathyroid, Trachea, Esophagus.

Animal Number: 1R-3554 Sex: Male Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 106) Terminal Sacrifice

Macroscopic Observations:

-No visible lesions.

Microscopic Observations:

|             |                                                                                                                                                                                         |
|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Kidney      | -Chronic progressive nephropathy, moderate                                                                                                                                              |
| Liver       | -Portal mononuclear cell infiltrate, mild<br>Portal bile duct proliferation, mild<br>Hepatocyte alteration, vacuolated, mild                                                            |
| Lung        | -Alveolar macrophages, multifocal, moderate<br>Perivascular mononuclear infiltrate, moderate<br>Vascular mineralization, mild<br>Pneumonia, interstitial, chronic, multifocal, moderate |
| Parathyroid | -Not examined, not in plane of section                                                                                                                                                  |
| Prostate    | -Prostatitis, acute, suppurative, moderate                                                                                                                                              |

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Spleen, Heart, Stomach, Small Intestine, Large Intestine, Urinary Bladder, Aorta, Testis/Epididymis, Pituitary, Adrenal, Thyroid, Trachea, Esophagus, Lymph Node (mesenteric), Pancreas, Salivary Gland, Eye.

Animal Number: 1R-3555 Sex: Male Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 102) Sacrificed in extremis

Macroscopic Observations:

|                 |                                                    |
|-----------------|----------------------------------------------------|
| Kidney          | -Pale, enlarged; mild hydronephrosis.              |
| Urinary Bladder | -Enlarged, fluid filled, wall appears hemorrhagic. |

Microscopic Observations:

|         |                                              |
|---------|----------------------------------------------|
| Adrenal | -Cortical vacuolation, local areas, moderate |
|---------|----------------------------------------------|

Species: Rat  
Project Number: 0281CR0012

Summarized STAR Page: 45

209

Summarized Single Tabulated Animal Report (continued)  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M  
FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats

Table: 2

Animal Number: 1R-3555 Sex: Male Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 102) Sacrificed in extremis

Microscopic Observations (continued):

|                 |                                                                                                                                                                             |
|-----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Aorta           | -Mineralization, mild                                                                                                                                                       |
| Heart           | -Myocarditis, chronic nonsuppurative,<br>multifocal, mild                                                                                                                   |
| Kidney          | -Nephrosis, tubular, moderate<br>Papillary necrosis, moderate<br>Hydronephrosis, mild<br>Tubules dilated with low, basophilic<br>epithelium, scattered mineralized tubules. |
| Liver           | -Portal bile duct proliferation, mild<br>Hepatocyte vacuolation, multifocal, mild                                                                                           |
| Lung            | -Vascular mineralization, mild<br>Alveolar macrophages, mild<br>Hemorrhage, focal, mild                                                                                     |
| Parathyroid     | -Not examined, not in plane of section                                                                                                                                      |
| Prostate        | -Prostatitis, acute, suppurative, mild<br>Edema, interstitial, moderate                                                                                                     |
| Small Intestine | -Within normal limits<br>Fewer than protocol number                                                                                                                         |
| Spleen          | -Hemosiderosis, mild                                                                                                                                                        |
| Stomach         | -Edema, submucosal, moderate                                                                                                                                                |
| Urinary Bladder | -Hemorrhage, marked<br>Epithelial hyperplasia, simple, diffuse, mild<br>Cystitis, acute, moderate                                                                           |

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Large Intestine, Testis/Epididymis, Pituitary, Thyroid,  
Trachea, Esophagus, Lymph Node (mesenteric), Pancreas, Salivary Gland, Eye.

Animal Number: 1R-3556 Sex: Male Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 106) Terminal Sacrifice

Macroscopic Observations:

Adrenal

-Right enlarged by mass, 2 x 1 cm.

Microscopic Observations:

Adrenal

-Carcinoma, cortical, unilateral  
Large neoplasm, mostly necrotic. Cells  
foamy, polyhedral arranged in cords and  
sheets. High mitotic activity. Multiple  
lung metastases.

Kidney

-Chronic progressive nephropathy, mild

Liver

-Portal mononuclear cell infiltrate, mild  
Portal bile duct proliferation, mild

Species: Rat

Project Number: 02B1CR0012

Summarized STAR Page: 46

210

3MA00027344

1337.0219

Summarized Single Tabulated Animal Report (continued)  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M  
FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats

Table: 2

Animal Number: 1R-3556 Sex: Male Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 106) Terminal Sacrifice

Microscopic Observations (continued):

|             |                                                                                                                                                          |
|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| Lung        | -Pneumonia, interstitial, chronic, multifocal, mild<br>Metastatic neoplasm<br>Perivascular mononuclear infiltrate, mild<br>Vascular mineralization, mild |
| Parathyroid | -Not examined, not in plane of section                                                                                                                   |

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Spleen, Heart, Stomach, Small Intestine, Large Intestine, Urinary Bladder, Aorta, Testis/Epididymis, Prostate, Pituitary, Thyroid, Trachea, Esophagus, Lymph Node (mesenteric), Pancreas, Salivary Gland, Eye.

Animal Number: 1R-3557 Sex: Male Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 106) Terminal Sacrifice

Macroscopic Observations:

-No visible lesions.

Microscopic Observations:

|         |                                                                                      |
|---------|--------------------------------------------------------------------------------------|
| Kidney  | -Chronic progressive nephropathy, mild                                               |
| Liver   | -Portal mononuclear cell infiltrate, mild<br>Hepatocyte alteration, vacuolated, mild |
| Lung    | -Vascular mineralization, mild<br>Pneumonia, interstitial, chronic, multifocal, mild |
| Thyroid | -Hyperplasia, C cell, mild                                                           |

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Spleen, Heart, Stomach, Small Intestine, Large Intestine, Urinary Bladder, Aorta, Testis/Epididymis, Prostate, Pituitary, Adrenal, Parathyroid, Trachea, Esophagus, Lymph Node (mesenteric), Pancreas, Salivary Gland, Eye.

Animal Number: 1R-3558 Sex: Male Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 106) Terminal Sacrifice

Macroscopic Observations:

|           |                           |
|-----------|---------------------------|
| Pituitary | -Raised mass, 0.9 cm dia. |
|-----------|---------------------------|

Microscopic Observations:

|         |                                                                     |
|---------|---------------------------------------------------------------------|
| Adrenal | -Sinusoidal ectasia, cortex, mild                                   |
| Kidney  | -Chronic progressive nephropathy, mild<br>Calculus, pelvic, minimal |
| Liver   | -Cystoid degeneration, focal, minimal                               |

Species: Rat  
Project Number: 02B1CR0012

Summarized STAR Page: 47

211

3MA00027345

1337.0220

Summarized Single Tabulated Animal Report (continued)  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M  
FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats

Table: 2

Animal Number: 1R-3558 Sex: Male Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 106) Terminal Sacrifice

Microscopic Observations (continued):

|             |                                        |
|-------------|----------------------------------------|
| Parathyroid | -Not examined, not in plane of section |
| Pituitary   | -Adenoma                               |
| Spleen      | -Hemosiderosis, mild                   |

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Heart, Lung, Stomach, Small Intestine, Large Intestine,  
Urinary Bladder, Aorta, Testis/Epididymis, Prostate, Thyroid, Trachea, Esophagus,  
Lymph Node (mesenteric), Pancreas, Salivary Gland, Eye.

Animal Number: 1R-3560 Sex: Male Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 35) Sacrificed in extremis

Macroscopic Observations:

|                        |                                                                                                                                                       |
|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| Brain                  | -Focal circumscribed dark area, dorsal surface, left cerebral hemisphere (0.2 cm dia.) and lateral surface of right cerebral hemisphere (0.2 cm dia.) |
| Lung                   | -Dark red diffuse mottling, all lobes; red frothy exudate at trachea.                                                                                 |
| Spleen                 | -Enlarged                                                                                                                                             |
| Lymph Node (abdominal) | -Hepatic and renal nodes enlarged.                                                                                                                    |
| Liver                  | -Pale, appears enlarged.                                                                                                                              |

Microscopic Observations:

|                         |                                                                                                  |
|-------------------------|--------------------------------------------------------------------------------------------------|
| Brain                   | -Abscess, mild<br>Hemorrhage, multifocal, moderate                                               |
| Liver                   | -Malignant lymphoma, histiocytic                                                                 |
| Lung                    | -Malignant lymphoma, histiocytic<br>Hemorrhage, diffuse, marked<br>Necrosis, local areas, marked |
| Lymph Node (mesenteric) | -Hemorrhage, minimal                                                                             |
| Small Intestine         | -Within normal limits<br>Fewer than protocol number                                              |
| Spleen                  | -Hematopoiesis, extramedullary, increased, marked                                                |

The following tissues were found to be within normal limits:

Spinal Cord, Bone Marrow, Kidney, Heart, Stomach, Large Intestine, Urinary Bladder, Aorta,  
Testis/Epididymis, Prostate, Pituitary, Adrenal, Thyroid, Parathyroid, Trachea, Esophagus,  
Pancreas, Salivary Gland, Eye.

Species: Rat  
Project Number: 0281CR0012

Summarized STAR Page: 48

212

3MA00027346

1337.0221

Summarized Single Tabulated Animal Report (continued)  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M  
FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats

Table: 2

Animal Number: 1R-3561 Sex: Male Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 106) Terminal Sacrifice

Macroscopic Observations:

Soft Tissues (leg)

-Right and left hindpaw and right forepaw  
swollen.

Kidney

-Right kidney polycystic.

Microscopic Observations:

Adrenal

-Cortical vacuolation, multifocal, mild  
Medullary cell hyperplasia, multifocal, mild

Bone

-Arthritis, synovitis; joints, hindleg,  
foreleg, marked

Bone Marrow

-Not examined, missing

Kidney

-Chronic progressive nephropathy, mild  
Pelvic mineralization, mild  
Cyst, cortical, unilateral, marked

Large Intestine

-Nematodiasis, colon

Liver

-Portal mononuclear cell infiltrate, mild  
Portal bile duct proliferation, mild

Lung

-Perivascular mononuclear infiltrate, mild  
Vascular mineralization, mild  
Pneumonia, interstitial, chronic, multifocal,  
mild

Hemorrhage, local areas, moderate

Parathyroid

-Not examined, missing

Pituitary

-Adenoma

Spinal Cord

-Not examined, missing

Spleen

-Hemosiderosis, mild

Testis/Epididymis

-Tubule atrophy, aspermatogenesis, moderate  
Polyarteritis, marked

Thyroid

-Not examined, missing

The following tissues were found to be within normal limits:

Brain, Heart, Stomach, Small Intestine, Urinary Bladder, Aorta, Prostate, Trachea, Esophagus,  
Lymph Node (mesenteric), Pancreas, Salivary Gland, Eye.

Animal Number: 1R-3562 Sex: Male Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 106) Terminal Sacrifice

Macroscopic Observations:

Skin

-Raised ulcerated inflamed lesion, right rear  
footpad.

Spleen

-Several pale foci.

Microscopic Observations:

Adrenal

-Nodular hyperplasia, cortex, unilateral,  
moderate

Species: Rat  
Project Number: 0281CR0012

Summarized STAR Page: 49

213

3MA00027347

1337.0222

Summarized Single Tabulated Animal Report (continued)  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M  
FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats

Table: 2

Animal Number: 1R-3562 Sex: Male Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 106) Terminal Sacrifice

Microscopic Observations (continued):

|                 |                                                                                                                       |
|-----------------|-----------------------------------------------------------------------------------------------------------------------|
| Heart           | -Myocarditis, chronic nonsuppurative, multifocal, mild                                                                |
| Kidney          | -Chronic progressive nephropathy, mild                                                                                |
| Large Intestine | -Nematodiasis, colon                                                                                                  |
| Liver           | -Portal mononuclear cell infiltrate, mild                                                                             |
| Lung            | -Vascular mineralization, mild<br>Pneumonia, interstitial, chronic, mild<br>Perivascular mononuclear infiltrate, mild |
| Parathyroid     | -Not examined, not in plane of section                                                                                |
| Pituitary       | -Adenoma                                                                                                              |
| Salivary Gland  | -Not examined, missing                                                                                                |
| Skin            | -Pododermatitis, ulcerative, hindleg, marked                                                                          |

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Spleen, Stomach, Small Intestine, Urinary Bladder, Aorta, Testis/Epididymis, Prostate, Thyroid, Trachea, Esophagus, Lymph Node (mesenteric), Pancreas, Eye.

Animal Number: 1R-3563 Sex: Male Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 106) Terminal Sacrifice

Macroscopic Observations:

|         |                                   |
|---------|-----------------------------------|
| Thyroid | -One side enlarged, 1 x 0.8 cm.   |
| Skin    | -Mass, 1.7 x 1.4 cm, dorsal area. |

Microscopic Observations:

|           |                                                                                                                                                                            |
|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Adrenal   | -Cortical vacuolation, multifocal, mild<br>Sinusoidal ectasia, cortex, minimal                                                                                             |
| Brain     | -Astrocytoma, benign<br>Poorly defined lesion in basal area of cerebrum. Tumor cells spindle.                                                                              |
| Heart     | -Myocarditis, chronic nonsuppurative, multifocal, mild                                                                                                                     |
| Kidney    | -Chronic progressive nephropathy, moderate                                                                                                                                 |
| Liver     | -Hepatocyte alteration, basophilic, moderate<br>Portal mononuclear cell infiltrate, mild<br>Hepatocyte alteration, vacuolated, moderate<br>Necrosis, local areas, moderate |
| Lung      | -Vascular mineralization, mild<br>Perivascular mononuclear infiltrate, mild                                                                                                |
| Pancreas  | -Acinar atrophy, marked                                                                                                                                                    |
| Pituitary | -Adenoma                                                                                                                                                                   |
| Prostate  | -Prostatitis, acute, suppurative, moderate                                                                                                                                 |

Species: Rat  
Project Number: 0281CR0012

Summarized STAR Page: 50

214

Summarized Single Tabulated Animal Report (continued)  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M  
FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats

Table: 2

Animal Number: 1R-3563 Sex: Male Group: ( 1 ) CONTROL 0 ppm  
Fate: (Week= 106) Terminal Sacrifice

Microscopic Observations (continued):

|         |                        |
|---------|------------------------|
| Skin    | -Keratoacanthoma, back |
| Thyroid | -C cell carcinoma      |

The following tissues were found to be within normal limits:

Spinal Cord, Bone Marrow, Spleen, Stomach, Small Intestine, Large Intestine, Urinary Bladder,  
Aorta, Testis/Epididymis, Parathyroid, Trachea, Esophagus, Lymph Node (mesenteric),  
Salivary Gland, Eye.

Animal Number: 1R-3564 Sex: Male Group: ( 1 ) CONTROL 0 ppm  
Fate: (Week= 106) Terminal Sacrifice

Macroscopic Observations:

|        |                                     |
|--------|-------------------------------------|
| Kidney | -Pale area in cortex of one kidney. |
|--------|-------------------------------------|

Microscopic Observations:

|                   |                                                                                                                                                                  |
|-------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Adrenal           | -Cortical vacuolation, multifocal, mild<br>Medullary cell hyperplasia, multifocal,<br>moderate                                                                   |
| Bone Marrow       | -Not examined, missing                                                                                                                                           |
| Heart             | -Myocarditis, chronic nonsuppurative,<br>multifocal, mild<br>Myocardial fibrosis, multifocal, mild                                                               |
| Kidney            | -Chronic progressive nephropathy, moderate<br>Cyst, unilateral, moderate<br>Area of multilocular cysts in cortex with<br>lipid change in surrounding parenchyma. |
| Liver             | -Portal bile duct proliferation, mild<br>Hepatocyte vacuolation, multifocal, mild<br>Portal mononuclear cell infiltrate, mild                                    |
| Lung              | -Vascular mineralization, mild                                                                                                                                   |
| Pancreas          | -Not examined, missing                                                                                                                                           |
| Parathyroid       | -Not examined, not in plane of section                                                                                                                           |
| Pituitary         | -Adenoma                                                                                                                                                         |
| Salivary Gland    | -Not examined, missing                                                                                                                                           |
| Spinal Cord       | -Not examined, missing                                                                                                                                           |
| Testis/Epididymis | -Mineralization, focal, mild                                                                                                                                     |

The following tissues were found to be within normal limits:

Brain, Spleen, Stomach, Small Intestine, Large Intestine, Urinary Bladder, Aorta, Prostate,  
Thyroid, Trachea, Esophagus, Lymph Node (mesenteric), Eye.

Species: Rat  
Project Number: 0281CR0012

Summarized STAR Page: 51

215

3MA00027349

1337.0224

Summarized Single Tabulated Animal Report (continued)  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M  
FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats

Table: 2

Animal Number: 1R-3565 Sex: Male Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 84) Found Dead

Macroscopic Observations:

Skin -Large mass, 7 x 7 cm, scrotal area.  
Liver -Pale

Microscopic Observations:

Adrenal -Not examined, missing  
Aorta -Not examined, missing  
Esophagus -Not examined, missing  
Eye -No diagnosis, inadequate section  
Kidney -Chronic progressive nephropathy, mild  
Large Intestine -No diagnosis, inadequate section  
Liver -Hepatocyte vacuolation, multifocal, mild  
Necrosis, multifocal, moderate  
Lung -Vascular mineralization, mild  
Lymph Node (mesenteric) -Not examined, missing  
Pancreas -Not examined, missing  
Parathyroid -Not examined, missing  
Pituitary -Not examined, missing  
Prostate -Not examined, missing  
Salivary Gland -Not examined, missing  
Skin -Liposarcoma  
The scrotal mass was composed of large,  
vacuolated mononuclear cells. The degree of  
autolysis made diagnosis somewhat uncertain.  
Small Intestine -Not examined, missing  
Spleen -Hematopoiesis, extramedullary, increased,  
mild  
Thyroid -Not examined, missing  
Trachea -Not examined, missing  
Urinary Bladder -Not examined, missing

The following tissues were found to be within normal limits:  
Brain, Spinal Cord, Bone Marrow, Heart, Stomach, Testis/Epididymis.

Animal Number: 1R-3566 Sex: Male Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 106) Terminal Sacrifice

Macroscopic Observations:

Pituitary -Small dark lesion.

Microscopic Observations:

Adrenal -Within normal limits  
One of pair present  
Kidney -Chronic progressive nephropathy, mild

Species: Rat  
Project Number: 0281CR0012

Summarized Single Tabulated Animal Report (continued)  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M  
FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats

Table: 2

Animal Number: 1R-3566 Sex: Male Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 106) Terminal Sacrifice

Microscopic Observations (continued):

|             |                                                                                   |
|-------------|-----------------------------------------------------------------------------------|
| Liver       | -Portal mononuclear cell infiltrate, mild<br>Portal bile duct proliferation, mild |
| Lung        | -Vascular mineralization, mild<br>Perivascular mononuclear infiltrate, mild       |
| Pancreas    | -Polyarteritis, moderate                                                          |
| Parathyroid | -Not examined, not in plane of section                                            |
| Spleen      | -Hemosiderosis, mild                                                              |

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Large Intestine, Urinary Bladder, Aorta, Testis/Epididymis,  
Prostate, Pituitary, Thyroid, Trachea, Lymph Node (mesenteric), Salivary Gland, Stomach,  
Small Intestine, Heart, Eye, Esophagus.

Animal Number: 1R-3567 Sex: Male Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 106) Terminal Sacrifice

Macroscopic Observations:

|        |                                                                                     |
|--------|-------------------------------------------------------------------------------------|
| Skin   | -Raised papilloma type mass on back; raised<br>inflamed lesion, right rear footpad. |
| Spleen | -Two pale foci.                                                                     |

Microscopic Observations:

|         |                                                                                                                 |
|---------|-----------------------------------------------------------------------------------------------------------------|
| Adrenal | -Cortical vacuolation, multifocal, mild<br>Nodular hyperplasia, cortex, focal, mild                             |
| Kidney  | -Chronic progressive nephropathy, moderate                                                                      |
| Liver   | -Portal mononuclear cell infiltrate, mild                                                                       |
| Lung    | -Vascular mineralization, mild<br>Alveolar macrophages, minimal<br>Perivascular mononuclear infiltrate, minimal |
| Skin    | -Papilloma, back<br>Pododermatitis, ulcerative, hindleg, marked                                                 |
| Spleen  | -Necrosis, local areas, moderate                                                                                |

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Heart, Stomach, Small Intestine, Large Intestine,  
Urinary Bladder, Aorta, Testis/Epididymis, Prostate, Pituitary, Thyroid, Parathyroid, Trachea,  
Esophagus, Lymph Node (mesenteric), Pancreas, Salivary Gland, Eye.

Species: Rat  
Project Number: 02B1CR0012

Summarized STAR Page: 53

217

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Summarized Single Tabulated Animal Report (continued)  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M  
FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats

Table: 2

Animal Number: 1R-3569 Sex: Male Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 106) Terminal Sacrifice

Macroscopic Observations:

Kidney -Bilaterally enlarged; pale, pitted.

Microscopic Observations:

Adrenal -Cortical vacuolation, focal, minimal  
Sinusoidal ectasia, cortex, mild  
Medullary cell hyperplasia, multifocal, mild  
Heart -Myocarditis, chronic nonsuppurative,  
multifocal, mild  
Kidney -Chronic progressive nephropathy, marked  
Liver -Portal mononuclear cell infiltrate, mild  
Hepatocyte vacuolation, multifocal, mild  
Lung -Vascular mineralization, mild  
Perivascular mononuclear infiltrate, mild  
Pituitary -Hyperplasia, focal, pars distalis, mild  
Testis/Epididymis -Polyarteritis, moderate

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Spleen, Stomach, Small Intestine, Large Intestine,  
Urinary Bladder, Aorta, Prostate, Thyroid, Parathyroid, Trachea, Esophagus,  
Lymph Node (mesenteric), Pancreas, Salivary Gland, Eye.

Animal Number: 1R-3571 Sex: Male Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 106) Terminal Sacrifice

Macroscopic Observations:

Liver -Pale  
Kidney -Pale, pitted, enlarged.  
Mesentery -Mesenteric vessels thickened

Microscopic Observations:

Adrenal -Cortical vacuolation, focal, minimal  
Heart -Myocarditis, chronic nonsuppurative,  
multifocal, minimal  
Kidney -Chronic progressive nephropathy, marked  
Liver -Portal mononuclear cell infiltrate, mild  
Portal bile duct proliferation, mild  
Hepatocyte vacuolation, multifocal, mild  
Lung -Vascular mineralization, mild  
Perivascular mononuclear infiltrate, minimal  
Mesentery -Polyarteritis, marked  
Pancreas -Polyarteritis, marked  
Parathyroid -Not examined, not in plane of section  
Pituitary -Not examined, missing

Species: Rat  
Project Number: 0281CR0012

Summarized STAR Page: 54

218

Summarized Single Tabulated Animal Report (continued)  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M  
FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats

Table: 2

Animal Number: 1R-3571 Sex: Male Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 106) Terminal Sacrifice

Microscopic Observations (continued):

|                   |                                   |
|-------------------|-----------------------------------|
| Small Intestine   | -Polyarteritis, mesentery, marked |
| Spleen            | -Hemosiderosis, mild              |
| Testis/Epididymis | -Polyarteritis, marked            |

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Stomach, Large Intestine, Urinary Bladder, Aorta, Prostate, Thyroid, Trachea, Esophagus, Lymph Node (mesenteric), Salivary Gland, Eye.

Animal Number: 1R-3572 Sex: Male Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 106) Terminal Sacrifice

Macroscopic Observations:

-No visible lesions.

Microscopic Observations:

|             |                                                                                                                               |
|-------------|-------------------------------------------------------------------------------------------------------------------------------|
| Kidney      | -Chronic progressive nephropathy, minimal                                                                                     |
| Liver       | -Portal mononuclear cell infiltrate, mild<br>Portal bile duct proliferation, mild<br>Hepatocyte vacuolation, multifocal, mild |
| Lung        | -Vascular mineralization, mild                                                                                                |
| Pancreas    | -Hyperplasia, islet cell, moderate                                                                                            |
| Parathyroid | -Not examined, not in plane of section                                                                                        |
| Stomach     | -Not examined, missing                                                                                                        |

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Spleen, Heart, Small Intestine, Large Intestine, Urinary Bladder, Aorta, Testis/Epididymis, Prostate, Pituitary, Adrenal, Thyroid, Trachea, Esophagus, Lymph Node (mesenteric), Salivary Gland, Eye.

Animal Number: 1R-3573 Sex: Male Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 106) Terminal Sacrifice

Macroscopic Observations:

|          |                                        |
|----------|----------------------------------------|
| Pancreas | -Small circular pale mass, 0.5 cm dia. |
|----------|----------------------------------------|

Microscopic Observations:

|                 |                                                                                                                                                                                                                     |
|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Adrenal         | -Cortical vacuolation, multifocal, mild<br>Pheochromocytoma, benign, unilateral                                                                                                                                     |
| Kidney          | -Chronic progressive nephropathy, mild                                                                                                                                                                              |
| Large Intestine | -Nematodiasis, colon                                                                                                                                                                                                |
| Liver           | -Hepatocyte alteration, vacuolated, mild<br>Hepatocyte alteration, basophilic, mild<br>Portal bile duct proliferation, mild<br>Hepatocyte vacuolation, multifocal, mild<br>Portal mononuclear cell infiltrate, mild |

Species: Rat  
Project Number: 0281CR0012

Summarized STAR Page: 55

219

Summarized Single Tabulated Animal Report (continued)  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M  
FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats

Table: 2

Animal Number: 1R-3573 Sex: Male Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 106) Terminal Sacrifice

Microscopic Observations (continued):

|             |                                                                             |
|-------------|-----------------------------------------------------------------------------|
| Lung        | -Vascular mineralization, mild<br>Perivascular mononuclear infiltrate, mild |
| Pancreas    | -Acinar atrophy, moderate<br>Islet cell adenoma                             |
| Parathyroid | -Not examined, not in plane of section                                      |

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Spleen, Heart, Stomach, Small Intestine, Urinary Bladder,  
Aorta, Testis/Epididymis, Prostate, Pituitary, Thyroid, Trachea, Esophagus,  
Lymph Node (mesenteric), Salivary Gland, Eye.

Animal Number: 1R-3574 Sex: Male Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 99) Sacrificed in extremis

Macroscopic Observations:

|                   |                                                                                                                       |
|-------------------|-----------------------------------------------------------------------------------------------------------------------|
| Skin              | -Ulcerated right and left hind footpads;<br>circular white subcutaneous mass,<br>1.5 cm dia., in right inguinal area. |
| Thorax (internal) | -Filled with fluid.                                                                                                   |
| Heart             | -Slightly pale and flaccid.                                                                                           |
| Liver             | -Slightly pale                                                                                                        |
| Kidney            | -Pale and pitted; 1.5 cm cyst in right kidney.                                                                        |
| Testis/Epididymis | -Testes small                                                                                                         |

Microscopic Observations:

|                         |                                                                                                                                    |
|-------------------------|------------------------------------------------------------------------------------------------------------------------------------|
| Adrenal                 | -Cortical vacuolation, multifocal, mild                                                                                            |
| Aorta                   | -Necrosis, local areas, moderate<br>Uniform intimal necrosis with reactive<br>cellular infiltrate.                                 |
| Heart                   | -Myocarditis, chronic nonsuppurative,<br>multifocal, mild                                                                          |
| Kidney                  | -Chronic progressive nephropathy, marked<br>Cyst, unilateral, marked                                                               |
| Liver                   | -Portal mononuclear cell infiltrate, mild<br>Portal bile duct proliferation, mild                                                  |
| Lung                    | -Pneumonia, interstitial, chronic, diffuse,<br>moderate<br>Perivascular mononuclear infiltrate, mild<br>Edema, local areas, marked |
| Lymph Node (mesenteric) | -Not examined, missing                                                                                                             |
| Pancreas                | -Acinar atrophy, mild                                                                                                              |
| Parathyroid             | -Not examined, not in plane of section                                                                                             |

Species: Rat  
Project Number: 02B1CR0012

Summarized STAR Page: 56

220

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Summarized Single Tabulated Animal Report (continued)  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M  
FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats

Table: 2

Animal Number: 1R-3574 Sex: Male Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 99) Sacrificed in extremis

Microscopic Observations (continued):

|                   |                                                        |
|-------------------|--------------------------------------------------------|
| Pituitary         | -Cyst, pars intermedia                                 |
| Prostate          | -Prostatitis, acute, suppurative, moderate             |
| Salivary Gland    | -Not examined, missing                                 |
| Skin              | -Fibroma, subcutaneous, inguinal                       |
|                   | Pododermatitis, ulcerative, hindleg, marked            |
| Testis/Epididymis | -Tubule atrophy, aspermatogenesis, bilateral, moderate |

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Spleen, Stomach, Small Intestine, Large Intestine, Urinary Bladder, Thyroid, Trachea, Esophagus, Eye.

Animal Number: 1R-3576 Sex: Male Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 55) Sacrificed in extremis

Macroscopic Observations:

|                    |                                                                     |
|--------------------|---------------------------------------------------------------------|
| Skin               | -Moist area around genital papilla.                                 |
| Abdomen (internal) | -Large amount of gas in gastrointestinal tract; no food in stomach. |

Microscopic Observations:

|                 |                                        |
|-----------------|----------------------------------------|
| Kidney          | -Pelvic mineralization, mild           |
| Lung            | -Hemorrhage, diffuse, marked           |
| Parathyroid     | -Not examined, not in plane of section |
| Spleen          | -Hemosiderosis, mild                   |
| Urinary Bladder | -Not examined, missing                 |

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Liver, Heart, Stomach, Small Intestine, Large Intestine, Aorta, Testis/Epididymis, Prostate, Pituitary, Adrenal, Thyroid, Trachea, Esophagus, Lymph Node (mesenteric), Pancreas, Salivary Gland, Eye.

Animal Number: 1R-3577 Sex: Male Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 106) Terminal Sacrifice

Macroscopic Observations:

-No visible lesions.

Microscopic Observations:

|        |                                            |
|--------|--------------------------------------------|
| Kidney | -Chronic progressive nephropathy, moderate |
| Liver  | -Portal mononuclear cell infiltrate, mild  |
|        | Portal bile duct proliferation, mild       |
|        | Hepatocyte vacuolation, multifocal, mild   |
|        | Cystoid degeneration, multifocal, mild     |
|        | Hepatocyte alteration, vacuolated, mild    |

Species: Rat  
Project Number: 0281CR0012

Summarized STAR Page: 57

221

Summarized Single Tabulated Animal Report (continued)  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M  
FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats

Table: 2

Animal Number: 1R-3577 Sex: Male Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 106) Terminal Sacrifice

Microscopic Observations (continued):

|                 |                                     |
|-----------------|-------------------------------------|
| Lung            | -Vascular mineralization, mild      |
| Mesentery       | -Polyarteritis, marked              |
| Pancreas        | -Polyarteritis, marked              |
| Small Intestine | -Polyarteritis, mesentery, moderate |
| Spleen          | -Hemosiderosis, mild                |
| Thyroid         | -Cyst, colloid, mild                |

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Heart, Stomach, Large Intestine, Urinary Bladder, Aorta,  
Testis/Epididymis, Prostate, Pituitary, Adrenal, Parathyroid, Trachea, Esophagus,  
Lymph Node (mesenteric), Salivary Gland, Eye.

Animal Number: 1R-3578 Sex: Male Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 106) Terminal Sacrifice

Macroscopic Observations:

|           |                                                                       |
|-----------|-----------------------------------------------------------------------|
| Pituitary | -Hemorrhagic mass, 0.7 cm dia.                                        |
| Skin      | -Raised ulcerated inflamed lesion, 1.5 cm<br>dia., left hind footpad. |

Microscopic Observations:

|                |                                                                                                                                          |
|----------------|------------------------------------------------------------------------------------------------------------------------------------------|
| Kidney         | -Chronic progressive nephropathy, mild<br>Hydronephrosis, unilateral, moderate<br>Calculi present in ureter of hydronephrotic<br>kidney. |
| Liver          | -Portal mononuclear cell infiltrate, mild<br>Portal bile duct proliferation, mild                                                        |
| Lung           | -Vascular mineralization, mild<br>Hemorrhage, local areas, moderate                                                                      |
| Pituitary      | -Adenoma                                                                                                                                 |
| Prostate       | -Prostatitis, acute, suppurative, moderate                                                                                               |
| Salivary Gland | -Sialadenitis, chronic, minimal<br>Very minimal lesion, only one duct affected.                                                          |
| Skin           | -Pododermatitis, ulcerative, hindleg, marked                                                                                             |

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Spleen, Heart, Stomach, Small Intestine, Large Intestine,  
Urinary Bladder, Aorta, Testis/Epididymis, Adrenal, Thyroid, Parathyroid, Trachea, Esophagus,  
Lymph Node (mesenteric), Pancreas, Eye.

Species: Rat  
Project Number: 02B1CR0012

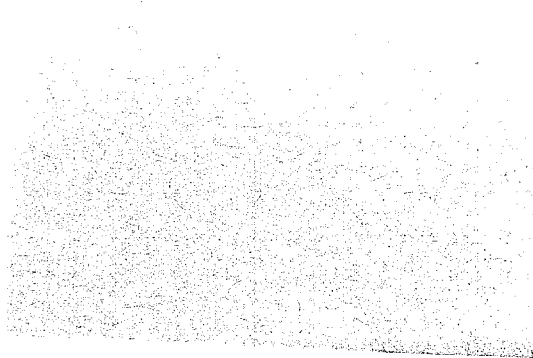
Summarized STAR Page: 58

222

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Summarized Single Tabulated Animal Report (continued)  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M  
FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats

Table: 2

Animal Number: 1R-3579 Sex: Male Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 86) Sacrificed in extremis

Macroscopic Observations:

|           |                                                                  |
|-----------|------------------------------------------------------------------|
| Pituitary | -Raised mass, 0.8 cm dia.                                        |
| Liver     | -Raised pale 2 cm dia. mass in right lateral lobe.               |
| Skin      | -Mass seen clinically on right side appears to be healed lesion. |

Microscopic Observations:

|                   |                                                                                                               |
|-------------------|---------------------------------------------------------------------------------------------------------------|
| Kidney            | -Chronic progressive nephropathy, marked                                                                      |
| Liver             | -Portal bile duct proliferation, mild<br>Hepatocellular carcinoma<br>Portal mononuclear cell infiltrate, mild |
| Lung              | -Perivascular mononuclear infiltrate, mild                                                                    |
| Parathyroid       | -Not examined, not in plane of section                                                                        |
| Pituitary         | -Adenoma                                                                                                      |
| Skin              | -Keratoacanthoma<br>Skin lesion from right side.                                                              |
| Small Intestine   | -Within normal limits<br>Fewer than protocol number                                                           |
| Spleen            | -Hemosiderosis, mild                                                                                          |
| Testis/Epididymis | -Tubule atrophy, aspermatogenesis, unilateral, mild<br>Polyarteritis, mild                                    |

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Heart, Stomach, Large Intestine, Urinary Bladder, Aorta, Prostate, Adrenal, Thyroid, Trachea, Esophagus, Lymph Node (mesenteric), Pancreas, Salivary Gland, Eye.

Animal Number: 1R-4576 Sex: Female Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 25) Sacrificed in extremis

Macroscopic Observations:

|                         |                                  |
|-------------------------|----------------------------------|
| Liver                   | -Enlarged; mottled yellow color. |
| Lymph Node (bronchial)  | -Enlarged                        |
| Lung                    | -Pale                            |
| Spleen                  | -Enlarged                        |
| Stomach                 | -Red patchy areas on mucosa.     |
| Lymph Node (mesenteric) | -Enlarged and reddened.          |

Microscopic Observations:

|             |                                                                    |
|-------------|--------------------------------------------------------------------|
| Adrenal     | -Sinusoidal ectasia, cortex, mild                                  |
| Bone Marrow | -Malignant lymphoma, lymphocytic                                   |
| Kidney      | -Malignant lymphoma, lymphocytic<br>Mineralization, cortical, mild |

Species: Rat  
Project Number: 0281CR0012

Summarized STAR Page: 59

223

Summarized Single Tabulated Animal Report (continued)  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M  
FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats

Table: 2

Animal Number: 1R-4576 Sex: Female Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 25) Sacrificed in extremis

Microscopic Observations (continued):

|                         |                                                                  |
|-------------------------|------------------------------------------------------------------|
| Liver                   | -Malignant lymphoma, lymphocytic                                 |
| Lung                    | -Malignant lymphoma, lymphocytic<br>Hemorrhage, multifocal, mild |
| Lymph Node (mesenteric) | -Malignant lymphoma, lymphocytic                                 |
| Pancreas                | -Malignant lymphoma, lymphocytic                                 |
| Salivary Gland          | -Not examined, missing                                           |
| Spinal Cord             | -Malignant lymphoma, lymphocytic                                 |
| Spleen                  | -Malignant lymphoma, lymphocytic                                 |
| Stomach                 | -Ulcer                                                           |
| Urinary Bladder         | -Epithelial hyperplasia, simple, diffuse, mild                   |

The following tissues were found to be within normal limits:

Brain, Heart, Small Intestine, Large Intestine, Aorta, Uterus, Ovary, Mammary Gland, Pituitary,  
Trachea, Thyroid, Parathyroid, Esophagus, Eye.

Animal Number: 1R-4577 Sex: Female Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 99) Found Dead

Macroscopic Observations:

|               |                                                           |
|---------------|-----------------------------------------------------------|
| Pituitary     | -Hemorrhagic mass, 0.8 cm dia.                            |
| Mammary Gland | -Multilobular mass, 4.5 x 3.5 x 2 cm, in right<br>axilla. |

Microscopic Observations:

|                         |                                                                                                                               |
|-------------------------|-------------------------------------------------------------------------------------------------------------------------------|
| Adrenal                 | -Sinusoidal ectasia, cortex, moderate                                                                                         |
| Kidney                  | -Pelvic mineralization, mild<br>Nephrosis, tubular, marked                                                                    |
| Liver                   | -Portal mononuclear cell infiltrate, mild<br>Portal bile duct proliferation, mild<br>Hepatocyte vacuolation, multifocal, mild |
| Lymph Node (mesenteric) | -Not examined, missing                                                                                                        |
| Mammary Gland           | -Lobular hyperplasia                                                                                                          |
| Pituitary               | -Hemorrhage, marked<br>Necrosis, moderate                                                                                     |
| Spleen                  | -Hemosiderosis, mild                                                                                                          |
| Uterus                  | -Cystic glands, moderate                                                                                                      |

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Heart, Lung, Stomach, Small Intestine, Large Intestine,  
Urinary Bladder, Aorta, Ovary, Trachea, Thyroid, Parathyroid, Esophagus, Pancreas,  
Salivary Gland, Eye.

Species: Rat  
Project Number: 0281CR0012

Summarized STAR Page: 60

224

Summarized Single Tabulated Animal Report (continued)  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M  
FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats

Table: 2

Animal Number: 1R-4579 Sex: Female Group: (1) CONTROL 0 ppm  
Fate: (Week= 84) Sacrificed in extremis

Macroscopic Observations:

|           |                                                   |
|-----------|---------------------------------------------------|
| Pituitary | -Raised mass, 0.5 cm dia.                         |
| Skin      | -Raised thickened lesion with scab on right side. |
| Liver     | -Slightly pale                                    |
| Stomach   | -Somewhat reddened                                |
| Kidney    | -Fluid filled cyst in left kidney.                |

Microscopic Observations:

|                         |                                                                                                                                   |
|-------------------------|-----------------------------------------------------------------------------------------------------------------------------------|
| Adrenal                 | -Sinusoidal ectasia, cortex, mild                                                                                                 |
| Aorta                   | -Mineralization, multifocal, mild                                                                                                 |
| Heart                   | -Myocarditis, chronic nonsuppurative, multifocal, moderate                                                                        |
| Kidney                  | -Nephrosis, tubular<br>Pelvic mineralization, marked<br>Cyst, cortical, moderate<br>Hyperplasia, pelvic epithelium, diffuse, mild |
| Liver                   | -Hepatocyte vacuolation, multifocal, mild                                                                                         |
| Lung                    | -Vascular mineralization, mild                                                                                                    |
| Lymph Node (mesenteric) | -Not examined, missing                                                                                                            |
| Parathyroid             | -Not examined, not in plane of section                                                                                            |
| Pituitary               | -Adenoma                                                                                                                          |
| Skin                    | -Ulcer, marked<br>Skin lesion from side.                                                                                          |
| Spleen                  | -Hemosiderosis, mild                                                                                                              |
| Stomach                 | -Mineralization, mucosal, mild                                                                                                    |

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Small Intestine, Large Intestine, Urinary Bladder, Uterus, Ovary, Mammary Gland, Trachea, Thyroid, Esophagus, Pancreas, Salivary Gland, Eye.

Animal Number: 1R-4580 Sex: Female Group: (1) CONTROL 0 ppm  
Fate: (Week= 52) Sacrificed in extremis

Macroscopic Observations:

|           |                                       |
|-----------|---------------------------------------|
| Pituitary | -Enlarged; dark red mass, 0.5 cm dia. |
|-----------|---------------------------------------|

Microscopic Observations:

|                         |                                        |
|-------------------------|----------------------------------------|
| Adrenal                 | -Sinusoidal ectasia, cortex, mild      |
| Aorta                   | -Not examined, missing                 |
| Esophagus               | -Not examined, missing                 |
| Lymph Node (mesenteric) | -Not examined, missing                 |
| Mammary Gland           | -Galactocoele                          |
| Parathyroid             | -Not examined, not in plane of section |

Species: Rat  
Project Number: 0281CR0012

Summarized STAR Page: 61

225

Summarized Single Tabulated Animal Report (continued)  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M  
FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats

Table: 2

Animal Number: 1R-4580 Sex: Female Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 52) Sacrificed in extremis

Microscopic Observations (continued):

|           |                          |
|-----------|--------------------------|
| Pituitary | -Adenoma                 |
| Spleen    | -Hemosiderosis, moderate |

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Liver, Kidney, Heart, Lung, Stomach, Small Intestine,  
Large Intestine, Urinary Bladder, Uterus, Ovary, Trachea, Thyroid, Pancreas, Salivary Gland, Eye.

Animal Number: 1R-4581 Sex: Female Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 85) Sacrificed in extremis

Macroscopic Observations:

|               |                                                      |
|---------------|------------------------------------------------------|
| Mammary Gland | -Ulcerated mass, 6 x 6 x 3 cm behind right shoulder. |
| Liver         | -Possibly slightly pale and swollen.                 |
| Spleen        | -Enlarged                                            |

Microscopic Observations:

|               |                                                                                                                                                                         |
|---------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Adrenal       | -Sinusoidal ectasia, cortex                                                                                                                                             |
| Liver         | -Portal mononuclear cell infiltrate, mild<br>Hepatocyte vacuolation, multifocal, mild<br>Hepatocyte alteration, basophilic, mild<br>Hematopoiesis, extramedullary, mild |
| Lung          | -Vascular mineralization, mild<br>Pneumonia, interstitial, chronic, multifocal, mild                                                                                    |
| Mammary Gland | -Adenocarcinoma                                                                                                                                                         |
| Parathyroid   | -Not examined, not in plane of section                                                                                                                                  |
| Spleen        | -Hematopoiesis, extramedullary, increased, marked                                                                                                                       |

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Kidney, Heart, Stomach, Small Intestine, Large Intestine,  
Urinary Bladder, Aorta, Uterus, Ovary, Pituitary, Trachea, Thyroid, Esophagus,  
Lymph Node (mesenteric), Pancreas, Salivary Gland, Eye.

Animal Number: 1R-4583 Sex: Female Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 105) Terminal Sacrifice

Macroscopic Observations:

|               |                                                     |
|---------------|-----------------------------------------------------|
| Eye           | -Extensive post bleeding inflammation of right eye. |
| Mammary Gland | -Firm nodular mass, 6 x 5 x 3 cm, left inguinal.    |

Species: Rat  
Project Number: 0281CR0012

Summarized STAR Page: 62

226

3MA00027361

1337.0236

Summarized Single Tabulated Animal Report (continued)  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M  
FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats

Table: 2

Animal Number: 1R-4583 Sex: Female Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 105) Terminal Sacrifice

Microscopic Observations (continued):

|               |                                                                          |
|---------------|--------------------------------------------------------------------------|
| Adrenal       | -Sinusoidal ectasia, cortex, marked                                      |
| Eye           | -Panophthalmitis, unilateral, marked                                     |
| Kidney        | -Pelvic mineralization, mild<br>Chronic progressive nephropathy, minimal |
| Liver         | -Hepatocyte vacuolation, multifocal, mild<br>Necrosis, focal, mild       |
| Lung          | -Alveolar macrophages, mild<br>Perivascular mononuclear infiltrate, mild |
| Mammary Gland | -Fibroadenoma                                                            |
| Ovary         | -Tubular adenoma, unilateral                                             |
| Parathyroid   | -Not examined, not in plane of section                                   |
| Spleen        | -Hematopoiesis, extramedullary, increased,<br>moderate                   |
| Uterus        | -Cystic glands, marked                                                   |

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Heart, Stomach, Small Intestine, Large Intestine,  
Urinary Bladder, Aorta, Pituitary, Trachea, Thyroid, Esophagus, Lymph Node (mesenteric),  
Pancreas, Salivary Gland.

Animal Number: 1R-4584 Sex: Female Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 105) Terminal Sacrifice

Macroscopic Observations:

|           |                                                     |
|-----------|-----------------------------------------------------|
| Eye       | -Slight atrophy with corneal opacity, right<br>eye. |
| Pituitary | -Enlarged                                           |
| Adrenal   | -Left adrenal enlarged.                             |

Microscopic Observations:

|             |                                                                                                                                      |
|-------------|--------------------------------------------------------------------------------------------------------------------------------------|
| Adrenal     | -Sinusoidal ectasia, cortex                                                                                                          |
| Eye         | -Phthisis bulbi, moderate                                                                                                            |
| Heart       | -Myocarditis, chronic nonsuppurative,<br>multifocal, mild                                                                            |
| Kidney      | -Chronic progressive nephropathy, mild                                                                                               |
| Liver       | -Portal bile duct proliferation, mild<br>Hepatocyte vacuolation, multifocal, mild                                                    |
| Lung        | -Pneumonia, interstitial, chronic, multifocal,<br>mild<br>Perivascular mononuclear infiltrate, mild<br>Hemorrhage, local areas, mild |
| Parathyroid | -Not examined, not in plane of section                                                                                               |

Species: Rat  
Project Number: 0281CR0012

Summarized STAR Page: 63

227

3MA00027362

1337.0237

Summarized Single Tabulated Animal Report (continued)  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M  
FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats

Table: 2

Animal Number: 1R-4584 Sex: Female Group: ( 1 ) CONTROL 0 ppm  
Fate: (Week= 105) Terminal Sacrifice

Microscopic Observations (continued):

|           |                      |
|-----------|----------------------|
| Pituitary | -Adenoma             |
| Spleen    | -Hemosiderosis, mild |

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Stomach, Small Intestine, Large Intestine, Urinary Bladder, Aorta, Uterus, Ovary, Mammary Gland, Trachea, Thyroid, Esophagus, Lymph Node (mesenteric), Pancreas, Salivary Gland.

Animal Number: 1R-4586 Sex: Female Group: ( 1 ) CONTROL 0 ppm  
Fate: (Week= 105) Terminal Sacrifice

Macroscopic Observations:

|           |                                                     |
|-----------|-----------------------------------------------------|
| Pituitary | -Raised dark mass, 0.3 cm dia.                      |
| Uterus    | -Dark area, 0.5 x 0.5 cm, in left horn near cervix. |

Microscopic Observations:

|             |                                                                                                                              |
|-------------|------------------------------------------------------------------------------------------------------------------------------|
| Adrenal     | -Sinusoidal ectasia, cortex, mild                                                                                            |
| Kidney      | -Chronic progressive nephropathy, mild<br>Pelvic mineralization, mild                                                        |
| Liver       | -Portal mononuclear cell infiltrate, mild<br>Portal bile duct proliferation, mild<br>Hepatocyte alteration, vacuolated, mild |
| Lung        | -Perivascular mononuclear infiltrate, minimal                                                                                |
| Ovary       | -Not examined, missing                                                                                                       |
| Pancreas    | -Acinar atrophy, moderate                                                                                                    |
| Parathyroid | -Not examined, not in plane of section                                                                                       |
| Pituitary   | -Adenoma                                                                                                                     |
| Uterus      | -Cystic glands, marked                                                                                                       |

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Spleen, Heart, Stomach, Small Intestine, Large Intestine, Urinary Bladder, Aorta, Mammary Gland, Trachea, Thyroid, Esophagus, Lymph Node (mesenteric), Salivary Gland, Eye.

Animal Number: 1R-4587 Sex: Female Group: ( 1 ) CONTROL 0 ppm  
Fate: (Week= 105) Terminal Sacrifice

Macroscopic Observations:

|               |                                                                                 |
|---------------|---------------------------------------------------------------------------------|
| Mammary Gland | -Small nodular mass, 3 x 2 cm, axillary; large mass, 8 x 8 x 3 cm, throat area. |
|---------------|---------------------------------------------------------------------------------|

Species: Rat  
Project Number: 0281CR0012

Summarized STAR Page: 64

228

Summarized Single Tabulated Animal Report (continued)  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M  
FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats

Table: 2

Animal Number: 1R-4587 Sex: Female Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 105) Terminal Sacrifice

Microscopic Observations (continued):

|                |                                                                          |
|----------------|--------------------------------------------------------------------------|
| Adrenal        | -Sinusoidal ectasia, cortex, marked                                      |
| Heart          | -Myocarditis, chronic nonsuppurative,<br>multifocal, mild                |
| Kidney         | -Chronic progressive nephropathy, mild<br>Pelvic mineralization, minimal |
| Liver          | -Hepatocyte vacuolation, multifocal, minimal                             |
| Mammary Gland  | -Lobular hyperplasia                                                     |
| Parathyroid    | -Not examined, not in plane of section                                   |
| Salivary Gland | -Not examined, missing                                                   |
| Skin           | -Fibroma, subcutaneous                                                   |
| Spleen         | -Hemosiderosis, mild                                                     |
| Uterus         | -Within normal limits<br>Fewer than protocol number                      |

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Lung, Stomach, Small Intestine, Large Intestine,  
Urinary Bladder, Aorta, Ovary, Pituitary, Trachea, Thyroid, Esophagus, Lymph Node (mesenteric),  
Pancreas, Eye.

Animal Number: 1R-4591 Sex: Female Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 105) Terminal Sacrifice

Macroscopic Observations:

-No visible lesions.

Microscopic Observations:

|                         |                                                                                      |
|-------------------------|--------------------------------------------------------------------------------------|
| Adrenal                 | -Cortical vacuolation, local areas, moderate<br>Sinusoidal ectasia, cortex, minimal  |
| Kidney                  | -Chronic progressive nephropathy, minimal                                            |
| Liver                   | -Portal mononuclear cell infiltrate, mild<br>Hepatocyte alteration, vacuolated, mild |
| Lung                    | -Vascular mineralization, mild                                                       |
| Lymph Node (mesenteric) | -Not examined, missing                                                               |
| Pancreas                | -Acinar atrophy, focal, minimal                                                      |
| Parathyroid             | -Not examined, not in plane of section                                               |
| Pituitary               | -Adenoma                                                                             |

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Spleen, Heart, Stomach, Small Intestine, Large Intestine,  
Urinary Bladder, Aorta, Uterus, Ovary, Mammary Gland, Trachea, Thyroid, Esophagus,  
Salivary Gland, Eye.

Species: Rat  
Project Number: 02B1CR0012

Summarized STAR Page: 65

229

3MA00027364

1337.0239

Summarized Single Tabulated Animal Report (continued)  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M  
FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats

Table: 2

Animal Number: 1R-4592 Sex: Female Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 88) Found Dead

Macroscopic Observations:

Pituitary -Enlarged, 0.9 x 1 cm.

Microscopic Observations:

Adrenal -Sinusoidal ectasia, cortex, moderate  
Kidney -Chronic progressive nephropathy, minimal  
Liver -Hepatocyte vacuolation, multifocal, mild  
Lung -Vascular mineralization, mild  
Perivascular mononuclear infiltrate, mild  
Lymph Node (mesenteric) -Not examined, missing  
Mammary Gland -Lobular hyperplasia, moderate  
Parathyroid -Not examined, not in plane of section  
Pituitary -Adenoma  
Spleen -Hemosiderosis, mild

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Heart, Stomach, Small Intestine, Large Intestine,  
Urinary Bladder, Aorta, Uterus, Ovary, Trachea, Thyroid, Esophagus, Pancreas, Salivary Gland,  
Eye.

Animal Number: 1R-4593 Sex: Female Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 105) Terminal Sacrifice

Macroscopic Observations:

-No visible lesions.

Microscopic Observations:

Adrenal -Sinusoidal ectasia, cortex, marked  
Liver -Hepatocyte alteration, vacuolated, mild  
Hepatocyte alteration, basophilic, mild  
Lung -Vascular mineralization, mild  
Parathyroid -Not examined, not in plane of section

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Spleen, Kidney, Heart, Stomach, Small Intestine,  
Large Intestine, Urinary Bladder, Aorta, Uterus, Ovary, Mammary Gland, Pituitary, Trachea,  
Thyroid, Esophagus, Lymph Node (mesenteric), Pancreas, Salivary Gland, Eye.

Species: Rat  
Project Number: 0281CR0012

Summarized STAR Page: 66

230

3MA00027365

1337.0240

Summarized Single Tabulated Animal Report (continued)  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M  
FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats

Table: 2

Animal Number: 1R-4594 Sex: Female Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 79) Found Dead

Macroscopic Observations:

|                           |                                                                                                                               |
|---------------------------|-------------------------------------------------------------------------------------------------------------------------------|
| Kidney                    | -Right kidney appears slightly enlarged;<br>filled with yellow milky fluid.                                                   |
| Urinary Bladder           | -Enlarged, 4.5 x 2 cm; filled with large, hard<br>calculi.                                                                    |
| Pituitary                 | -Hemorrhagic mass, 0.9 x 0.6 cm                                                                                               |
| Microscopic Observations: |                                                                                                                               |
| Adrenal                   | -Sinusoidal ectasia, cortex, moderate<br>One of pair present                                                                  |
| Aorta                     | -Not examined, missing                                                                                                        |
| Kidney                    | -Pyelonephritis, acute, bilateral, moderate<br>Hydronephrosis, bilateral, moderate<br>Nephrosis, tubular, bilateral, moderate |
| Liver                     | -Hepatocyte alteration, vacuolated, mild                                                                                      |
| Lung                      | -Vascular mineralization, mild                                                                                                |
| Lymph Node (mesenteric)   | -Not examined, missing                                                                                                        |
| Ovary                     | -Within normal limits<br>One of pair present                                                                                  |
| Pancreas                  | -Not examined, missing                                                                                                        |
| Parathyroid               | -Not examined, not in plane of section                                                                                        |
| Pituitary                 | -Adenoma                                                                                                                      |
| Small Intestine           | -Not examined, missing                                                                                                        |
| Spleen                    | -Hemosiderosis, moderate                                                                                                      |
| Urinary Bladder           | -Epithelial hyperplasia, papillary, diffuse,<br>marked<br>Calculus                                                            |

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Heart, Stomach, Large Intestine, Uterus, Mammary Gland,  
Trachea, Thyroid, Esophagus, Salivary Gland, Eye.

Animal Number: 1R-4595 Sex: Female Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 105) Terminal Sacrifice

Macroscopic Observations:

|               |                                                          |
|---------------|----------------------------------------------------------|
| Pituitary     | -Hemorrhagic mass, 0.8 cm dia.                           |
| Mammary Gland | -Small lobular mass, 2.7 x 1.5 x 1.8 cm, left<br>axilla. |
| Pancreas      | -Small lobular mass, 1 x 0.7 cm, in area of<br>pancreas. |

Microscopic Observations:

|         |                                       |
|---------|---------------------------------------|
| Adrenal | -Sinusoidal ectasia, cortex, moderate |
|---------|---------------------------------------|

Species: Rat  
Project Number: 0281CR0012

Summarized STAR Page: 67

231

3MA00027366

1337.0241

Summarized Single Tabulated Animal Report (continued)  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M  
FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats

Table: 2

Animal Number: 1R-4595 Sex: Female Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 105) Terminal Sacrifice

Microscopic Observations (continued):

|               |                                                                                                                              |
|---------------|------------------------------------------------------------------------------------------------------------------------------|
| Kidney        | -Chronic progressive nephropathy, minimal                                                                                    |
| Liver         | -Portal mononuclear cell infiltrate, mild<br>Portal bile duct proliferation, mild<br>Hepatocyte alteration, vacuolated, mild |
| Lung          | -Alveolar macrophages, mild                                                                                                  |
| Mammary Gland | -Lobular hyperplasia                                                                                                         |
| Pancreas      | -Islet cell carcinoma<br>Partially encapsulated with invasion of capsule. Well differentiated.                               |
| Parathyroid   | -Not examined, not in plane of section                                                                                       |
| Pituitary     | -Adenoma                                                                                                                     |
| Uterus        | -Adenoma<br>Small circumscribed papillary lesion.                                                                            |

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Spleen, Heart, Stomach, Small Intestine, Large Intestine, Urinary Bladder, Aorta, Trachea, Thyroid, Esophagus, Lymph Node (mesenteric), Salivary Gland, Eye, Ovary.

Animal Number: 1R-4596 Sex: Female Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 78) Sacrificed in extremis

Macroscopic Observations:

|               |                                                                             |
|---------------|-----------------------------------------------------------------------------|
| Pituitary     | -Mass, 0.8 x 0.6 cm.                                                        |
| Mammary Gland | -Mass, 2.5 x 2 x 1.5 cm, in left axilla.                                    |
| Liver         | -Very pale                                                                  |
| Kidney        | -Bilaterally pale and pitted; slightly enlarged; 0.4 cm dia. cyst in right. |
| Adrenal       | -Pale, bilaterally                                                          |

Microscopic Observations:

|         |                                                                                                                                                                                |
|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Adrenal | -Cortical vacuolation, focal, moderate<br>Sinusoidal ectasia, cortex, moderate<br>Medullary cell hyperplasia, multifocal, mild<br>Cortical degeneration, local areas, moderate |
| Aorta   | -Mineralization, mild<br>Mineralization also in media of an elastic artery in section of mesentery submitted for mesenteric lymph node.                                        |
| Kidney  | -Chronic progressive nephropathy, marked<br>Cyst, cortical, moderate                                                                                                           |
| Liver   | -Hepatocyte vacuolation, diffuse, marked                                                                                                                                       |

Species: Rat  
Project Number: 0281CR0012

Summarized STAR Page: 68

232

Summarized Single Tabulated Animal Report (continued)  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M  
FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats

Table: 2

Animal Number: 1R-4596 Sex: Female Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 78) Sacrificed in extremis

Microscopic Observations (continued):

|                         |                                                                 |
|-------------------------|-----------------------------------------------------------------|
| Lung                    | -Vascular mineralization, mild<br>Alveolar macrophages, minimal |
| Lymph Node (mesenteric) | -Not examined, missing                                          |
| Mammary Gland           | -Fibroadenoma                                                   |
| Parathyroid             | -Not examined, not in plane of section                          |
| Pituitary               | -Adenoma                                                        |
| Salivary Gland          | -Not examined, missing                                          |
| Spleen                  | -Hemosiderosis, moderate                                        |
| Urinary Bladder         | -Epithelial hyperplasia, simple, diffuse, mild                  |

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Heart, Stomach, Small Intestine, Large Intestine, Uterus,  
Ovary, Trachea, Thyroid, Esophagus, Pancreas, Eye.

Animal Number: 1R-4597 Sex: Female Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 105) Terminal Sacrifice

Macroscopic Observations:

|         |                          |
|---------|--------------------------|
| Adrenal | -Right adrenal enlarged. |
|---------|--------------------------|

Microscopic Observations:

|                         |                                                                                   |
|-------------------------|-----------------------------------------------------------------------------------|
| Adrenal                 | -Sinusoidal ectasia, cortex, marked<br>Medullary cell hyperplasia, focal, mild    |
| Kidney                  | -Chronic progressive nephropathy, minimal<br>Pelvic mineralization, mild          |
| Liver                   | -Portal mononuclear cell infiltrate, mild<br>Portal bile duct proliferation, mild |
| Lung                    | -Alveolar macrophages, mild<br>Perivascular mononuclear infiltrate, mild          |
| Lymph Node (mesenteric) | -No diagnosis, inadequate section                                                 |
| Ovary                   | -Tubular adenoma, unilateral                                                      |
| Pancreas                | -Cyst                                                                             |
| Parathyroid             | -Not examined, not in plane of section                                            |
| Spleen                  | -Hemosiderosis, mild                                                              |
| Uterus                  | -Within normal limits<br>Fewer than protocol number                               |

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Heart, Stomach, Small Intestine, Large Intestine,  
Urinary Bladder, Aorta, Mammary Gland, Pituitary, Trachea, Thyroid, Esophagus, Salivary Gland,  
Eye.

Species: Rat  
Project Number: 0281CR0012

Summarized STAR Page: 69

233

3MA00027368

1337.0243

Summarized Single Tabulated Animal Report (continued)  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M  
FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats

Table: 2

Animal Number: 1R-4598 Sex: Female Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 105) Terminal Sacrifice

Macroscopic Observations:

Pituitary -Mass, 0.7 cm dia.  
Adrenal -Left adrenal greatly enlarged.

Microscopic Observations:

Adrenal -Sinusoidal ectasia, cortex, marked  
Brain -Oligodendroglioma, benign  
Heart -Myocarditis, chronic nonsuppurative,  
multifocal, mild  
Kidney -Chronic progressive nephropathy, moderate  
Pelvic mineralization, mild  
Hyperplasia, pelvic epithelium, local areas,  
mild  
Liver -Hepatocyte vacuolation, multifocal, mild  
Hepatocyte alteration, basophilic, mild  
Lung -Vascular mineralization, mild  
Perivascular mononuclear infiltrate, mild  
Ovary -Tubular adenoma  
Pancreas -Acinar atrophy, moderate  
Parathyroid -Not examined, not in plane of section  
Pituitary -Adenoma  
Uterus -Cystic glands, moderate

The following tissues were found to be within normal limits:

Spinal Cord, Bone Marrow, Spleen, Stomach, Small Intestine, Large Intestine, Urinary Bladder,  
Aorta, Mammary Gland, Trachea, Thyroid, Esophagus, Lymph Node (mesenteric), Salivary Gland, Eye.

Animal Number: 1R-4599 Sex: Female Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 102) Found Dead

Macroscopic Observations:

Mammary Gland -Subcutaneous mass, 2.5 x 2 x 1 cm, in  
perineal area.  
Liver -Appears mottled  
Stomach -Areas of elongated ulceration.  
Urinary Bladder -Thickened walls; mass 1.5 x 1 cm, with  
adhesions to abdominal wall.  
Eye -No tissue taken due to postmortem changes

Microscopic Observations:

Adrenal -Sinusoidal ectasia, cortex, marked  
Aorta -Malignant lymphoma, histiocytic  
Esophagus -Malignant lymphoma, histiocytic  
Eye -Not examined, missing

Species: Rat  
Project Number: 0281CR0012

Summarized STAR Page: 70

234

3MA00027369

1337.0244

Summarized Single Tabulated Animal Report (continued)  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M  
FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats

Table: 2

Animal Number: 1R-4599 Sex: Female Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 102) Found Dead

Microscopic Observations (continued):

|                         |                                                                                                                                                     |
|-------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| Heart                   | -Myocarditis, chronic nonsuppurative,<br>multifocal, mild                                                                                           |
| Kidney                  | -Malignant lymphoma, histiocytic<br>Pelvic mineralization, mild<br>Hyperplasia, pelvic epithelium, local areas,<br>mild<br>Nephrosis, tubular, mild |
| Large Intestine         | -Malignant lymphoma, histiocytic                                                                                                                    |
| Liver                   | -Malignant lymphoma, histiocytic<br>Necrosis, local areas, marked                                                                                   |
| Lung                    | -Malignant lymphoma, histiocytic<br>Hemorrhage, multifocal, mild                                                                                    |
| Lymph Node (mesenteric) | -Malignant lymphoma, histiocytic                                                                                                                    |
| Mammary Gland           | -Malignant lymphoma, histiocytic                                                                                                                    |
| Ovary                   | -Malignant lymphoma, histiocytic                                                                                                                    |
| Pancreas                | -Malignant lymphoma, histiocytic                                                                                                                    |
| Parathyroid             | -Not examined, not in plane of section                                                                                                              |
| Pituitary               | -Adenoma                                                                                                                                            |
| Spleen                  | -Hemosiderosis, mild                                                                                                                                |
| Stomach                 | -Necrosis, mucosal, moderate                                                                                                                        |
| Thyroid                 | -Malignant lymphoma, histiocytic                                                                                                                    |
| Urinary Bladder         | -Malignant lymphoma, histiocytic<br>Epithelial hyperplasia, simple, diffuse, mild                                                                   |
| Uterus                  | -Malignant lymphoma, histiocytic                                                                                                                    |

The following tissues were found to be within normal limits:  
Brain, Spinal Cord, Bone Marrow, Small Intestine, Trachea, Salivary Gland.

Animal Number: 1R-4600 Sex: Female Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 99) Found Dead

Macroscopic Observations:

|               |                                                                                                                                         |
|---------------|-----------------------------------------------------------------------------------------------------------------------------------------|
| Mammary Gland | -Subcutaneous cystic mass, 4 x 3.5 x 2 cm, in<br>region of throat; subcutaneous<br>multilobular mass, 5 x 4 x 2 cm, in right<br>axilla. |
| Liver         | -Appears mottled                                                                                                                        |

Microscopic Observations:

|         |                                                           |
|---------|-----------------------------------------------------------|
| Adrenal | -Necrosis, unilateral, marked                             |
| Eye     | -Not examined, missing                                    |
| Heart   | -Myocarditis, chronic nonsuppurative,<br>multifocal, mild |

Species: Rat  
Project Number: 02B1CR0012

Summarized STAR Page: 71

235

3MA00027370

1337.0245

Summarized Single Tabulated Animal Report (continued)  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M  
FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats

Table: 2

Animal Number: 1R-4600 Sex: Female Group: ( 1 ) CONTROL 0 ppm  
Fate: (Week= 99) Found Dead

Microscopic Observations (continued):

|               |                                                                                                                                                                                                            |
|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Kidney        | -Chronic progressive nephropathy, mild<br>Pelvic mineralization, mild<br>Nephrosis, tubular, moderate                                                                                                      |
| Liver         | -Portal mononuclear cell infiltrate, moderate<br>Portal bile duct proliferation, mild<br>Hepatocyte vacuolation, multifocal, mild<br>Hepatocyte alteration, eosinophilic, moderate<br>Telangiectasis, mild |
| Lung          | -Vascular mineralization, mild                                                                                                                                                                             |
| Mammary Gland | -Adenoma, papillary<br>Lobular hyperplasia                                                                                                                                                                 |
| Ovary         | -Cyst, unilateral                                                                                                                                                                                          |
| Parathyroid   | -Not examined, not in plane of section                                                                                                                                                                     |
| Pituitary     | -Adenoma                                                                                                                                                                                                   |
| Spleen        | -Hemosiderosis, mild                                                                                                                                                                                       |

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Stomach, Small Intestine, Large Intestine, Urinary Bladder,  
Aorta, Uterus, Trachea, Thyroid, Esophagus, Lymph Node (mesenteric), Pancreas, Salivary Gland.

Animal Number: 1R-4602 Sex: Female Group: ( 1 ) CONTROL 0 ppm  
Fate: (Week= 105) Terminal Sacrifice

Macroscopic Observations:

|           |                          |
|-----------|--------------------------|
| Eye       | -Cornea appears cloudy.  |
| Pituitary | -Raised mass, 1 cm dia.  |
| Adrenal   | -Right adrenal enlarged. |
| Kidney    | -Pale and pitted.        |

Microscopic Observations:

|             |                                                                                           |
|-------------|-------------------------------------------------------------------------------------------|
| Adrenal     | -Sinusoidal ectasia, cortex, marked<br>Cortical degeneration, diffuse, marked             |
| Eye         | -No diagnosis, inadequate section                                                         |
| Heart       | -Myocarditis, chronic nonsuppurative,<br>multifocal, mild                                 |
| Kidney      | -Chronic progressive nephropathy, marked<br>Pelvic mineralization, mild<br>Cyst, cortical |
| Liver       | -Hepatocyte alteration, basophilic, mild                                                  |
| Lung        | -Hemorrhage, local areas, moderate                                                        |
| Parathyroid | -Not examined, not in plane of section                                                    |
| Pituitary   | -Adenoma                                                                                  |

Species: Rat  
Project Number: 0281CR0012

Summarized STAR Page: 72

236

Summarized Single Tabulated Animal Report (continued)  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M  
FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats

Table: 2

Animal Number: 1R-4602 Sex: Female Group: (1) CONTROL 0 ppm  
Fate: (Week= 105) Terminal Sacrifice

Microscopic Observations (continued):

|        |                            |
|--------|----------------------------|
| Spleen | -Hemosiderosis, mild       |
| Uterus | -Within normal limits      |
|        | Fewer than protocol number |

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Stomach, Small Intestine, Large Intestine, Urinary Bladder, Aorta, Ovary, Mammary Gland, Trachea, Thyroid, Esophagus, Lymph Node (mesenteric), Pancreas, Salivary Gland.

Animal Number: 1R-4603 Sex: Female Group: (1) CONTROL 0 ppm  
Fate: (Week= 105) Terminal Sacrifice

Macroscopic Observations:

|       |                                                          |
|-------|----------------------------------------------------------|
| Liver | -Circular raised lesion, 0.6 cm dia., left lateral lobe. |
| Skin  | -Hair loss on forelimbs.                                 |

Microscopic Observations:

|               |                                                                                                                              |
|---------------|------------------------------------------------------------------------------------------------------------------------------|
| Adrenal       | -Sinusoidal ectasia, cortex, moderate<br>Cortical degeneration, diffuse, moderate                                            |
| Heart         | -Myocarditis, chronic nonsuppurative, multifocal, mild                                                                       |
| Kidney        | -Pelvic mineralization, mild                                                                                                 |
| Liver         | -Portal mononuclear cell infiltrate, mild<br>Portal bile duct proliferation, mild<br>Hepatocyte alteration, vacuolated, mild |
| Lung          | -Perivascular mononuclear infiltrate, mild                                                                                   |
| Mammary Gland | -Galactocoele                                                                                                                |
| Parathyroid   | -Not examined, not in plane of section                                                                                       |
| Pituitary     | -Adenoma                                                                                                                     |
| Skin          | -Acanthosis, mild                                                                                                            |
| Spleen        | -Hemosiderosis, mild                                                                                                         |

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Stomach, Small Intestine, Large Intestine, Urinary Bladder, Aorta, Uterus, Ovary, Trachea, Thyroid, Esophagus, Lymph Node (mesenteric), Pancreas, Salivary Gland, Eye.

Species: Rat  
Project Number: 0281CR0012

Summarized STAR Page: 73

237

3MA00027372

1337.0247

Summarized Single Tabulated Animal Report (continued)  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M  
FC-143: Two Year Oral Toxicity-Uncarcinogenicity Study in Rats

Table: 2

Animal Number: 1R-4604 Sex: Female Group: ( 1 ) CONTROL 0 ppm  
Fate: (Week= 105) Terminal Sacrifice

Macroscopic Observations:

Adrenal -Left adrenal enlarged.

Microscopic Observations:

Adrenal -Sinusoidal ectasia, cortex, marked  
Aorta -Not examined, missing  
Esophagus -Not examined, missing  
Kidney -Chronic progressive nephropathy, mild  
Pelvic mineralization, mild  
Large Intestine -Not examined, missing  
Liver -Portal bile duct proliferation, mild  
Hepatocyte vacuolation, multifocal, mild  
Hyperplastic nodule  
Ovary -Cyst, unilateral  
Parathyroid -Not examined, not in plane of section  
Uterus -Within normal limits  
Fewer than protocol number

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Spleen, Heart, Lung, Stomach, Small Intestine, Urinary Bladder, Mammary Gland, Pituitary, Trachea, Thyroid, Lymph Node (mesenteric), Pancreas, Salivary Gland, Eye.

Animal Number: 1R-4605 Sex: Female Group: ( 1 ) CONTROL 0 ppm  
Fate: (Week= 77) Sacrificed in extremis

Macroscopic Observations:

Kidney -Slightly pitted  
Lung -Right apical lobe consolidated and somewhat enlarged; possibly tumor, mass, chronic pneumonia.

Microscopic Observations:

Adrenal -Necrosis, local areas, moderate  
Hematopoiesis, extramedullary, multifocal, mild  
Heart -Myocarditis, chronic nonsuppurative, multifocal, moderate  
Malignant lymphoma, lymphocytic  
Kidney -Chronic progressive nephropathy, moderate  
Pelvic mineralization, minimal  
Liver -Hepatocyte vacuolation, midzonal, moderate  
Malignant lymphoma, lymphocytic  
Lung -Vascular mineralization, mild  
Malignant lymphoma, lymphocytic  
Large circumscribed mass with extensive necrosis.

Species: Rat  
Project Number: 0281CR0012

Summarized STAR Page: 74

238

Summarized Single Tabulated Animal Report (continued)  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M  
FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats

Table: 2

Animal Number: 1R-4605 Sex: Female Group: (1) CONTROL 0 ppm  
Fate: (Week= 77) Sacrificed in extremis

Microscopic Observations (continued):

|                 |                                                    |
|-----------------|----------------------------------------------------|
| Ovary           | -Cyst, unilateral                                  |
| Parathyroid     | -Not examined, not in plane of section             |
| Pituitary       | -Adenoma                                           |
| Spinal Cord     | -Malacia, local areas, moderate                    |
| Spleen          | -Hemosiderosis, mild                               |
| Urinary Bladder | -Epithelial hyperplasia, simple, diffuse, moderate |

The following tissues were found to be within normal limits:

Brain, Bone Marrow, Stomach, Small Intestine, Large Intestine, Aorta, Uterus, Mammary Gland, Trachea, Thyroid, Esophagus, Lymph Node (mesenteric), Pancreas, Salivary Gland, Eye.

Animal Number: 1R-4606 Sex: Female Group: (1) CONTROL 0 ppm  
Fate: (Week= 105) Terminal Sacrifice

Macroscopic Observations:

|               |                                                      |
|---------------|------------------------------------------------------|
| Mammary Gland | -Small mass, 1.4 cm dia., left lateral area.         |
| Pituitary     | -Enlarged; circular dark lesion, 0.4 cm dia.         |
| Uterus        | -Dark fluid filled lesion, 0.5 x 0.6 cm, right horn. |

Microscopic Observations:

|                         |                                                                                                                         |
|-------------------------|-------------------------------------------------------------------------------------------------------------------------|
| Adrenal                 | -Sinusoidal ectasia, cortex, mild<br>Cortical degeneration, bilateral, moderate<br>Pheochromocytoma, benign, unilateral |
| Heart                   | -Myocarditis, chronic nonsuppurative, multifocal, mild                                                                  |
| Kidney                  | -Chronic progressive nephropathy, mild<br>Pelvic mineralization, mild                                                   |
| Liver                   | -Hepatocyte vacuolation, multifocal, mild<br>Hepatocyte alteration, vacuolated, mild                                    |
| Lung                    | -Pigment, moderate<br>Scattered small foci of dark brown pigment-laden macrophages within alveoli.                      |
| Lymph Node (mesenteric) | -Hemorrhage, mild                                                                                                       |
| Mammary Gland           | -Adenocarcinoma                                                                                                         |
| Ovary                   | -Not examined, missing                                                                                                  |
| Parathyroid             | -Not examined, not in plane of section                                                                                  |
| Pituitary               | -Adenoma                                                                                                                |
| Uterus                  | -Hydrometra, marked                                                                                                     |

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Spleen, Stomach, Small Intestine, Large Intestine,

Species: Rat  
Project Number: 0281CR0012

Summarized STAR Page: 75

239

3MA00027374

1337.0249

Summarized Single Tabulated Animal Report (continued)  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M  
FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats

Table: 2

Animal Number: 1R-4606 Sex: Female Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 105) Terminal Sacrifice

Microscopic Observations (continued):  
The following tissues were found to be within normal limits (continued):  
Urinary Bladder, Aorta, Trachea, Thyroid, Esophagus, Pancreas, Salivary Gland, Eye.

Animal Number: 1R-4607 Sex: Female Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 40) Sacrificed in extremis

Macroscopic Observations:

Soft Tissues (neck)

-Reddened gland like structures, possibly enlarged lymph nodes or salivary glands.

Lymph Node

-Enlarged axillary, hepatic, mesenteric and internal iliac lymph nodes.

Liver

-Possibly slightly pale.

Spleen

-Considerably enlarged.

Microscopic Observations:

Adrenal

-Malignant lymphoma, lymphocytic

Aorta

-Malignant lymphoma, lymphocytic

Bone Marrow

-Malignant lymphoma, lymphocytic

Esophagus

-No diagnosis, inadequate section

Eye

-Malignant lymphoma, lymphocytic

Kidney

-Malignant lymphoma, lymphocytic

Liver

-Malignant lymphoma, lymphocytic

Lung

-Malignant lymphoma, lymphocytic

Hemorrhage, local areas, mild Abscess

Lymph Node (mesenteric)

-Hemorrhage, moderate

Malignant lymphoma, lymphocytic  
Massive enlargement of node by mature appearing lymphocytes. All other nodes examined were similarly involved.

Mammary Gland

-Malignant lymphoma, lymphocytic

Ovary

-Malignant lymphoma, lymphocytic

Parathyroid

-Not examined, not in plane of section

Salivary Gland

-Not examined, missing

Spleen

-Malignant lymphoma, lymphocytic

Stomach

-Hemorrhage, submucosal, moderate

Malignant lymphoma, lymphocytic

Thyroid

-Malignant lymphoma, lymphocytic

Uterus

-Malignant lymphoma, lymphocytic

The following tissues were found to be within normal limits:  
Brain, Spinal Cord, Heart, Small Intestine, Large Intestine, Urinary Bladder, Pituitary,

Species: Rat  
Project Number: 0281CR0012

Summarized STAR Page: 76

240

Summarized Single Tabulated Animal Report (continued)  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M  
FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats

Table: 2

Animal Number: 1R-4607 Sex: Female Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 40) Sacrificed in extremis

Microscopic Observations (continued):

The following tissues were found to be within normal limits (continued):

Trachea, Pancreas.

Animal Number: 1R-4609 Sex: Female Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 105) Terminal Sacrifice

Macroscopic Observations:

|               |                                                       |
|---------------|-------------------------------------------------------|
| Pituitary     | -Raised mass, 1 cm dia.                               |
| Mammary Gland | -Mass, 5 x 4 cm, throat area; 3 cm dia., left axilla. |

Microscopic Observations:

|                 |                                                                                                                               |
|-----------------|-------------------------------------------------------------------------------------------------------------------------------|
| Adrenal         | -Sinusoidal ectasia, cortex, moderate                                                                                         |
| Heart           | -Myocarditis, chronic nonsuppurative, multifocal, mild                                                                        |
| Kidney          | -Chronic progressive nephropathy, mild<br>Pelvic mineralization, moderate                                                     |
| Large Intestine | -Not examined, missing                                                                                                        |
| Liver           | -Portal mononuclear cell infiltrate, mild<br>Portal bile duct proliferation, mild<br>Hepatocyte vacuolation, multifocal, mild |
| Lung            | -Pneumonia, interstitial, chronic, multifocal, mild                                                                           |
| Mammary Gland   | -Carcinoma<br>Highly cellular very undifferentiated tumor.                                                                    |
| Pancreas        | -Acinar atrophy, moderate                                                                                                     |
| Parathyroid     | -Not examined, not in plane of section                                                                                        |
| Pituitary       | -Adenoma                                                                                                                      |
| Spleen          | -Hemosiderosis, mild                                                                                                          |
| Thyroid         | -C cell adenoma                                                                                                               |
| Uterus          | -Within normal limits<br>Fewer than protocol number                                                                           |

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Stomach, Small Intestine, Urinary Bladder, Aorta, Ovary, Trachea, Esophagus, Lymph Node (mesenteric), Salivary Gland, Eye.

Species: Rat  
Project Number: 0281CR0012

Summarized STAR Page: 77

241

3MA00027376

1337.0251

Summarized Single Tabulated Animal Report (continued)  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M  
FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats

Table: 2

Animal Number: 1R-4611 Sex: Female Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 105) Terminal Sacrifice

Macroscopic Observations:

Mammary Gland

-Large lobular mass, 10 x 7.5 x 5 cm.

Microscopic Observations:

Adrenal

-Sinusoidal ectasia, cortex, marked  
Cortical degeneration, local areas, moderate

Liver

-Hepatocyte vacuolation, multifocal, mild  
Hepatocyte alteration, eosinophilic, mild

Lung

-Hemorrhage, multifocal, mild  
Alveolar macrophages, multifocal, mild

Mammary Gland

-Fibroadenoma

Parathyroid

-Not examined, not in plane of section

Pituitary

-Adenoma

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Spleen, Kidney, Heart, Stomach, Small Intestine,  
Large Intestine, Urinary Bladder, Aorta, Uterus, Ovary, Trachea, Thyroid, Esophagus,  
Lymph Node (mesenteric), Pancreas, Salivary Gland, Eye.

Animal Number: 1R-4612 Sex: Female Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 105) Terminal Sacrifice

Macroscopic Observations:

Pituitary

-Raised mass, 0.7 cm dia.

Mammary Gland

-Mass, 3 cm dia., left axilla; 4 cm dia.,  
right axilla;  
7 x 6 x 2 cm, right side.

Microscopic Observations:

Adrenal

-Sinusoidal ectasia, cortex, moderate

Eye

-No diagnosis, inadequate section

Liver

-Hepatocyte vacuolation, multifocal, mild

Lung

-Hemorrhage, diffuse, marked  
Alveolar macrophages, mild

Mammary Gland

-Galactoceles  
Fibroadenoma  
Fibroadenoma  
Two tumors present.

Parathyroid

-Not examined, not in plane of section

Pituitary

-Adenoma

Uterus

-Within normal limits  
Fewer than protocol number

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Spleen, Kidney, Heart, Stomach, Small Intestine,

Species: Rat  
Project Number: 0281CR0012

Summarized STAR Page: 78

242

3MA00027377

1337.0252

Summarized Single Tabulated Animal Report (continued)  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M  
FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats

Table: 2

Animal Number: 1R-4612 Sex: Female Group: (1) CONTROL 0 ppm  
Fate: (Week= 105) Terminal Sacrifice

Microscopic Observations (continued):

The following tissues were found to be within normal limits (continued):  
Large Intestine, Urinary Bladder, Aorta, Ovary, Trachea, Thyroid, Esophagus,  
Lymph Node (mesenteric), Pancreas, Salivary Gland.

Animal Number: 1R-4613 Sex: Female Group: (1) CONTROL 0 ppm  
Fate: (Week= 89) Sacrificed in extremis

Macroscopic Observations:

|               |                                                         |
|---------------|---------------------------------------------------------|
| Pituitary     | -Somewhat enlarged                                      |
| Mammary Gland | -Mass, 10 x 8 x 5 cm, inguinal area; surface ulcerated. |
| Liver         | -Appears pale                                           |

Microscopic Observations:

|                 |                                                                                                                |
|-----------------|----------------------------------------------------------------------------------------------------------------|
| Adrenal         | -Hematopoiesis, extramedullary, mild<br>Sinusoidal ectasia, cortex, mild<br>Cortical vacuolation, focal, mild  |
| Esophagus       | -Not examined, missing                                                                                         |
| Kidney          | -Pelvic mineralization, mild<br>Hyperplasia, pelvic epithelium, local areas, mild                              |
| Large Intestine | -Not examined, missing                                                                                         |
| Liver           | -Hepatocyte vacuolation, periportal, mild<br>Necrosis, multifocal, mild<br>Hematopoiesis, extramedullary, mild |
| Lung            | -Hemorrhage, multifocal, mild<br>Pneumonia, interstitial, chronic, multifocal, mild                            |
| Mammary Gland   | -Lobular hyperplasia                                                                                           |
| Parathyroid     | -Not examined, not in plane of section                                                                         |
| Pituitary       | -Adenoma                                                                                                       |
| Spleen          | -Hematopoiesis, extramedullary, increased, moderate                                                            |
| Urinary Bladder | -Epithelial hyperplasia, simple, diffuse, mild                                                                 |
| Uterus          | -Within normal limits<br>Fewer than protocol number                                                            |

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Heart, Stomach, Small Intestine, Aorta, Ovary, Trachea,  
Thyroid, Lymph Node (mesenteric), Pancreas, Salivary Gland, Eye.

Species: Rat  
Project Number: 0281CR0012

Summarized STAR Page: 79

243

3MA00027378

1337.0253

Summarized Single Tabulated Animal Report (continued)  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M  
FC-143: Two Year Oral Toxicity-Uncogenicity Study in Rats

Table: 2

Animal Number: 1R-4614 Sex: Female Group: (1) CONTROL 0 ppm  
Fate: (Week= 105) Terminal Sacrifice

Macroscopic Observations:

Mammary Gland  
Uterus

-Mass in perineal area; possible milk cyst.  
-Large gelatinous cervical mass, 2 cm dia.

Microscopic Observations:

Adrenal  
Kidney

-Sinusoidal ectasia, cortex, moderate  
-Pelvic mineralization, minimal  
Chronic progressive nephropathy, mild

Liver  
Mammary Gland  
Pancreas  
Parathyroid  
Pituitary  
Spinal Cord  
Spleen  
Thyroid  
Uterus

-Hepatocyte vacuolation, multifocal, mild  
-Adenocarcinoma  
-Acinar atrophy, mild  
-Not examined, not in plane of section  
-Adenoma  
-No diagnosis, inadequate section  
-Hemosiderosis, mild  
-Ultramorphological cyst  
-Polyp  
This was the mass at cervix noted at necropsy.

The following tissues were found to be within normal limits:

Brain, Bone Marrow, Heart, Lung, Stomach, Small Intestine, Large Intestine, Urinary Bladder,  
Aorta, Ovary, Trachea, Esophagus, Lymph Node (mesenteric), Salivary Gland, Eye.

Animal Number: 1R-4615 Sex: Female Group: (1) CONTROL 0 ppm  
Fate: (Week= 105) Terminal Sacrifice

Macroscopic Observations:

-No visible lesions.

Microscopic Observations:

Adrenal  
Aorta  
Kidney  
Liver

-Sinusoidal ectasia, cortex, marked  
-Not examined, missing  
-Pelvic mineralization, minimal  
-Portal bile duct proliferation, mild  
Hepatocyte alteration, vacuolated, mild  
Hepatocyte alteration, basophilic, mild  
-Pneumonia, interstitial, chronic, mild  
Alveolar macrophages, mild

Lung  
Mammary Gland  
Parathyroid  
Spleen  
Uterus

-Galactoceles  
-Not examined, not in plane of section  
-Hemosiderosis, mild  
-Within normal limits  
Fewer than protocol number

Species: Rat  
Project Number: 02B1CR0012

Summarized STAR Page: 80

244

3MA00027379

1337.0254

Summarized Single Tabulated Animal Report (continued)  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M  
FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats

Table: 2

Animal Number: 1R-4615 Sex: Female Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 105) Terminal Sacrifice

Microscopic Observations (continued):

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Heart, Stomach, Small Intestine, Large Intestine,  
Urinary Bladder, Ovary, Pituitary, Trachea, Thyroid, Esophagus, Lymph Node (mesenteric),  
Pancreas, Salivary Gland, Eye.

Animal Number: 1R-4616 Sex: Female Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 105) Terminal Sacrifice

Macroscopic Observations:

-No visible lesions.

Microscopic Observations:

Adrenal

-Cortical degeneration, unilateral, marked

Heart

-Myocardial fibrosis, focal, mild  
Myocarditis, chronic nonsuppurative,  
multifocal, mild

Kidney

-Chronic progressive nephropathy, mild  
Pelvic mineralization, minimal

Liver

-Portal mononuclear cell infiltrate, mild  
Portal bile duct proliferation, mild  
Hepatocyte vacuolation, multifocal, mild  
Hepatocyte alteration, vacuolated, mild

Lung

-Perivascular mononuclear infiltrate, moderate  
Vascular mineralization, mild  
Alveolar macrophages, mild

Mammary Gland

-Not examined, missing

Ovary

-Cyst, unilateral

Parathyroid

-Not examined, not in plane of section

Spleen

-Hemosiderosis, mild

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Stomach, Small Intestine, Large Intestine, Urinary Bladder,  
Aorta, Uterus, Pituitary, Trachea, Thyroid, Esophagus, Lymph Node (mesenteric), Pancreas,  
Salivary Gland, Eye.

Species: Rat  
Project Number: 0281CR0012

Summarized STAR Page: 81

245

3MA00027380

1337.0255

Summarized Single Tabulated Animal Report (continued)  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M  
FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats

Table: 2

Animal Number: 1R-4617 Sex: Female Group: (1) CONTROL 0 ppm  
Fate: (Week= 73) Sacrificed in extremis

Macroscopic Observations:

Ovary -Hemorrhagic mass, 5 cm dia., left ovary.  
Liver -Pale; left lateral lobe dark red.

Microscopic Observations:

Adrenal -Sinusoidal ectasia, cortex, mild  
One of pair present  
Liver -Portal mononuclear cell infiltrate, mild  
Necrosis, diffuse, marked  
Massive necrosis of one lobe with  
compensatory increase in mitoses in another  
lobe.  
Lung -Vascular mineralization, mild  
Mammary Gland -Not examined, missing  
Ovary -Leiomyoma  
Large well differentiated neoplasm, mostly  
necrotic, probably arises from an oviduct.  
Parathyroid -Not examined, not in plane of section  
Pituitary -Not examined, missing

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Spleen, Kidney, Heart, Stomach, Small Intestine,  
Large Intestine, Urinary Bladder, Aorta, Uterus, Trachea, Thyroid, Esophagus,  
Lymph Node (mesenteric), Pancreas, Salivary Gland, Eye.

Animal Number: 1R-4618 Sex: Female Group: (1) CONTROL 0 ppm  
Fate: (Week= 93) Sacrificed in extremis

Macroscopic Observations:

Pituitary -Raised mass, 1.1 cm dia.  
Mammary Gland -Large ulcerated mass, 10 x 7 x 9 cm, right  
axillary area.

Microscopic Observations:

Adrenal -Sinusoidal ectasia, cortex, mild  
Esophagus -Not examined, missing  
Kidney -Pelvic mineralization, minimal  
Liver -Portal mononuclear cell infiltrate, mild  
Lung -Vascular mineralization, mild  
Alveolar macrophages, mild  
Perivascular mononuclear infiltrate, mild  
Mammary Gland -Not examined, missing  
Parathyroid -Not examined, not in plane of section  
Pituitary -Adenoma

Species: Rat  
Project Number: 02BICR0012

Summarized STAR Page: 82

246

Summarized Single Tabulated Animal Report (continued)  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M  
FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats

Table: 2

Animal Number: 1R-4618 Sex: Female Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 93) Sacrificed in extremis

Microscopic Observations (continued):

|                 |                                                                                                                                                                           |
|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Skin            | -Fibroma, subcutaneous<br>Large neoplasm with extensive collagen formation, large portion necrotic. Described as mammary lesion but no mammary tissue present in section. |
| Thyroid         | -Ultimobranchial cyst                                                                                                                                                     |
| Urinary Bladder | -Epithelial hyperplasia, simple, diffuse, mild                                                                                                                            |

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Spleen, Heart, Stomach, Small Intestine, Large Intestine, Aorta, Ovary, Trachea, Lymph Node (mesenteric), Pancreas, Salivary Gland, Eye, Uterus.

Animal Number: 1R-4619 Sex: Female Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 64) Found Dead

Macroscopic Observations:

|           |                                               |
|-----------|-----------------------------------------------|
| Spleen    | -Slightly enlarged                            |
| Liver     | -Pale with an irregular surface on all lobes. |
| Pituitary | -Enlarged with hemorrhagic foci.              |

Microscopic Observations:

|                         |                                                                                                               |
|-------------------------|---------------------------------------------------------------------------------------------------------------|
| Adrenal                 | -Necrosis, diffuse, marked<br>Malignant lymphoma, histiocytic                                                 |
| Esophagus               | -Not examined, missing                                                                                        |
| Eye                     | -Not examined, missing                                                                                        |
| Kidney                  | -Nephrosis, tubular, marked                                                                                   |
| Liver                   | -Portal bile duct proliferation, marked<br>Necrosis, local areas, moderate<br>Malignant lymphoma, histiocytic |
| Lung                    | -Vascular mineralization, mild<br>Malignant lymphoma, histiocytic                                             |
| Lymph Node (mesenteric) | -Hemorrhage, mild                                                                                             |
| Mammary Gland           | -Galactocele                                                                                                  |
| Parathyroid             | -Not examined, not in plane of section                                                                        |
| Pituitary               | -Adenoma                                                                                                      |
| Salivary Gland          | -Sialadenitis, chronic, moderate                                                                              |
| Spleen                  | -Malignant lymphoma, histiocytic<br>Hematopoiesis, extramedullary, increased, moderate                        |
| Stomach                 | -Necrosis, mucosal, mild                                                                                      |
| Urinary Bladder         | -Epithelial hyperplasia, simple, diffuse, mild                                                                |

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Heart, Small Intestine, Large Intestine, Aorta, Uterus, Ovary,

Species: Rat  
Project Number: 0281CR0012

Summarized STAR Page: 83

247

3MA00027382

1337.0257

Summarized Single Tabulated Animal Report (continued)  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M  
FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats

Table: 2

Animal Number: 1R-4619 Sex: Female Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 64) Found Dead

Microscopic Observations (continued):

The following tissues were found to be within normal limits (continued):  
Trachea, Thyroid, Pancreas.

Animal Number: 1R-4621 Sex: Female Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 99) Sacrificed in extremis

Macroscopic Observations:

|               |                                                                   |
|---------------|-------------------------------------------------------------------|
| Pituitary     | -Slightly enlarged                                                |
| Mammary Gland | -Subcutaneous ulcerated mass, 5 x 4 x 1.5 cm,<br>in right axilla. |
| Liver         | -Appears mottled.                                                 |
| Adrenal       | -Slightly enlarged.                                               |

Microscopic Observations:

|               |                                                                                                           |
|---------------|-----------------------------------------------------------------------------------------------------------|
| Adrenal       | -Cortical vacuolation, focal, mild<br>Sinusoidal ectasia, cortex, marked                                  |
| Esophagus     | -Not examined, missing                                                                                    |
| Heart         | -Myocarditis, chronic nonsuppurative,<br>multifocal, mild                                                 |
| Kidney        | -Chronic progressive nephropathy, mild<br>Pelvic mineralization, mild<br>Nephrosis, tubular, moderate     |
| Liver         | -Portal mononuclear cell infiltrate, minimal<br>Hepatocyte vacuolation, periportal, mild                  |
| Lung          | -Alveolar macrophages, mild<br>Perivascular mononuclear infiltrate, mild<br>Hemorrhage, local areas, mild |
| Mammary Gland | -Fibroadenoma<br>Galactoceles                                                                             |
| Parathyroid   | -Not examined, not in plane of section                                                                    |
| Pituitary     | -Adenoma                                                                                                  |
| Spleen        | -Hematopoiesis, extramedullary, increased,<br>mild                                                        |

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Stomach, Small Intestine, Large Intestine, Urinary Bladder,  
Aorta, Uterus, Ovary, Trachea, Thyroid, Lymph Node (mesenteric), Pancreas, Salivary Gland, Eye.

Species: Rat  
Project Number: 02B1CR0012

Summarized STAR Page: 84

248

3MA00027383

1337.0258

Summarized Single Tabulated Animal Report (continued)  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M  
FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats

Table: 2

Animal Number: 1R-4622 Sex: Female Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 62) Found Dead

Macroscopic Observations:

|               |                                                                              |
|---------------|------------------------------------------------------------------------------|
| Skin          | -Small circular lesion on back; slight hair loss on left lateral side.       |
| Mammary Gland | -Mass, 2 cm dia., right axillary area; 1.5 cm dia., left inguinal area.      |
| Kidney        | -Raised area, 0.3 cm dia., on surface of right kidney; appears fluid filled. |
| Pituitary     | -Dark red gelatinous mass.                                                   |
| Lung          | -Slightly mottled                                                            |

Microscopic Observations:

|               |                                                                                                                                    |
|---------------|------------------------------------------------------------------------------------------------------------------------------------|
| Adrenal       | -Sinusoidal ectasia, cortex, marked                                                                                                |
| Aorta         | -Not examined, missing                                                                                                             |
| Kidney        | -Chronic progressive nephropathy, moderate<br>Pelvic mineralization, moderate<br>Hyperplasia, pelvic epithelium, local areas, mild |
| Liver         | -Hepatocyte vacuolation, periportal, moderate                                                                                      |
| Lung          | -Alveolar macrophages, mild                                                                                                        |
| Mammary Gland | -Galactocele                                                                                                                       |
| Parathyroid   | -Not examined, not in plane of section                                                                                             |
| Pituitary     | -Not examined, missing                                                                                                             |
| Skin          | -Ulcer, focal, moderate                                                                                                            |

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Spleen, Heart, Stomach, Small Intestine, Large Intestine, Urinary Bladder, Uterus, Ovary, Trachea, Thyroid, Esophagus, Lymph Node (mesenteric), Pancreas, Salivary Gland, Eye.

Animal Number: 1R-4623 Sex: Female Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 96) Sacrificed in extremis

Macroscopic Observations:

|               |                                                   |
|---------------|---------------------------------------------------|
| Eye           | -Opacity, right eye.                              |
| Mammary Gland | -Multilobular mass, 11 x 12 x 3 cm, right axilla. |
| Adrenal       | -Appear enlarged                                  |

Microscopic Observations:

|           |                                                                                      |
|-----------|--------------------------------------------------------------------------------------|
| Adrenal   | -Sinusoidal ectasia, cortex, marked                                                  |
| Esophagus | -Not examined, missing                                                               |
| Eye       | -Cataract, unilateral                                                                |
| Kidney    | -Pelvic mineralization, minimal                                                      |
| Liver     | -Portal mononuclear cell infiltrate, mild<br>Hepatocyte alteration, vacuolated, mild |

Species: Rat  
Project Number: 0281CR0012

Summarized STAR Page: 85

249

3MA00027384

1337.0259

Summarized Single Tabulated Animal Report (continued)  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M  
FC-143: Two Year Oral Toxicity-Uncogenicity Study in Rats

Table: 2

Animal Number: 1R-4623 Sex: Female Group: ( 1 ) CONTROL 0 ppm  
Fate: (Week= 96) Sacrificed in extremis

Microscopic Observations (continued):

|                         |                                                     |
|-------------------------|-----------------------------------------------------|
| Lung                    | -Pneumonia, interstitial, chronic, multifocal, mild |
|                         | Alveolar macrophages, mild                          |
|                         | Perivascular mononuclear infiltrate, mild           |
| Lymph Node (mesenteric) | -Sinusoidal ectasia, moderate                       |
| Mammary Gland           | -Fibroadenoma                                       |
| Pituitary               | -Adenoma                                            |
| Thyroid                 | -Follicular hyperplasia, cystic, unilateral, mild   |
| Uterus                  | -Within normal limits                               |
|                         | Fewer than protocol number                          |

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Spleen, Heart, Stomach, Small Intestine, Large Intestine, Urinary Bladder, Aorta, Ovary, Trachea, Parathyroid, Pancreas, Salivary Gland.

Animal Number: 1R-4624 Sex: Female Group: ( 1 ) CONTROL 0 ppm  
Fate: (Week= 100) Sacrificed in extremis

Macroscopic Observations:

|               |                                                                      |
|---------------|----------------------------------------------------------------------|
| Pituitary     | -Hemorrhagic mass, 0.6 cm dia.                                       |
| Mammary Gland | -Ulcerated, cystic mass, 4 x 4 x 3.5 cm, in left axilla-throat area; |
|               | multilobular mass, 8.5 x 5.5 x 3 cm, in right inguinal area.         |
| Lung          | -Raised circular nodule, 0.6 cm dia., in left lobe.                  |

Microscopic Observations:

|               |                                                     |
|---------------|-----------------------------------------------------|
| Adrenal       | -Sinusoidal ectasia, cortex, moderate               |
| Kidney        | -Chronic progressive nephropathy, minimal           |
|               | Pelvic mineralization, mild                         |
| Liver         | -Portal mononuclear cell infiltrate, mild           |
|               | Portal bile duct proliferation, mild                |
|               | Hepatocyte vacuolation, multifocal, mild            |
| Lung          | -Pneumonia, interstitial, chronic, multifocal, mild |
|               | Metastatic neoplasm                                 |
|               | Large metastasis of mammary adenocarcinoma.         |
| Mammary Gland | -Fibroadenoma                                       |
|               | Adenocarcinoma                                      |
| Ovary         | -Cyst, unilateral                                   |

Species: Rat  
Project Number: 0281CR0012

Summarized STAR Page: 86

250

3MA00027385

1337.0260

Summarized Single Tabulated Animal Report (continued)  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M  
FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats

Table: 2

Animal Number: 1R-4624 Sex: Female Group: (1) CONTROL 0 ppm  
Fate: (Week= 100) Sacrificed in extremis

Microscopic Observations (continued):

|             |                                                        |
|-------------|--------------------------------------------------------|
| Parathyroid | -Not examined, not in plane of section                 |
| Pituitary   | -Adenoma                                               |
| Spleen      | -Hematopoiesis, extramedullary, increased,<br>moderate |

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Heart, Stomach, Small Intestine, Large Intestine,  
Urinary Bladder, Aorta, Uterus, Trachea, Thyroid, Esophagus, Lymph Node (mesenteric), Pancreas,  
Salivary Gland, Eye.

Animal Number: 1R-4625 Sex: Female Group: (1) CONTROL 0 ppm  
Fate: (Week= 100) Sacrificed in extremis

Macroscopic Observations:

|               |                                           |
|---------------|-------------------------------------------|
| Pituitary     | -Enlarged due to raised mass, 1.2 cm dia. |
| Mammary Gland | -Cystic mass, 2 cm dia., left axilla.     |
| Adrenal       | -Both appear enlarged.                    |
| Kidney        | -Somewhat pitted                          |

Microscopic Observations:

|               |                                                                                          |
|---------------|------------------------------------------------------------------------------------------|
| Adrenal       | -Sinusoidal ectasia, cortex, marked<br>Cortical degeneration, local areas, mild          |
| Esophagus     | -Not examined, missing                                                                   |
| Eye           | -No diagnosis, inadequate section                                                        |
| Heart         | -Myocarditis, chronic nonsuppurative,<br>multifocal, mild                                |
| Kidney        | -Chronic progressive nephropathy, marked                                                 |
| Liver         | -Portal mononuclear cell infiltrate, mild<br>Hepatocyte vacuolation, multifocal, minimal |
| Lung          | -Hemorrhage, local areas, moderate                                                       |
| Mammary Gland | -Fibroadenoma                                                                            |
| Parathyroid   | -Not examined, not in plane of section                                                   |
| Pituitary     | -Adenoma                                                                                 |
| Spleen        | -Hemosiderosis, mild                                                                     |

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Stomach, Small Intestine, Large Intestine, Urinary Bladder,  
Aorta, Uterus, Ovary, Trachea, Thyroid, Lymph Node (mesenteric), Pancreas, Salivary Gland.

Species: Rat  
Project Number: 0281CR0012

Summarized STAR Page: 87

251

3MA00027386

1337.0261

Summarized Single Tabulated Animal Report (continued)  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M  
FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats

Table: 2

Animal Number: 1R-4626 Sex: Female Group: ( 1) CONTROL 0 ppa  
Fate: (Week= 105) Terminal Sacrifice

Macroscopic Observations:

Pituitary -Raised mass, 0.9 cm dia.

Microscopic Observations:

Adrenal -Pheochromocytoma, benign, unilateral  
Kidney -Chronic progressive nephropathy, moderate  
Pelvic mineralization, moderate  
Liver -Hepatocyte vacuolation, multifocal, mild  
Lung -Vascular mineralization, mild  
Parathyroid -Not examined, not in plane of section  
Pituitary -Adenoma  
Spinal Cord -Not examined, missing  
Spleen -Hemosiderosis, mild

The following tissues were found to be within normal limits:

Brain, Bone Marrow, Heart, Stomach, Small Intestine, Large Intestine, Urinary Bladder, Aorta,  
Uterus, Ovary, Mammary Gland, Trachea, Thyroid, Esophagus, Lymph Node (mesenteric), Pancreas,  
Salivary Gland, Eye.

Animal Number: 1R-4627 Sex: Female Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 105) Terminal Sacrifice

Macroscopic Observations:

Pituitary -Mass, 1 x 0.6 cm.  
Mammary Gland -Firm mass, 5.5 x 4 x 3.5 cm, right lateral  
area; lobular mass, 7 x 6 x 5 cm,  
left axilla.

Microscopic Observations:

Adrenal -Sinusoidal ectasia, cortex, moderate  
Medullary cell hyperplasia, multifocal, mild  
Heart -Myocarditis, chronic nonsuppurative,  
multifocal, mild  
Kidney -Chronic progressive nephropathy, moderate  
Liver -Portal mononuclear cell infiltrate, mild  
Portal bile duct proliferation, moderate  
Hepatocyte alteration, basophilic, moderate  
Lung -Vascular mineralization, mild  
Alveolar macrophages, mild  
Perivascular mononuclear infiltrate, mild  
Mammary Gland -Adenocarcinoma  
Neoplasm arises in several places in a  
fibroadenoma.  
Ovary -Tubular adenoma, unilateral  
Cyst, bilateral

Species: Rat  
Project Number: 0281CR0012

Summarized STAR Page: 88

252

3MA00027387

1337.0262

Summarized Single Tabulated Animal Report (continued)  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M  
FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats

Table: 2

Animal Number: 1R-4627 Sex: Female Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 105) Terminal Sacrifice

Microscopic Observations (continued):

|             |                                        |
|-------------|----------------------------------------|
| Pancreas    | -Islet cell adenoma                    |
| Parathyroid | -Not examined, not in plane of section |
| Pituitary   | -Adenoma                               |
| Skin        | -Fibroma, subcutaneous                 |
| Uterus      | -Cystic glands, mild                   |

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Spleen, Stomach, Small Intestine, Large Intestine,  
Urinary Bladder, Aorta, Trachea, Thyroid, Esophagus, Lymph Node (mesenteric), Salivary Gland,  
Eye.

Animal Number: 1R-4628 Sex: Female Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 105) Terminal Sacrifice

Macroscopic Observations:

|               |                                                                  |
|---------------|------------------------------------------------------------------|
| Pituitary     | -Mass, 1.2 cm dia.                                               |
| Mammary Gland | -Small nodule, 1.5 cm dia., right axilla;<br>possible milk cyst. |

Microscopic Observations:

|               |                                                                                                                              |
|---------------|------------------------------------------------------------------------------------------------------------------------------|
| Adrenal       | -Sinusoidal ectasia, cortex, moderate                                                                                        |
| Esophagus     | -Not examined, missing                                                                                                       |
| Kidney        | -Pelvic mineralization, minimal                                                                                              |
| Liver         | -Portal bile duct proliferation, mild<br>Hepatocyte alteration, vacuolated, mild<br>Hepatocyte vacuolation, multifocal, mild |
| Lung          | -Vascular mineralization, mild                                                                                               |
| Mammary Gland | -Galactoceles<br>Adenoma, papillary<br>Small highly cellular neoplasm lying adjacent<br>to several large galactoceles.       |
| Parathyroid   | -Not examined, not in plane of section                                                                                       |
| Pituitary     | -Adenoma                                                                                                                     |

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Spleen, Heart, Stomach, Small Intestine, Large Intestine,  
Urinary Bladder, Aorta, Uterus, Ovary, Trachea, Thyroid, Lymph Node (mesenteric), Pancreas,  
Salivary Gland, Eye.

Species: Rat  
Project Number: 0281CR0012

Summarized STAR Page: 89

253

3MA00027388

1337.0263

Summarized Single Tabulated Animal Report (continued)  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M  
FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats

Table: 2

Animal Number: 1R-4633 Sex: Female Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 63) Sacrificed in extremis

Macroscopic Observations:

|               |                                                                                                                     |
|---------------|---------------------------------------------------------------------------------------------------------------------|
| Liver         | -Very pale                                                                                                          |
| Spleen        | -Slightly enlarged                                                                                                  |
| Mammary Gland | -Large subcutaneous mass, 6 x 10 x 2.5 cm,<br>with necrotic areas, containing<br>dark brown fluid, ventral abdomen. |

Microscopic Observations:

|                |                                                                                                                              |
|----------------|------------------------------------------------------------------------------------------------------------------------------|
| Adrenal        | -Hematopoiesis, extramedullary, cortical, mild<br>Sinusoidal ectasia, cortex, mild                                           |
| Aorta          | -Not examined, missing                                                                                                       |
| Esophagus      | -Not examined, missing                                                                                                       |
| Kidney         | -Chronic progressive nephropathy, minimal<br>Vacuolation, conv. tub. epithelium, moderate                                    |
| Liver          | -Hepatocyte vacuolation, centrilobular, marked                                                                               |
| Lung           | -Vascular mineralization, mild<br>Hemorrhage, multifocal, mild                                                               |
| Mammary Gland  | -Adenocarcinoma<br>Well differentiated, ductular pattern, areas<br>of moderate mitotic activity, large areas of<br>necrosis. |
| Parathyroid    | -Not examined, not in plane of section                                                                                       |
| Salivary Gland | -Not examined, missing                                                                                                       |
| Spleen         | -Hematopoiesis, extramedullary, increased,<br>moderate                                                                       |

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Heart, Stomach, Small Intestine, Large Intestine,  
Urinary Bladder, Uterus, Ovary, Pituitary, Trachea, Thyroid, Lymph Node (mesenteric), Pancreas,  
Eye.

Animal Number: 1R-4634 Sex: Female Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 105) Terminal Sacrifice

Macroscopic Observations:

|               |                                                                                               |
|---------------|-----------------------------------------------------------------------------------------------|
| Pituitary     | -Mass, 0.7 cm dia.                                                                            |
| Mammary Gland | -Lobular mass, 8 x 6 x 4 cm, right axilla;<br>lobular mass, 9 x 7 x 3.5 cm, left<br>inguinal. |

Microscopic Observations:

|           |                                                           |
|-----------|-----------------------------------------------------------|
| Adrenal   | -Sinusoidal ectasia, cortex, moderate                     |
| Esophagus | -Not examined, missing                                    |
| Heart     | -Myocarditis, chronic nonsuppurative,<br>multifocal, mild |

Species: Rat  
Project Number: 0281CR0012

Summarized STAR Page: 90

254

3MA00027389

1337.0264

Summarized Single Tabulated Animal Report (continued)  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M  
FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats

Table: 2

Animal Number: 1R-4634 Sex: Female Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 105) Terminal Sacrifice

Microscopic Observations (continued):

|               |                                                                                                                                                                                                                          |
|---------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Kidney        | -Pelvic mineralization, minimal                                                                                                                                                                                          |
| Liver         | -Portal mononuclear cell infiltrate, mild<br>Portal bile duct proliferation, mild<br>Hepatocyte alteration, vacuolated, mild<br>Hepatocyte alteration, basophilic, moderate<br>Hepatocyte alteration, eosinophilic, mild |
| Lung          | -Vascular mineralization, mild<br>Perivascular mononuclear infiltrate, mild<br>Hemorrhage, multifocal, mild                                                                                                              |
| Mammary Gland | -Fibroadenoma<br>Fibroadenoma<br>Both masses were fibroadenomas. Areas of<br>necrosis and cystic areas in tumors.                                                                                                        |
| Parathyroid   | -Not examined, not in plane of section                                                                                                                                                                                   |
| Pituitary     | -Adenoma                                                                                                                                                                                                                 |
| Spleen        | -Hematopoiesis, extramedullary, increased,<br>mild<br>Hemosiderosis, mild                                                                                                                                                |

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Stomach, Small Intestine, Large Intestine, Urinary Bladder,  
Aorta, Uterus, Ovary, Trachea, Thyroid, Lymph Node (mesenteric), Pancreas, Salivary Gland, Eye.

Animal Number: 1R-4635 Sex: Female Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 94) Found Dead

Macroscopic Observations:

|                 |                                                                                                                                               |
|-----------------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| Small Intestine | -Jejunum appears inflamed with reddish fluid;<br>ileum appears inflamed near<br>cecum.                                                        |
| Mammary Gland   | -Mass, 7 x 7.5 x 2 cm, multilobular and<br>ulcerated, right inguinal; mass,<br>light beige in color, spherical, 2 cm dia.,<br>in left axilla. |

Microscopic Observations:

|           |                                                                                           |
|-----------|-------------------------------------------------------------------------------------------|
| Adrenal   | -Sinusoidal ectasia, cortex, mild<br>Hematopoiesis, extramedullary, cortical,<br>moderate |
| Esophagus | -Not examined, missing                                                                    |
| Eye       | -Not examined, missing                                                                    |
| Kidney    | -Chronic progressive nephropathy, mild<br>Pelvic mineralization, minimal                  |

Species: Rat  
Project Number: 0281CR0012

Summarized STAR Page: 91

255

3MA00027390

1337.0265

Summarized Single Tabulated Animal Report (continued)  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M  
FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats

Table: 2

Animal Number: 1R-4635 Sex: Female Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 94) Found Dead

Microscopic Observations (continued):

|                |                                                                                                                        |
|----------------|------------------------------------------------------------------------------------------------------------------------|
| Liver          | -Hepatocyte vacuolation, diffuse, mild<br>Hematopoiesis, extramedullary, mild<br>Mitotic activity, increased, moderate |
| Lung           | -Vascular mineralization, mild<br>Metastatic neoplasm                                                                  |
| Mammary Gland  | -Adenoma<br>Adenocarcinoma<br>Extensive necrosis.                                                                      |
| Parathyroid    | -Not examined, not in plane of section                                                                                 |
| Pituitary      | -Not examined, missing                                                                                                 |
| Salivary Gland | -Not examined, missing                                                                                                 |
| Spleen         | -Hematopoiesis, extramedullary, increased,<br>marked                                                                   |
| Thyroid        | -Ultimobranchial cyst                                                                                                  |

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Heart, Stomach, Small Intestine, Large Intestine,  
Urinary Bladder, Aorta, Uterus, Ovary, Trachea, Lymph Node (mesenteric), Pancreas.

Animal Number: 1R-4636 Sex: Female Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 105) Terminal Sacrifice

Macroscopic Observations:

|               |                                                                |
|---------------|----------------------------------------------------------------|
| Mammary Gland | -Mass in right axilla appears to be milk cyst.                 |
| Liver         | -Slightly raised dark mass, 0.6 cm dia., left<br>lateral lobe. |

Microscopic Observations:

|                 |                                                                                                                                 |
|-----------------|---------------------------------------------------------------------------------------------------------------------------------|
| Adrenal         | -Cortical vacuolation, focal, mild<br>Sinusoidal ectasia, cortex, mild                                                          |
| Heart           | -Myocardial fibrosis, multifocal, mild                                                                                          |
| Kidney          | -Chronic progressive nephropathy, mild                                                                                          |
| Large Intestine | -Nematodiasis, colon                                                                                                            |
| Liver           | -Hepatocyte vacuolation, multifocal, mild<br>Hepatocyte alteration, vacuolated, mild<br>Hepatocyte alteration, basophilic, mild |
| Lung            | -Vascular mineralization, mild<br>Alveolar macrophages, mild                                                                    |
| Mammary Gland   | -Lobular hyperplasia                                                                                                            |
| Pancreas        | -Acinar atrophy, mild                                                                                                           |
| Parathyroid     | -Not examined, not in plane of section                                                                                          |
| Pituitary       | -Adenoma                                                                                                                        |

Species: Rat  
Project Number: 0281CR0012

Summarized STAR Page: 92

256

Summarized Single Tabulated Animal Report (continued)  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M  
FC-143: Two Year Oral Toxicity-Uncogenicity Study in Rats

Table: 2

Animal Number: 1R-4636 Sex: Female Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 105) Terminal Sacrifice

Microscopic Observations (continued):

Spleen -Hemosiderosis, mild

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Stomach, Small Intestine, Urinary Bladder, Aorta, Uterus,  
Ovary, Trachea, Thyroid, Esophagus, Lymph Node (mesenteric), Salivary Gland, Eye.

Animal Number: 1R-4637 Sex: Female Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 82) Sacrificed in extremis

Macroscopic Observations:

Pituitary -Reddened mass, 1 cm dia.  
Lung -Focal areas of consolidation in anterior part  
of right and left lung.  
Liver -Possibly pale

Microscopic Observations:

Eye -Keratitis, acute, marked  
Kidney -Pelvic mineralization, mild  
Mineralization, cortical, mild  
Chronic progressive nephropathy, mild  
Liver -Hepatocyte vacuolation, periportal, moderate  
Lung -Pneumonia, acute exudative, local areas,  
moderate  
Hemorrhage, multifocal, mild  
Mammary Gland -Galactoceles  
Pituitary -Adenoma  
Spleen -Hemosiderosis, moderate  
Uterus -Cystic glands, moderate

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Heart, Stomach, Small Intestine, Large Intestine,  
Urinary Bladder, Aorta, Ovary, Trachea, Adrenal, Thyroid, Parathyroid, Esophagus,  
Lymph Node (mesenteric), Pancreas, Salivary Gland.

Animal Number: 1R-4638 Sex: Female Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 105) Terminal Sacrifice

Macroscopic Observations:

Pituitary -Mass, 0.5 cm dia.

Microscopic Observations:

Adrenal -Sinusoidal ectasia, cortex, mild  
Esophagus -Not examined, missing

Species: Rat  
Project Number: 0281CR0012

Summarized STAR Page: 93

257

3MA00027392

1337.0267

Summarized Single Tabulated Animal Report (continued)  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M  
FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats

Table: 2

Animal Number: 1R-4638 Sex: Female Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 105) Terminal Sacrifice

Microscopic Observations (continued):

|               |                                                                                       |
|---------------|---------------------------------------------------------------------------------------|
| Kidney        | -Chronic progressive nephropathy, mild                                                |
| Liver         | -Portal bile duct proliferation, mild<br>Hepatocyte vacuolation, multifocal, moderate |
| Lung          | -Vascular mineralization, mild                                                        |
| Mammary Gland | -Not examined, missing                                                                |
| Parathyroid   | -Not examined, not in plane of section                                                |
| Pituitary     | -No diagnosis, inadequate section                                                     |
| Spleen        | -Hemosiderosis, mild                                                                  |
| Uterus        | -Cystic glands, marked                                                                |

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Heart, Stomach, Small Intestine, Large Intestine,  
Urinary Bladder, Aorta, Trachea, Thyroid, Lymph Node (mesenteric), Pancreas, Salivary Gland,  
Eye, Ovary.

Animal Number: 1R-4639 Sex: Female Group: ( 1) CONTROL 0 ppm  
Fate: (Week= 56) Sacrificed in extremis

Macroscopic Observations:

|       |                                              |
|-------|----------------------------------------------|
| Skin  | -Midsternal subcutaneous mass, 8 x 8 x 3 cm. |
| Liver | -Slightly pale                               |

Microscopic Observations:

|                 |                                                                       |
|-----------------|-----------------------------------------------------------------------|
| Kidney          | -Pelvic mineralization, mild<br>Chronic progressive nephropathy, mild |
| Large Intestine | -Nematodiasis, colon                                                  |
| Liver           | -Portal mononuclear cell infiltrate, mild                             |
| Lung            | -Hemorrhage, multifocal, mild                                         |
| Mammary Gland   | -Fibroadenoma                                                         |
| Salivary Gland  | -Not examined, missing                                                |
| Spleen          | -Hemosiderosis, mild                                                  |
| Uterus          | -Within normal limits<br>Fewer than protocol number                   |

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Heart, Stomach, Small Intestine, Urinary Bladder, Aorta, Ovary,  
Pituitary, Trachea, Adrenal, Thyroid, Parathyroid, Esophagus, Lymph Node (mesenteric), Pancreas,  
Eye.

Species: Rat  
Project Number: 0281CR0012

Summarized STAR Page: 94

258

3MA00027393

1337.0268

8 24Mo 300ppm

Summarized Single Tabulated Animal Report  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M  
FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats

Table: 2

Animal Number: 1R-3581 Sex: Male Group: ( 5) FC-143 300 ppm  
Fate: (Week= 106) Terminal Sacrifice

Macroscopic Observations:

Pituitary -Raised mass, 0.5 cm dia.

Microscopic Observations:

Adrenal -Pheochromocytoma, benign  
Kidney -Chronic progressive nephropathy, mild  
Liver -Portal mononuclear cell infiltrate, mild  
Hepatocyte vacuolation, multifocal, mild  
Hepatocyte alteration, vacuolated, mild  
Megakaryocytosis, minimal  
Lung -Vascular mineralization, mild  
Hemorrhage, multifocal, moderate  
Pituitary -Adenoma  
Spleen -Hemosiderosis, mild  
Thyroid -C cell adenoma

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Heart, Stomach, Small Intestine, Large Intestine,  
Urinary Bladder, Aorta, Testis/Epididymis, Prostate, Parathyroid, Trachea, Esophagus,  
Lymph Node (mesenteric), Pancreas, Salivary Gland, Eye.

Animal Number: 1R-3582 Sex: Male Group: ( 5) FC-143 300 ppm  
Fate: (Week= 106) Terminal Sacrifice

Macroscopic Observations:

Skin -Ulcerated mass, 2.8 cm dia., dorsal.  
Pituitary -Hemorrhagic lesion, 0.2 cm dia.  
Kidney -Pale  
Adrenal -Left adrenal enlarged, 0.7 cm dia. mass.  
Testis/Epididymis -Testes small, bilateral.

Microscopic Observations:

Adrenal -Pheochromocytoma, benign, unilateral  
Eye -Retinal atrophy, diffuse, marked  
Heart -Myocarditis, chronic nonsuppurative,  
multifocal, mild  
Kidney -Chronic progressive nephropathy, moderate  
Liver -Portal mononuclear cell infiltrate, mild  
Cystoid degeneration, focal, mild  
Lung -Vascular mineralization, mild  
Parathyroid -Not examined, missing  
Pituitary -Adenoma  
Salivary Gland -Not examined, missing  
Skin -Keratoacanthoma, back

Species: Rat  
Project Number: 0281CR0012

Summarized STAR Page: 95

259

Summarized Single Tabulated Animal Report (continued)  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M  
FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats

Table: 2

Animal Number: 1R-3582 Sex: Male Group: ( 5) FC-143 300 ppm  
Fate: (Week= 106) Terminal Sacrifice

Microscopic Observations (continued):

|                   |                                                    |
|-------------------|----------------------------------------------------|
| Spleen            | -Hemosiderosis, mild                               |
| Testis/Epididymis | -Tubule atrophy, aspermatogenesis, bilateral, mild |
| Thyroid           | -Not examined, missing                             |

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Stomach, Small Intestine, Large Intestine, Urinary Bladder, Aorta, Prostate, Trachea, Esophagus, Lymph Node (mesenteric), Pancreas.

Animal Number: 1R-3583 Sex: Male Group: ( 5) FC-143 300 ppm  
Fate: (Week= 106) Terminal Sacrifice

Macroscopic Observations:

|       |                                                                                       |
|-------|---------------------------------------------------------------------------------------|
| Liver | -Pale raised masses, 1.3 cm dia., right lateral lobe; 0.6 cm dia., left lateral lobe. |
|-------|---------------------------------------------------------------------------------------|

Microscopic Observations:

|                   |                                                                                                                                                                              |
|-------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Adrenal           | -Sinusoidal ectasia, cortex, moderate                                                                                                                                        |
| Kidney            | -Chronic progressive nephropathy, mild                                                                                                                                       |
| Liver             | -Hepatocellular carcinoma<br>Megalocytosis, mild<br>Portal mononuclear cell infiltrate, mild<br>Cystoid degeneration, focal, mild<br>Hepatocyte alteration, vacuolated, mild |
| Lung              | -Vascular mineralization, mild<br>Alveolar macrophages, mild                                                                                                                 |
| Testis/Epididymis | -Leydig cell adenoma, unilateral<br>Vascular mineralization, mild                                                                                                            |

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Spleen, Heart, Stomach, Small Intestine, Large Intestine, Urinary Bladder, Aorta, Prostate, Pituitary, Thyroid, Parathyroid, Trachea, Esophagus, Lymph Node (mesenteric), Pancreas, Salivary Gland, Eye.

Animal Number: 1R-3585 Sex: Male Group: ( 5) FC-143 300 ppm  
Fate: (Week= 106) Terminal Sacrifice

Macroscopic Observations:

|      |                                              |
|------|----------------------------------------------|
| Lung | -Raised pale lesion, 0.5 cm dia., left lobe. |
|------|----------------------------------------------|

Microscopic Observations:

|        |                                        |
|--------|----------------------------------------|
| Kidney | -Chronic progressive nephropathy, mild |
|--------|----------------------------------------|

Species: Rat  
Project Number: 02B1CR0012

Summarized STAR Page: 96

260

Summarized Single Tabulated Animal Report (continued)  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M  
FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats

Table: 2

Animal Number: 1R-3585 Sex: Male Group: ( 5) FC-143 300 ppm  
Fate: (Week= 106) Terminal Sacrifice

Microscopic Observations (continued):

|          |                                                                                                                                                                                                 |
|----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Liver    | -Portal mononuclear cell infiltrate, mild<br>Cystoid degeneration, multifocal, mild<br>Malignant lymphoma, lymphocytic<br>Hepatocyte alteration, basophilic, moderate<br>Megalocytosis, minimal |
| Lung     | -Vascular mineralization, mild<br>Fibrosis, pleural, moderate                                                                                                                                   |
| Pancreas | -Acinar atrophy, mild<br>Hyperplasia, acinar cell, mild                                                                                                                                         |

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Spleen, Heart, Stomach, Small Intestine, Large Intestine,  
Urinary Bladder, Aorta, Testis/Epididymis, Prostate, Pituitary, Adrenal, Thyroid, Parathyroid,  
Trachea, Esophagus, Lymph Node (mesenteric), Salivary Gland, Eye.

Animal Number: 1R-3586 Sex: Male Group: ( 5) FC-143 300 ppm  
Fate: (Week= 106) Terminal Sacrifice

Macroscopic Observations:

|                   |                                  |
|-------------------|----------------------------------|
| Liver             | -Possible pale foci on one lobe. |
| Testis/Epididymis | -Pale mass, 1 cm dia.            |

Microscopic Observations:

|                   |                                                                                                                |
|-------------------|----------------------------------------------------------------------------------------------------------------|
| Adrenal           | -Cortical vacuolation, focal, mild<br>Sinusoidal ectasia, cortex, mild                                         |
| Heart             | -Myocarditis, chronic nonsuppurative, mild                                                                     |
| Kidney            | -Chronic progressive nephropathy, moderate                                                                     |
| Liver             | -Portal mononuclear cell infiltrate, mild<br>Cystoid degeneration, multifocal, moderate<br>Megalocytosis, mild |
| Lung              | -Vascular mineralization, mild                                                                                 |
| Pancreas          | -Acinar atrophy, moderate                                                                                      |
| Salivary Gland    | -Sialadenitis, chronic, moderate                                                                               |
| Testis/Epididymis | -Tubule atrophy, aspermatogenesis, moderate<br>Mineralization, tubular, mild<br>Leydig cell adenoma, bilateral |

The following tissues were found to be within normal limits:

Spleen, Stomach, Small Intestine, Large Intestine, Urinary Bladder, Aorta, Prostate, Pituitary,  
Brain, Spinal Cord, Bone Marrow, Thyroid, Parathyroid, Trachea, Esophagus,  
Lymph Node (mesenteric), Eye.

Species: Rat  
Project Number: 0281CR0012

Summarized STAR Page: 97

261

Summarized Single Tabulated Animal Report (continued)  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M  
FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats

Table: 2

Animal Number: 1R-3587 Sex: Male Group: ( 5) FC-143 300 ppm  
Fate: (Week= 106) Terminal Sacrifice

Macroscopic Observations:

Eye

-Hypopyon, right eye.

Microscopic Observations:

Adrenal

-Sinusoidal ectasia, cortex, minimal

Eye

-Phthisis bulbi, unilateral, marked  
Lesion characterized by retinal atrophy,  
cataract, and corneal vascularization with  
collapse of the globe.

Kidney

-Chronic progressive nephropathy, mild

Liver

-Portal mononuclear cell infiltrate, mild  
Cystoid degeneration, multifocal, mild  
Hepatocyte alteration, basophilic, minimal  
Megalocytosis, minimal

Lung

-Vascular mineralization, mild

Pancreas

Alveolar macrophages, mild

Parathyroid

Perivascular mononuclear infiltrate, minimal

Pituitary

-Hyperplasia, islet cell, moderate

Salivary Gland

-Not examined, not in plane of section

-Cyst, pars distalis

-Sialadenitis, chronic, moderate

Moderate reactive hyperplasia of included  
lymph node.

Spleen

-Hemosiderosis, mild

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Heart, Stomach, Small Intestine, Large Intestine,  
Urinary Bladder, Aorta, Testis/Epididymis, Prostate, Thyroid, Trachea, Esophagus,  
Lymph Node (mesenteric).

Animal Number: 1R-3590 Sex: Male Group: ( 5) FC-143 300 ppm  
Fate: (Week= 19) Sacrificed in extremis

Macroscopic Observations:

Thymus

-Enlarged, 1.5 x 1.5 x 0.3 cm, dark red.

Liver

-Enlarged, brown/yellow mottling.

Spleen

-Markedly enlarged, 8 x 2 x 1 cm.

Lymph Node (mesenteric)

-Enlarged

Lymph Node (abdominal)

-Hepatic lymph nodes enlarged.

Small Intestine

-Peyer's patches enlarged and reddened.

Large Intestine

-Peyer's patches enlarged and reddened.

Kidney

-Slight dilatation of renal pelvis, bilateral.

Urinary Bladder

-Distended with urine.

Penis

-Swollen

Species: Rat  
Project Number: 0281CR0012

Summarized STAR Page: 98

262

3MA00027398

1337.0273

Summarized Single Tabulated Animal Report (continued)  
 Individual Macroscopic and Microscopic Observations  
 Riker Laboratories, Inc. 3M  
 FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats

Table: 2

Animal Number: 1R-3590 Sex: Male Group: ( 5) FC-143 300 ppm  
 Fate: (Week= 19) Sacrificed in extremis

Microscopic Observations (continued):

|                         |                                                                                                                     |
|-------------------------|---------------------------------------------------------------------------------------------------------------------|
| Adrenal                 | -Malignant lymphoma, lymphocytic                                                                                    |
| Bone Marrow             | -Malignant lymphoma, lymphocytic                                                                                    |
| Brain                   | -Malignant lymphoma, lymphocytic                                                                                    |
| Eye                     | -Malignant lymphoma, lymphocytic                                                                                    |
| Kidney                  | -Malignant lymphoma, lymphocytic                                                                                    |
| Liver                   | -Malignant lymphoma, lymphocytic<br>Parenchyma almost completely replaced by<br>diffuse neoplastic cell infiltrate. |
| Lung                    | -Malignant lymphoma, lymphocytic<br>Hemorrhage, local areas, moderate                                               |
| Lymph Node (abdominal)  | -Malignant lymphoma, histiocytic<br>Extensive neoplastic involvement of hepatic<br>node.                            |
| Lymph Node (mesenteric) | -Malignant lymphoma, lymphocytic                                                                                    |
| Parathyroid             | -Not examined, missing                                                                                              |
| Pituitary               | -No diagnosis, inadequate section                                                                                   |
| Small Intestine         | -Malignant lymphoma, lymphocytic                                                                                    |
| Spleen                  | -Malignant lymphoma, lymphocytic                                                                                    |
| Thymus                  | -Malignant lymphoma, histiocytic                                                                                    |
| Thyroid                 | -Not examined, missing                                                                                              |
| Urinary Bladder         | -Malignant lymphoma, lymphocytic<br>Epithelial hyperplasia, simple, diffuse, mild                                   |

The following tissues were found to be within normal limits:

Heart, Stomach, Large Intestine, Aorta, Testis/Epididymis, Prostate, Trachea, Esophagus,  
 Pancreas, Salivary Gland, Spinal Cord.

Animal Number: 1R-3591 Sex: Male Group: ( 5) FC-143 300 ppm  
 Fate: (Week= 106) Terminal Sacrifice

Macroscopic Observations:

-No visible lesions.

Microscopic Observations:

|           |                                                                                                                                                      |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| Adrenal   | -Sinusoidal ectasia, cortex, mild                                                                                                                    |
| Esophagus | -No diagnosis, inadequate section                                                                                                                    |
| Kidney    | -Chronic progressive nephropathy, minimal                                                                                                            |
| Liver     | -Portal mononuclear cell infiltrate, mild<br>Cystoid degeneration, moderate<br>Hepatocyte alteration, basophilic, moderate<br>Megalocytosis, minimal |
| Lung      | -Vascular mineralization, mild<br>Alveolar macrophages, mild<br>Hemorrhage, local areas, moderate                                                    |

Species: Rat  
 Project Number: 0291CR0012

Summarized STAR Page: 99

263

Summarized Single Tabulated Animal Report (continued)  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M  
FC-143: Two Year Oral Toxicity-Uncogenicity Study in Rats

Table: 2

Animal Number: 1R-3591 Sex: Male Group: ( 5) FC-143 300 ppm  
Fate: (Week= 106) Terminal Sacrifice

Microscopic Observations (continued):

Pituitary -Adenoma

The following tissues were found to be within normal limits:  
Brain, Spinal Cord, Bone Marrow, Spleen, Heart, Stomach, Small Intestine, Large Intestine,  
Urinary Bladder, Aorta, Testis/Epididymis, Prostate, Thyroid, Parathyroid, Trachea,  
Lymph Node (mesenteric), Pancreas, Salivary Gland, Eye.

Animal Number: 1R-3593 Sex: Male Group: ( 5) FC-143 300 ppm  
Fate: (Week= 106) Terminal Sacrifice

Macroscopic Observations:

Liver -Raised pale lesion, 0.6 cm dia., inferior  
caudate lobe.

Microscopic Observations:

Kidney -Chronic progressive nephropathy, mild  
Liver -Megalocytosis, minimal  
Portal mononuclear cell infiltrate, mild  
Cystoid degeneration, multifocal, mild  
Hepatocellular carcinoma  
Well differentiated, trabecular pattern,  
moderate mitotic activity, vascular invasion.  
Lung -Vascular mineralization, mild  
Alveolar macrophages, mild  
Parathyroid -Not examined, not in plane of section  
Thyroid -C cell adenoma

The following tissues were found to be within normal limits:  
Brain, Spinal Cord, Bone Marrow, Spleen, Heart, Stomach, Small Intestine, Large Intestine,  
Urinary Bladder, Aorta, Testis/Epididymis, Prostate, Pituitary, Adrenal, Trachea, Esophagus,  
Lymph Node (mesenteric), Pancreas, Salivary Gland, Eye.

Animal Number: 1R-3594 Sex: Male Group: ( 5) FC-143 300 ppm  
Fate: (Week= 106) Terminal Sacrifice

Macroscopic Observations:

Liver -Pale foci throughout.

Microscopic Observations:

Adrenal -Sinusoidal ectasia, cortex, moderate  
Heart -Myocarditis, chronic nonsuppurative,  
multifocal, minimal  
Kidney -Chronic progressive nephropathy, mild

Species: Rat  
Project Number: 0281CR0012

Summarized STAR Page: 100

264

Summarized Single Tabulated Animal Report (continued)  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M  
FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats

Table: 2

Animal Number: 1R-3594 Sex: Male Group: ( 5) FC-143 300 ppm  
Fate: (Week= 106) Terminal Sacrifice

Microscopic Observations (continued):

|                   |                                                                                                                                                                                                                                                            |
|-------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Liver             | -Hepatocyte vacuolation, diffuse, moderate<br>Cystoid degeneration, mild<br>Hepatocyte alteration, vacuolated, moderate<br>Megalocytosis, moderate<br>Centrilobular cells enlarged with finely granular, eosinophilic, "ground glass" appearing cytoplasm. |
| Lung              | -Pneumonia, interstitial, chronic, multifocal, mild<br>Alveolar macrophages, moderate                                                                                                                                                                      |
| Parathyroid       | -Not examined, not in plane of section                                                                                                                                                                                                                     |
| Pituitary         | -Adenoma                                                                                                                                                                                                                                                   |
| Testis/Epididymis | -Vascular mineralization, moderate                                                                                                                                                                                                                         |
| Thyroid           | -Hyperplasia, C cell, mild                                                                                                                                                                                                                                 |

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Spleen, Stomach, Small Intestine, Large Intestine, Urinary Bladder, Aorta, Prostate, Trachea, Esophagus, Lymph Node (mesenteric), Pancreas, Salivary Gland, Eye.

Animal Number: 1R-3595 Sex: Male Group: ( 5) FC-143 300 ppm  
Fate: (Week= 106) Terminal Sacrifice

Macroscopic Observations:

|               |                                           |
|---------------|-------------------------------------------|
| Mammary Gland | -Firm mass, 3 x 2 x 1.5 cm, right axilla. |
| Pituitary     | -Hemorrhagic mass, 0.5 x 0.7 cm.          |

Microscopic Observations:

|                |                                                                                                                                                                                 |
|----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Adrenal        | -Sinusoidal ectasia, cortex, mild                                                                                                                                               |
| Bone Marrow    | -Not examined, missing                                                                                                                                                          |
| Kidney         | -Pelvic mineralization, mild<br>Pyelonephritis, acute, mild<br>Hyperplasia, pelvic epithelium, diffuse, mild                                                                    |
| Liver          | -Portal mononuclear cell infiltrate, mild<br>Portal bile duct proliferation, mild<br>Cystoid degeneration, multifocal, mild                                                     |
| Lung           | -Vascular mineralization, mild<br>Alveolar macrophages, mild                                                                                                                    |
| Pituitary      | -Adenoma                                                                                                                                                                        |
| Salivary Gland | -Sialadenitis, acute, moderate<br>Mass described at necropsy as mammary gland was apparently the enlarged, inflamed salivary gland. No mammary tissue was present on any slide. |

Species: Rat  
Project Number: 0281CR0012

Summarized STAR Page: 101

265

Summarized Single Tabulated Animal Report (continued)  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M  
FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats

Table: 2

Animal Number: 1R-3595 Sex: Male Group: ( 5) FC-143 300 ppm  
Fate: (Week= 106) Terminal Sacrifice

Microscopic Observations (continued):

Spinal Cord -Not examined, missing  
Spleen -Hemosiderosis, mild

The following tissues were found to be within normal limits:  
Brain, Heart, Stomach, Small Intestine, Large Intestine, Urinary Bladder, Aorta,  
Testis/Epididymis, Prostate, Thyroid, Parathyroid, Trachea, Esophagus, Lymph Node (mesenteric),  
Pancreas, Eye.

Animal Number: 1R-3596 Sex: Male Group: ( 5) FC-143 300 ppm  
Fate: (Week= 106) Terminal Sacrifice

Macroscopic Observations:

Kidney -Pale, enlarged and pitted, bilateral.

Microscopic Observations:

Adrenal -Cortical vacuolation, multifocal, minimal  
Medullary cell hyperplasia, focal, mild  
Heart -Myocarditis, chronic nonsuppurative,  
multifocal, mild  
Kidney -Chronic progressive nephropathy, marked  
Cyst, cortical, moderate  
Liver -Portal mononuclear cell infiltrate, mild  
Hepatocyte vacuolation, multifocal, mild  
Hepatocyte alteration, vacuolated, mild  
Megalocytosis, mild  
Lung -Vascular mineralization, mild  
Hemorrhage, local areas, marked  
Pituitary -Adenoma  
Testis/Epididymis -Polyarteritis, moderate

The following tissues were found to be within normal limits:  
Brain, Spinal Cord, Bone Marrow, Spleen, Stomach, Small Intestine, Large Intestine,  
Urinary Bladder, Aorta, Prostate, Thyroid, Parathyroid, Trachea, Esophagus,  
Lymph Node (mesenteric), Pancreas, Salivary Gland, Eye.

Animal Number: 1R-3597 Sex: Male Group: ( 5) FC-143 300 ppm  
Fate: (Week= 106) Terminal Sacrifice

Macroscopic Observations:

-No visible lesions.

Microscopic Observations:

Heart -Myocarditis, chronic nonsuppurative,  
multifocal, mild

Species: Rat  
Project Number: 0281CR0012

Summarized STAR Page: 102

266

Summarized Single Tabulated Animal Report (continued)  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M  
FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats

Table: 2

Animal Number: 1R-3597 Sex: Male Group: ( 5) FC-143 300 ppm  
Fate: (Week= 106) Terminal Sacrifice

Microscopic Observations (continued):

|          |                                                                                                                                                        |
|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| Kidney   | -Chronic progressive nephropathy, mild                                                                                                                 |
| Liver    | -Portal mononuclear cell infiltrate, mild<br>Portal bile duct proliferation, mild<br>Hepatocyte alteration, vacuolated, mild<br>Megalocytosis, minimal |
| Lung     | -Vascular mineralization, mild                                                                                                                         |
| Pancreas | -Acinar atrophy, mild                                                                                                                                  |
| Prostate | -Prostatitis, acute, suppurative, minimal                                                                                                              |

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Spleen, Stomach, Small Intestine, Large Intestine,  
Urinary Bladder, Aorta, Testis/Epididymis, Pituitary, Adrenal, Thyroid, Parathyroid, Trachea,  
Esophagus, Lymph Node (mesenteric), Salivary Gland, Eye.

Animal Number: 1R-3599 Sex: Male Group: ( 5) FC-143 300 ppm  
Fate: (Week= 106) Terminal Sacrifice

Macroscopic Observations:

|        |                                |
|--------|--------------------------------|
| Kidney | -Hydronephrosis, right kidney. |
|--------|--------------------------------|

Microscopic Observations:

|                |                                                                                                                                                         |
|----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| Kidney         | -Chronic progressive nephropathy, mild<br>Pelvic mineralization, mild<br>Hyperplasia, pelvic epithelium, multifocal, moderate                           |
| Liver          | -Portal mononuclear cell infiltrate, mild<br>Portal bile duct proliferation, mild<br>Cystoid degeneration, multifocal, mild<br>Megalocytosis, mild      |
| Lung           | -Vascular mineralization, mild<br>Pneumonia, interstitial, chronic, multifocal, mild<br>Alveolar macrophages, mild<br>Hemorrhage, local areas, moderate |
| Salivary Gland | -Sialadenitis, chronic, moderate                                                                                                                        |
| Spleen         | -Hemosiderosis, mild                                                                                                                                    |

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Heart, Stomach, Small Intestine, Large Intestine,  
Urinary Bladder, Aorta, Testis/Epididymis, Prostate, Pituitary, Adrenal, Thyroid, Parathyroid,  
Trachea, Esophagus, Lymph Node (mesenteric), Pancreas, Eye.

Species: Rat  
Project Number: 0281CR0012

Summarized STAR Page: 103

267

3MA00027403

1337.0278

Summarized Single Tabulated Animal Report (continued)  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M  
FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats

Table: 2

Animal Number: 1R-3600 Sex: Male Group: ( 5) FC-143 300 ppm  
Fate: (Week= 106) Terminal Sacrifice

Macroscopic Observations:

Liver -Mottled

Microscopic Observations:

Adrenal -Cortical vacuolation, mild  
Bone Marrow -Not examined, missing  
Heart -Myocarditis, chronic nonsuppurative,  
multifocal, mild  
Kidney -Chronic progressive nephropathy, mild  
Liver -Portal mononuclear cell infiltrate, mild  
Portal bile duct proliferation, mild  
Cystoid degeneration, focal, mild  
Megalocytosis, moderate  
Lung -Vascular mineralization, mild  
Alveolar macrophages, mild  
Hemorrhage, local areas, moderate  
Lymph Node (mesenteric) -Hemorrhage, minimal  
Pituitary -Not examined, missing  
Spinal Cord -Not examined, missing  
Spleen -Hemosiderosis, mild  
Testis/Epididymis -Vascular mineralization, mild

The following tissues were found to be within normal limits:

Brain, Stomach, Small Intestine, Large Intestine, Urinary Bladder, Aorta, Prostate, Thyroid,  
Parathyroid, Trachea, Esophagus, Pancreas, Salivary Gland, Eye.

Animal Number: 1R-3601 Sex: Male Group: ( 5) FC-143 300 ppm  
Fate: (Week= 106) Terminal Sacrifice

Macroscopic Observations:

Liver -Mottled; yellow raised lesions, 0.7 and 0.9  
cm dia., posterior caudate lobes.

Lymph Node (mesenteric) -Enlarged

Stomach -Enlarged gastric rugae

Microscopic Observations:

Adrenal -Cortical vacuolation, multifocal, moderate  
Heart -Myocarditis, chronic nonsuppurative,  
multifocal, minimal  
Kidney -Chronic progressive nephropathy, mild  
Liver -Portal mononuclear cell infiltrate, mild  
Cystoid degeneration, multifocal, moderate  
Hepatocyte alteration, vacuolated, mild  
Megalocytosis, moderate  
Hepatocyte alteration, basophilic, moderate

Species: Rat  
Project Number: 0281CR0012

Summarized STAR Page: 104

268

Summarized Single Tabulated Animal Report (continued)  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M  
FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats

Table: 2

Animal Number: 1R-3601 Sex: Male Group: ( 5) FC-143 300 ppm  
Fate: (Week= 106) Terminal Sacrifice

Microscopic Observations (continued):

|                         |                                                                                                                                                                                      |
|-------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Lung                    | -Vascular mineralization, mild<br>Hemorrhage, local areas, marked                                                                                                                    |
| Lymph Node (mesenteric) | -Hemorrhage, mild<br>Hemangiosarcoma                                                                                                                                                 |
| Pancreas                | -Acinar atrophy, moderate                                                                                                                                                            |
| Pituitary               | -Cyst, pars distalis                                                                                                                                                                 |
| Stomach                 | -Adenocarcinoma<br>Extensive infiltration into submucosa and<br>muscularis. Well differentiated, high<br>mitotic index. Probably parietal cell<br>origin. Tumor cells in lymphatics. |

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Spleen, Small Intestine, Large Intestine, Urinary Bladder,  
Aorta, Testis/Epididymis, Prostate, Thyroid, Parathyroid, Trachea, Esophagus, Salivary Gland,  
Eye.

Animal Number: 1R-3602 Sex: Male Group: ( 5) FC-143 300 ppm  
Fate: (Week= 106) Terminal Sacrifice

Macroscopic Observations:

-No visible lesions.

Microscopic Observations:

|                         |                                                                                      |
|-------------------------|--------------------------------------------------------------------------------------|
| Adrenal                 | -Nodular hyperplasia, cortex, focal, mild<br>Medullary cell hyperplasia, focal, mild |
| Heart                   | -Myocarditis, chronic nonsuppurative,<br>multifocal, mild                            |
| Kidney                  | -Chronic progressive nephropathy, mild                                               |
| Liver                   | -Portal mononuclear cell infiltrate, mild<br>Megalocytosis, minimal                  |
| Lung                    | -Vascular mineralization, mild<br>Alveolar macrophages, mild                         |
| Lymph Node (mesenteric) | -Hemorrhage, mild                                                                    |
| Pancreas                | -Islet cell adenoma                                                                  |
| Spleen                  | -Hemosiderosis, mild                                                                 |
| Testis/Epididymis       | -Vascular mineralization, mild                                                       |
| Thyroid                 | -C cell adenoma                                                                      |

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Stomach, Small Intestine, Large Intestine, Urinary Bladder,  
Aorta, Prostate, Pituitary, Parathyroid, Trachea, Esophagus, Salivary Gland, Eye.

Species: Rat  
Project Number: 02B1CR0012

Summarized STAR Page: 105

269

3MA00027405

1337.0280

Summarized Single Tabulated Animal Report (continued)  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M  
FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats

Table: 2

Animal Number: 1R-3603 Sex: Male Group: ( 5) FC-143 300 ppm  
Fate: (Week= 106) Terminal Sacrifice

Macroscopic Observations:

-No visible lesions.

Microscopic Observations:

|             |                                                                                                                                                     |
|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| Adrenal     | -Sinusoidal ectasia, cortex, minimal                                                                                                                |
| Kidney      | -Chronic progressive nephropathy, mild                                                                                                              |
| Liver       | -Portal mononuclear cell infiltrate, mild<br>Cystoid degeneration, focal, mild<br>Megalocytosis, minimal<br>Hepatocyte alteration, basophilic, mild |
| Lung        | -Vascular mineralization, mild                                                                                                                      |
| Parathyroid | -Not examined, not in plane of section                                                                                                              |

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Spleen, Heart, Stomach, Small Intestine, Large Intestine,  
Urinary Bladder, Aorta, Testis/Epididymis, Prostate, Pituitary, Thyroid, Trachea, Esophagus,  
Lymph Node (mesenteric), Pancreas, Salivary Gland, Eye.

Animal Number: 1R-3605 Sex: Male Group: ( 5) FC-143 300 ppm  
Fate: (Week= 106) Terminal Sacrifice

Macroscopic Observations:

Liver -Pale, mottled

Microscopic Observations:

|                   |                                                                                                                                                                                                   |
|-------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Heart             | -Myocarditis, chronic nonsuppurative,<br>multifocal, minimal                                                                                                                                      |
| Kidney            | -Chronic progressive nephropathy, mild                                                                                                                                                            |
| Liver             | -Portal mononuclear cell infiltrate, mild<br>Portal bile duct proliferation, mild<br>Hepatocyte vacuolation, multifocal, mild<br>Cystoid degeneration, multifocal, mild<br>Megalocytosis, minimal |
| Lung              | -Vascular mineralization, mild<br>Pneumonia, interstitial, chronic, multifocal,<br>mild<br>Alveolar macrophages, moderate<br>Perivascular mononuclear infiltrate, moderate                        |
| Salivary Gland    | -Sialadenitis, chronic, moderate                                                                                                                                                                  |
| Spleen            | -Hematopoiesis, extramedullary, increased,<br>mild<br>Hemosiderosis, mild                                                                                                                         |
| Testis/Epididymis | -Tubule atrophy, aspermatogenesis, unilateral,<br>marked<br>Vascular mineralization, mild                                                                                                         |

Species: Rat  
Project Number: 0281CR0012

Summarized STAR Page: 106

270

Summarized Single Tabulated Animal Report (continued)  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M  
FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats

Table: 2

Animal Number: 1R-3605 Sex: Male Group: ( 5) FC-143 300 ppm  
Fate: (Week= 106) Terminal Sacrifice

Microscopic Observations (continued):

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Stomach, Small Intestine, Large Intestine, Urinary Bladder,  
Aorta, Prostate, Pituitary, Adrenal, Thyroid, Parathyroid, Trachea, Esophagus,  
Lymph Node (mesenteric), Pancreas, Eye.

Animal Number: 1R-3606 Sex: Male Group: ( 5) FC-143 300 ppm  
Fate: (Week= 106) Terminal Sacrifice

Macroscopic Observations:

-No visible lesions.

Microscopic Observations:

Adrenal

-Nodular hyperplasia, cortex, focal, mild

Kidney

-Chronic progressive nephropathy, minimal  
Pyelonephritis, acute, mild

Liver

-Portal mononuclear cell infiltrate, mild  
Megalocytosis, minimal

Lung

-Vascular mineralization, mild

Parathyroid

-Not examined, not in plane of section

Spleen

-Hemosiderosis, mild

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Heart, Stomach, Small Intestine, Large Intestine,  
Urinary Bladder, Aorta, Testis/Epididymis, Prostate, Pituitary, Thyroid, Trachea, Esophagus,  
Lymph Node (mesenteric), Pancreas, Salivary Gland, Eye.

Animal Number: 1R-3607 Sex: Male Group: ( 5) FC-143 300 ppm  
Fate: (Week= 106) Terminal Sacrifice

Macroscopic Observations:

Pituitary

-Hemorrhagic mass, 1 x 0.7 cm.

Microscopic Observations:

Adrenal

-Cortical vacuolation, multifocal, moderate  
Pheochromocytoma, benign, unilateral

Kidney

-Chronic progressive nephropathy, mild  
Pyelonephritis, acute, moderate  
Hyperplasia, pelvic epithelium, diffuse, mild

Liver

-Portal mononuclear cell infiltrate, mild

Lung

-Vascular mineralization, mild

Pancreas

Alveolar macrophages, mild  
-Acinar atrophy, mild  
Hyperplasia, islet cell, moderate

Species: Rat  
Project Number: 02B1CR0012

Summarized STAR Page: 107

271

3MA00027407

1337.0282

Summarized Single Tabulated Animal Report (continued)  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M  
FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats

Table: 2

Animal Number: 1R-3607 Sex: Male Group: ( 5) FC-143 300 ppm  
Fate: (Week= 106) Terminal Sacrifice

Microscopic Observations (continued):

|                 |                                                    |
|-----------------|----------------------------------------------------|
| Parathyroid     | -Adenoma                                           |
| Pituitary       | -Adenoma                                           |
| Prostate        | -Prostatitis, acute, suppurative, marked           |
| Salivary Gland  | -Sialadenitis, chronic, moderate                   |
| Spleen          | -Hemosiderosis, mild                               |
| Thyroid         | -Ultimobranchial cyst                              |
| Urinary Bladder | -Epithelial hyperplasia, simple, local areas, mild |

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Heart, Stomach, Small Intestine, Large Intestine, Aorta, Testis/Epididymis, Trachea, Esophagus, Lymph Node (mesenteric), Eye.

Animal Number: 1R-3608 Sex: Male Group: ( 5) FC-143 300 ppm  
Fate: (Week= 106) Terminal Sacrifice

Macroscopic Observations:

Skin -Raised inflamed lesion, left hind footpad.

Microscopic Observations:

|                   |                                                                                                                                                                                          |
|-------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Adrenal           | -Sinusoidal ectasia, cortex, mild<br>Nodular hyperplasia, cortex, multifocal, mild                                                                                                       |
| Kidney            | -Chronic progressive nephropathy, minimal                                                                                                                                                |
| Liver             | -Portal mononuclear cell infiltrate, mild<br>Portal bile duct proliferation, mild<br>Cystoid degeneration, focal, mild<br>Hepatocyte alteration, vacuolated, mild<br>Megalocytosis, mild |
| Lung              | -Vascular mineralization, mild<br>Alveolar macrophages, mild<br>Perivascular mononuclear infiltrate, mild                                                                                |
| Skin              | -Pododermatitis, ulcerative, hindleg, marked                                                                                                                                             |
| Testis/Epididymis | -Tubule atrophy, aspermatogenesis, moderate                                                                                                                                              |
| Thyroid           | -Ultimobranchial cyst                                                                                                                                                                    |

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Spleen, Heart, Stomach, Small Intestine, Large Intestine, Urinary Bladder, Aorta, Prostate, Pituitary, Parathyroid, Trachea, Esophagus, Lymph Node (mesenteric), Pancreas, Salivary Gland, Eye.

Species: Rat  
Project Number: 02B1CR0012

Summarized STAR Page: 108

272

3MA00027408

1337.0283

Summarized Single Tabulated Animal Report (continued)  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M  
FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats

Table: 2

Animal Number: 1R-3609 Sex: Male Group: ( 5) FC-143 300 ppm  
Fate: (Week= 106) Terminal Sacrifice

Macroscopic Observations:

-No visible lesions.

Microscopic Observations:

Adrenal

-Nodular hyperplasia, cortex, focal, mild

Kidney

-Chronic progressive nephropathy, minimal

Liver

-Portal mononuclear cell infiltrate, mild

Portal bile duct proliferation, mild

Megalocytosis, mild

Lung

-Vascular mineralization, mild

Hemorrhage, local areas, moderate

Lymph Node (mesenteric)

-Sinusoidal ectasia, mild

Pancreas

-Acinar atrophy, moderate

Polyarteritis, moderate

Parathyroid

-Not examined, not in plane of section

Testis/Epididymis

-Leydig cell hyperplasia, focal, mild

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Spleen, Heart, Stomach, Small Intestine, Large Intestine,  
Urinary Bladder, Aorta, Prostate, Pituitary, Thyroid, Trachea, Esophagus, Salivary Gland, Eye.

Animal Number: 1R-3610 Sex: Male Group: ( 5) FC-143 300 ppm  
Fate: (Week= 106) Terminal Sacrifice

Macroscopic Observations:

Liver

-Few pale foci.

Testis/Epididymis

-Testes appear somewhat small.

Microscopic Observations:

Adrenal

-Pheochromocytoma, benign, unilateral

Kidney

-Chronic progressive nephropathy, mild

Liver

-Portal mononuclear cell infiltrate, mild

Hepatocyte vacuolation, multifocal, mild

Cystoid degeneration, multifocal, mild

Megalocytosis, minimal

Lung

-Vascular mineralization, mild

Pneumonia, interstitial, chronic, multifocal,  
mild

Perivascular mononuclear infiltrate, minimal

Hemorrhage, local areas, moderate

Pancreas

-Acinar atrophy, mild

Testis/Epididymis

-Mineralization, tubular, mild

Tubule atrophy, aspermatogenesis, bilateral,  
marked

Species: Rat  
Project Number: 0281CR0012

Summarized STAR Page: 109

273

3MA00027409

1337.0284

Summarized Single Tabulated Animal Report (continued)  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M  
FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats

Table: 2

Animal Number: 1R-3610 Sex: Male Group: ( 5) FC-143 300 ppm  
Fate: (Week= 106) Terminal Sacrifice

Microscopic Observations (continued):

Thyroid

-C cell adenoma  
Follicular hyperplasia, cystic, unilateral,  
moderate

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Spleen, Heart, Stomach, Small Intestine, Large Intestine,  
Urinary Bladder, Aorta, Prostate, Pituitary, Parathyroid, Trachea, Esophagus,  
Lymph Node (mesenteric), Salivary Gland, Eye.

Animal Number: 1R-3611 Sex: Male Group: ( 5) FC-143 300 ppm  
Fate: (Week= 106) Terminal Sacrifice

Macroscopic Observations:

Liver

-Few pale foci; raised pale lesion, 0.7 cm  
dia., in median lobe.

Microscopic Observations:

Adrenal

-Sinusoidal ectasia, cortex, mild  
Cortical vacuolation, focal, minimal

Esophagus

-Not examined, missing

Heart

-Myocarditis, chronic nonsuppurative,  
multifocal, mild

Kidney

-Chronic progressive nephropathy, mild  
Pelvic mineralization, minimal

Liver

-Portal mononuclear cell infiltrate, mild  
Hepatocyte vacuolation, multifocal, mild  
Cystoid degeneration, multifocal, mild  
Hepatocyte alteration, vacuolated, mild  
Megalocytosis, minimal  
Hyperplastic nodule  
Cells in cords of single cell thickness. Many  
cells vacuolated. Large central blood filled  
space.

Lung

-Vascular mineralization, mild  
Hemorrhage, local areas, moderate

Pancreas

-Acinar atrophy, mild

Parathyroid

-Not examined, missing

Salivary Gland

-Sialadenitis, chronic, marked  
Extensive squamous metaplasia of duct  
epithelium with some ducts occluded by  
hyperplastic, metaplastic epithelium.

Thyroid

-Not examined, missing

Species: Rat  
Project Number: 0281CR0012

Summarized STAR Page: 110

274

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1337.0285

Summarized Single Tabulated Animal Report (continued)  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M  
FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats

Table: 2

Animal Number: 1R-3611 Sex: Male Group: ( 5) FC-143 300 ppm  
Fate: (Week= 106) Terminal Sacrifice

Microscopic Observations (continued):

Trachea -Not examined, missing

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Spleen, Stomach, Small Intestine, Large Intestine,  
Urinary Bladder, Aorta, Testis/Epididymis, Prostate, Pituitary, Lymph Node (mesenteric), Eye.

Animal Number: 1R-3612 Sex: Male Group: ( 5) FC-143 300 ppm  
Fate: (Week= 99) Found Dead

Macroscopic Observations:

Liver -Multilobular mass, 4.5 x 4 x 3 cm in area of  
right lateral lobe, attached to  
caudate lobe.

Microscopic Observations:

Adrenal -Cortical vacuolation, focal, minimal  
Kidney -Chronic progressive nephropathy, marked  
Liver -Portal mononuclear cell infiltrate, mild  
Portal bile duct proliferation, mild  
Hepatocellular carcinoma  
Well differentiated, trabecular pattern,  
large areas of necrosis within tumor.  
Lung -Vascular mineralization, mild  
Alveolar macrophages, marked  
Medial hypertrophy, arteries, moderate  
Pancreas -Hyperplasia, islet cell, moderate  
Thyroid -Cyst, colloid, mild

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Spleen, Heart, Stomach, Small Intestine, Large Intestine,  
Urinary Bladder, Aorta, Testis/Epididymis, Prostate, Pituitary, Parathyroid, Trachea, Esophagus,  
Salivary Gland, Eye, Lymph Node (mesenteric).

Animal Number: 1R-3614 Sex: Male Group: ( 5) FC-143 300 ppm  
Fate: (Week= 106) Terminal Sacrifice

Macroscopic Observations:

Testis/Epididymis -Pale masses of various sizes in both testes.

Microscopic Observations:

Kidney -Chronic progressive nephropathy, mild  
Liver -Portal mononuclear cell infiltrate, mild  
Cystoid degeneration, focal, minimal

Species: Rat  
Project Number: 0281CR0012

Summarized STAR Page: 111

275

Summarized Single Tabulated Animal Report (continued)  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M  
FC-143: Two Year Oral Toxicity-Uncogenicity Study in Rats

Table: 2

Animal Number: 1R-3614 Sex: Male Group: ( 5) FC-143 300 ppm  
Fate: (Week= 106) Terminal Sacrifice

Microscopic Observations (continued):

|                   |                                                                                               |
|-------------------|-----------------------------------------------------------------------------------------------|
| Lung              | -Vascular mineralization, mild<br>Alveolar macrophages, mild                                  |
| Prostate          | -Not examined, missing                                                                        |
| Spleen            | -Hemosiderosis, mild                                                                          |
| Testis/Epididymis | -Tubule atrophy, aspermatogenesis, unilateral,<br>moderate<br>Leydig cell adenoma, unilateral |

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Heart, Stomach, Small Intestine, Large Intestine,  
Urinary Bladder, Aorta, Pituitary, Adrenal, Thyroid, Parathyroid, Trachea, Esophagus,  
Lymph Node (mesenteric), Pancreas, Salivary Gland, Eye.

Animal Number: 1R-3615 Sex: Male Group: ( 5) FC-143 300 ppm  
Fate: (Week= 106) Terminal Sacrifice

Macroscopic Observations:

|                   |                      |
|-------------------|----------------------|
| Pituitary         | -Mass, 0.8 cm dia.   |
| Testis/Epididymis | -Right testis small. |

Microscopic Observations:

|                   |                                                                                                               |
|-------------------|---------------------------------------------------------------------------------------------------------------|
| Adrenal           | -Sinusoidal ectasia, cortex, mild                                                                             |
| Kidney            | -Chronic progressive nephropathy, moderate                                                                    |
| Liver             | -Portal mononuclear cell infiltrate, mild<br>Cystoid degeneration, multifocal, mild<br>Megalocytosis, minimal |
| Lung              | -Vascular mineralization, mild<br>Alveolar macrophages, mild<br>Hemorrhage, local areas, mild                 |
| Parathyroid       | -Not examined, not in plane of section                                                                        |
| Pituitary         | -Adenoma                                                                                                      |
| Salivary Gland    | -Sialadenitis, chronic, marked<br>Extensive hyperplasia and metaplasia of duct<br>epithelium.                 |
| Spleen            | -Hemosiderosis, mild                                                                                          |
| Testis/Epididymis | -Tubule atrophy, aspermatogenesis, unilateral,<br>marked                                                      |

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Heart, Stomach, Small Intestine, Large Intestine,  
Urinary Bladder, Aorta, Prostate, Thyroid, Trachea, Esophagus, Lymph Node (mesenteric),  
Pancreas, Eye.

Species: Rat  
Project Number: 02B1CR0012

Summarized STAR Page: 112

276

Summarized Single Tabulated Animal Report (continued)  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M  
FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats

Table: 2

Animal Number: 1R-3616 Sex: Male Group: ( 5) FC-143 300 ppm  
Fate: (Week= 72) Found Dead

Macroscopic Observations:

Pituitary

-Enlarged, 0.9 cm dia.

Microscopic Observations:

Kidney

-Chronic progressive nephropathy, minimal

Liver

-Portal mononuclear cell infiltrate, mild

Hepatocyte vacuolation, multifocal, minimal

Cystoid degeneration, multifocal, mild

Necrosis, multifocal, moderate

Lung

-Vascular mineralization, mild

Alveolar macrophages, mild

Hemorrhage, diffuse, marked

Pancreas

-Hyperplasia, acinar cell, moderate

Pituitary

-Adenoma

Salivary Gland

-Not examined, missing

Spleen

-Hemosiderosis, mild

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Heart, Stomach, Small Intestine, Large Intestine,  
Urinary Bladder, Aorta, Testis/Epididymis, Prostate, Adrenal, Thyroid, Parathyroid, Trachea,  
Esophagus, Lymph Node (mesenteric), Eye.

Animal Number: 1R-3618 Sex: Male Group: ( 5) FC-143 300 ppm  
Fate: (Week= 106) Terminal Sacrifice

Macroscopic Observations:

Liver

-Appears pale; pale raised mass, 1 cm dia.,  
caudate lobe.

Microscopic Observations:

Adrenal

-Cortical vacuolation, multifocal, mild

Sinusoidal ectasia, cortex, mild

Kidney

-Chronic progressive nephropathy, mild

Liver

-Portal mononuclear cell infiltrate, mild

Hepatocyte vacuolation, multifocal, minimal

Necrosis, focal, minimal

Megalocytosis, minimal

Hepatocellular carcinoma

Trabecular pattern, many tumor cells  
vacuolated, moderate mitotic activity.

Lung

-Vascular mineralization, mild

Alveolar macrophages, mild

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Spleen, Heart, Stomach, Small Intestine, Large Intestine,

Species: Rat

Project Number: 0281CR0012

Summarized STAR Page: 113

277

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1337.0288

Summarized Single Tabulated Animal Report (continued)  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M  
FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats

Table: 2

Animal Number: 1R-3618 Sex: Male Group: ( 5) FC-143 300 ppm  
Fate: (Week= 106) Terminal Sacrifice

Microscopic Observations (continued):

The following tissues were found to be within normal limits (continued):

Urinary Bladder, Aorta, Testis/Epididymis, Prostate, Pituitary, Thyroid, Parathyroid, Trachea, Esophagus, Lymph Node (mesenteric), Pancreas, Salivary Gland, Eye.

Animal Number: 1R-3619 Sex: Male Group: ( 5) FC-143 300 ppm  
Fate: (Week= 106) Terminal Sacrifice

Macroscopic Observations:

|                 |                                                          |
|-----------------|----------------------------------------------------------|
| Liver           | -Raised lesions, 2 x 1.5 cm, median lobes.               |
| Kidney          | -Hydronephrosis, left kidney.                            |
| Urinary Bladder | -Distended into abdomen, filled with dark colored fluid. |

Microscopic Observations:

|                 |                                                                                                                                                                                                                              |
|-----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Adrenal         | -Sinusoidal ectasia, cortex, mild<br>Modular hyperplasia, cortex, focal, moderate                                                                                                                                            |
| Kidney          | -Chronic progressive nephropathy, minimal<br>Hydronephrosis, bilateral, mild                                                                                                                                                 |
| Liver           | -Portal mononuclear cell infiltrate, mild<br>Cystoid degeneration, multifocal, mild<br>Megalocytosis, mild<br>Hepatocellular carcinoma<br>Poorly differentiated, adenoid and trabecular patterns, moderate mitotic activity. |
| Lung            | -Vascular mineralization, mild<br>Hemorrhage, local areas, moderate                                                                                                                                                          |
| Salivary Gland  | -Not examined, missing                                                                                                                                                                                                       |
| Urinary Bladder | -Epithelial hyperplasia, simple, diffuse, mild<br>Hemorrhage, focal, minimal                                                                                                                                                 |

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Spleen, Heart, Stomach, Small Intestine, Large Intestine, Aorta, Testis/Epididymis, Prostate, Pituitary, Thyroid, Parathyroid, Trachea, Esophagus, Lymph Node (mesenteric), Pancreas, Eye.

Animal Number: 1R-3621 Sex: Male Group: ( 5) FC-143 300 ppm  
Fate: (Week= 106) Terminal Sacrifice

Macroscopic Observations:

-No visible lesions.

Microscopic Observations:

|        |                                           |
|--------|-------------------------------------------|
| Kidney | -Chronic progressive nephropathy, minimal |
|--------|-------------------------------------------|

Species: Rat  
Project Number: 0281CR0012

Summarized STAR Page: 114

278

Summarized Single Tabulated Animal Report (continued)  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M  
FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats

Table: 2

Animal Number: 1R-3621 Sex: Male Group: ( 5) FC-143 300 ppm  
Fate: (Week= 106) Terminal Sacrifice

Microscopic Observations (continued):

|                |                                                                                                            |
|----------------|------------------------------------------------------------------------------------------------------------|
| Liver          | -Portal mononuclear cell infiltrate, mild<br>Cystoid degeneration, multifocal, mild<br>Megalocytosis, mild |
| Lung           | -Vascular mineralization, mild                                                                             |
| Parathyroid    | -Not examined, not in plane of section                                                                     |
| Salivary Gland | -Sialadenitis, chronic, moderate                                                                           |
| Spleen         | -Hemosiderosis, mild                                                                                       |

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Heart, Stomach, Small Intestine, Large Intestine,  
Urinary Bladder, Aorta, Testis/Epididymis, Prostate, Pituitary, Adrenal, Thyroid, Trachea,  
Esophagus, Lymph Node (mesenteric), Pancreas, Eye.

Animal Number: 1R-3623 Sex: Male Group: ( 5) FC-143 300 ppm  
Fate: (Week= 106) Terminal Sacrifice

Macroscopic Observations:

-No visible lesions.

Microscopic Observations:

|                         |                                                                                                                                   |
|-------------------------|-----------------------------------------------------------------------------------------------------------------------------------|
| Adrenal                 | -Cortical vacuolation, focal, mild<br>Sinusoidal ectasia, cortex, moderate                                                        |
| Kidney                  | -Chronic progressive nephropathy, mild                                                                                            |
| Liver                   | -Portal mononuclear cell infiltrate, mild<br>Hepatocyte vacuolation, mild<br>Necrosis, multifocal, mild<br>Megalocytosis, minimal |
| Lung                    | -Vascular mineralization, mild<br>Pneumonia, interstitial, chronic, multifocal,<br>mild<br>Alveolar macrophages, mild             |
| Lymph Node (mesenteric) | -Hemorrhage, mild                                                                                                                 |
| Pituitary               | -Not examined, missing                                                                                                            |
| Prostate                | -Prostatitis, acute, suppurative, moderate                                                                                        |
| Salivary Gland          | -Sialadenitis, chronic, marked                                                                                                    |
| Testis/Epididymis       | -Vascular mineralization, mild                                                                                                    |

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Spleen, Heart, Stomach, Small Intestine, Large Intestine,  
Urinary Bladder, Aorta, Thyroid, Parathyroid, Trachea, Esophagus, Eye, Pancreas.

Species: Rat  
Project Number: 0281CR0012

Summarized STAR Page: 115

279

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Summarized Single Tabulated Animal Report (continued)  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M  
FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats

Table: 2

Animal Number: 1R-3624 Sex: Male Group: ( 5) FC-143 300 ppm  
Fate: (Week= 90) Sacrificed in extremis

Macroscopic Observations:

|                   |                                     |
|-------------------|-------------------------------------|
| Pituitary         | -Hemorrhagic mass, 1 x 0.5 cm.      |
| Liver             | -Possibly pale                      |
| Kidney            | -Slightly enlarged and pitted.      |
| Testis/Epididymis | -Both testes appear somewhat small. |

Microscopic Observations:

|                   |                                                                                                                                |
|-------------------|--------------------------------------------------------------------------------------------------------------------------------|
| Adrenal           | -Cortical vacuolation, multifocal, mild<br>Medullary cell hyperplasia, multifocal, mild                                        |
| Kidney            | -Chronic progressive nephropathy, moderate                                                                                     |
| Liver             | -Portal mononuclear cell infiltrate, mild<br>Hepatocyte vacuolation, periportal, moderate                                      |
| Lung              | -Vascular mineralization, mild<br>Pneumonia, interstitial, chronic, multifocal, mild<br>Alveolar macrophages, multifocal, mild |
| Pituitary         | -Adenoma                                                                                                                       |
| Prostate          | -Prostatitis, acute, suppurative, marked                                                                                       |
| Spleen            | -Hemosiderosis, mild                                                                                                           |
| Testis/Epididymis | -Tubule atrophy, aspermatogenesis, bilateral, marked                                                                           |

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Heart, Stomach, Small Intestine, Large Intestine,  
Urinary Bladder, Aorta, Thyroid, Parathyroid, Trachea, Esophagus, Lymph Node (mesenteric),  
Pancreas, Salivary Gland, Eye.

Animal Number: 1R-3625 Sex: Male Group: ( 5) FC-143 300 ppm  
Fate: (Week= 27) Sacrificed in extremis

Macroscopic Observations:

|                     |                                                                                                                                                                                                   |
|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Soft Tissues (neck) | -Large multinodular mass, 9 x 8 x 6 cm, in left neck and throat region. Possibly of mammary gland or salivary gland origin. Mass contained several cystic areas that were filled with dark fluid. |
| Spleen              | -Possibly slightly enlarged.                                                                                                                                                                      |

Microscopic Observations:

|       |                                                                                                                                                                   |
|-------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Liver | -Portal mononuclear cell infiltrate, mild<br>Necrosis, focal, mild<br>Megalocytosis, minimal                                                                      |
| Lung  | -Metastatic neoplasm<br>Thrombus<br>Large thrombus containing tumor cells from salivary gland tumor. Multiple small metastases of salivary tumor throughout lung. |

Species: Rat  
Project Number: 0281CR0012

Summarized STAR Page: 116

280

Summarized Single Tabulated Animal Report (continued)  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M  
FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats

Table: 2

Animal Number: 1R-3625 Sex: Male Group: ( 5) FC-143 300 ppm  
Fate: (Week= 27) Sacrificed in extremis

Microscopic Observations (continued):

Salivary Gland

-Carcinoma

Highly cellular, anaplastic tumor. Appears to have arisen in parotid gland duct. Small rim of salivary gland tissue around mass.

Spleen

-Hematopoiesis, extramedullary, increased, moderate

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Kidney, Heart, Stomach, Small Intestine, Large Intestine, Urinary Bladder, Aorta, Testis/Epididymis, Prostate, Pituitary, Adrenal, Thyroid, Parathyroid, Trachea, Esophagus, Lymph Node (mesenteric), Pancreas, Eye.

Animal Number: 1R-3628 Sex: Male Group: ( 5) FC-143 300 ppm  
Fate: (Week= 106) Terminal Sacrifice

Macroscopic Observations:

-No visible lesions.

Microscopic Observations:

Adrenal

-Cortical vacuolation, focal, moderate

Kidney

-Chronic progressive nephropathy, moderate

Liver

-Portal mononuclear cell infiltrate, mild

Portal bile duct proliferation, mild

Cystoid degeneration, multifocal, mild

Megalocytosis, minimal

Lung

-Vascular mineralization, moderate

Alveolar macrophages, mild

Hemorrhage, local areas, moderate

Parathyroid

-Not examined, not in plane of section

Spleen

-Hemosiderosis, mild

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Heart, Stomach, Small Intestine, Large Intestine, Urinary Bladder, Aorta, Testis/Epididymis, Prostate, Pituitary, Thyroid, Trachea, Esophagus, Lymph Node (mesenteric), Pancreas, Salivary Gland, Eye.

Species: Rat  
Project Number: 0281CR0012

Summarized STAR Page: 117

281

3MA00027417

1337.0292

Summarized Single Tabulated Animal Report (continued)  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M  
FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats

Table: 2

Animal Number: 1R-3629 Sex: Male Group: ( 5) FC-143 300 ppm  
Fate: (Week= 106) Terminal Sacrifice

Macroscopic Observations:

-No visible lesions.

Microscopic Observations:

Heart

-Myocarditis, chronic nonsuppurative,  
multifocal, mild

Kidney

-Chronic progressive nephropathy, mild

Liver

-Portal mononuclear cell infiltrate, mild  
Megalocytosis, mild

Lung

-Vascular mineralization, mild  
Alveolar macrophages, mild  
Hemorrhage, local areas, moderate

Salivary Gland

-Sialadenitis, chronic, marked

Thyroid

-Ultimobranchial cyst

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Spleen, Stomach, Small Intestine, Large Intestine,  
Urinary Bladder, Aorta, Testis/Epididymis, Prostate, Pituitary, Adrenal, Parathyroid, Trachea,  
Esophagus, Lymph Node (mesenteric), Pancreas, Eye.

Animal Number: 1R-3630 Sex: Male Group: ( 5) FC-143 300 ppm  
Fate: (Week= 106) Terminal Sacrifice

Macroscopic Observations:

-No visible lesions.

Microscopic Observations:

Adrenal

-Sinusoidal ectasia, cortex, mild

Heart

-Myocardial fibrosis, local areas, mild  
Myocarditis, chronic nonsuppurative,  
local areas, mild

Liver

-Portal mononuclear cell infiltrate, mild  
Cystoid degeneration, multifocal, mild  
Megalocytosis, minimal

Lung

-Vascular mineralization, mild

Pituitary

-Not examined, missing

Testis/Epididymis

-Vascular mineralization, mild

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Spleen, Kidney, Stomach, Small Intestine, Large Intestine,  
Urinary Bladder, Aorta, Prostate, Thyroid, Parathyroid, Trachea, Esophagus,  
Lymph Node (mesenteric), Pancreas, Salivary Gland, Eye.

Species: Rat  
Project Number: 0281CR0012

Summarized STAR Page: 118

282

3MA00027418

1337.0293

Summarized Single Tabulated Animal Report (continued)  
 Individual Macroscopic and Microscopic Observations  
 Riker Laboratories, Inc. 3M  
 FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats

Table: 2

Animal Number: 1R-3631 Sex: Male Group: ( 5) FC-143 300 ppm  
 Fate: (Week= 106) Terminal Sacrifice

Macroscopic Observations:

-No visible lesions.

Microscopic Observations:

Adrenal

-Nodular hyperplasia, cortex, focal, mild  
 Medullary cell hyperplasia, focal, minimal

Kidney

-Chronic progressive nephropathy, mild

Liver

-Portal mononuclear cell infiltrate, mild  
 Portal bile duct proliferation, mild  
 Hepatocyte vacuolation, local areas, mild  
 Megalocytosis, minimal

Lung

-Vascular mineralization, moderate

Alveolar macrophages, mild

Hemorrhage, local areas, moderate

Salivary Gland

-Sialadenitis, chronic, marked  
 There were two sections of gland on the  
 slide, only one was involved.

Spleen

-Hemosiderosis, mild

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Heart, Stomach, Small Intestine, Large Intestine,  
 Urinary Bladder, Aorta, Testis/Epididymis, Prostate, Pituitary, Thyroid, Parathyroid, Trachea,  
 Esophagus, Lymph Node (mesenteric), Pancreas, Eye.

Animal Number: 1R-3632 Sex: Male Group: ( 5) FC-143 300 ppm  
 Fate: (Week= 106) Terminal Sacrifice

Macroscopic Observations:

Liver

-Few pale foci.

Testis/Epididymis

-Pale mass, 1.5 cm dia.

Microscopic Observations:

Kidney

-Chronic progressive nephropathy, moderate

Liver

-Portal mononuclear cell infiltrate, mild  
 Hepatocyte vacuolation, multifocal, mild  
 Megalocytosis, mild  
 Hepatocyte alteration, basophilic, mild  
 Single subcapsular area of basophilic  
 alteration. About one half of the cells have  
 multiple cytoplasmic vacuoles.

Lung

-Vascular mineralization, mild

Alveolar macrophages, mild

Hemorrhage, focal, mild

Pancreas

-Hyperplasia, islet cell, moderate

Species: Rat  
 Project Number: 02B1CR0012

Summarized STAR Page: 119

283

Summarized Single Tabulated Animal Report (continued)  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M  
FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats

Table: 2

Animal Number: 1R-3632 Sex: Male Group: ( 5) FC-143 300 ppm  
Fate: (Week= 106) Terminal Sacrifice

Microscopic Observations (continued):

Testis/Epididymis

-Tubule atrophy, aspermatogenesis, unilateral,  
marked  
Leydig cell adenoma, unilateral

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Spleen, Heart, Stomach, Small Intestine, Large Intestine,  
Urinary Bladder, Aorta, Prostate, Pituitary, Adrenal, Thyroid, Parathyroid, Trachea, Esophagus,  
Lymph Node (mesenteric), Salivary Gland, Eye.

Animal Number: 1R-3633 Sex: Male Group: ( 5) FC-143 300 ppm  
Fate: (Week= 106) Terminal Sacrifice

Macroscopic Observations:

Eye

-Opacity, right eye.

Kidney

-Bilaterally pale and pitted.

Microscopic Observations:

Adrenal

-Sinusoidal ectasia, cortex, mild  
Ganglioneuroma  
Large, well differentiated tumor arising in  
medulla of one gland. Composed of nerve  
fibers and large ganglion cells.

Eye

-Keratitis, chronic, moderate

Heart

-Myocarditis, chronic nonsuppurative,  
local areas, mild

Kidney

-Chronic progressive nephropathy, marked  
One of pair present

Liver

-Portal mononuclear cell infiltrate, mild  
Portal bile duct proliferation, mild  
Cystoid degeneration, multifocal, mild  
Hepatocyte alteration, vacuolated, mild  
Megalocytosis, moderate

Lung

-Vascular mineralization, mild  
Alveolar macrophages, mild  
Perivascular mononuclear infiltrate, minimal  
Hemorrhage, local areas, mild

Thyroid

-Cyst, colloid

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Spleen, Stomach, Small Intestine, Large Intestine,  
Urinary Bladder, Aorta, Testis/Epididymis, Prostate, Pituitary, Parathyroid, Trachea, Esophagus,  
Lymph Node (mesenteric), Pancreas, Salivary Gland.

Species: Rat

Project Number: 0281CR0012

Summarized STAR Page: 120 284

3MA00027420

1337.0295

Summarized Single Tabulated Animal Report (continued)  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M  
FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats

Table: 2

Animal Number: 1R-3634 Sex: Male Group: ( 5) FC-143 300 ppm  
Fate: (Week= 106) Terminal Sacrifice

Macroscopic Observations:

Testis/Epididymis

-Pale masses, 1 cm dia., in each testis.

Mesentery

-Mass, 3 x 1.5 cm in area of pancreas.

Microscopic Observations:

Liver

-Portal mononuclear cell infiltrate, mild  
Cystoid degeneration, multifocal, mild  
Hepatocyte alteration, vacuolated, moderate  
Megalocytosis, minimal

Lung

-Vascular mineralization, mild  
Alveolar macrophages, mild

Pancreas

-Adenocarcinoma  
Large, highly cellular, well differentiated  
neoplasm with high mitotic index. Lymphatic  
invasion.

Parathyroid

-Not examined, not in plane of section

Spleen

-Hemosiderosis, mild

Testis/Epididymis

-Tubule atrophy, aspermatogenesis, bilateral,  
marked  
Leydig cell adenoma, bilateral

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Kidney, Heart, Stomach, Small Intestine, Large Intestine,  
Urinary Bladder, Aorta, Prostate, Pituitary, Adrenal, Thyroid, Trachea, Esophagus,  
Lymph Node (mesenteric), Salivary Gland, Eye.

Animal Number: 1R-3635 Sex: Male Group: ( 5) FC-143 300 ppm  
Fate: (Week= 106) Terminal Sacrifice

Macroscopic Observations:

Pituitary

-Hemorrhagic area, 0.5 x 0.2 cm.

Microscopic Observations:

Adrenal

-Medullary cell hyperplasia, focal, minimal

Kidney

-Chronic progressive nephropathy, mild

Liver

-Portal mononuclear cell infiltrate, mild  
Megalocytosis, minimal

Lung

-Vascular mineralization, mild  
Alveolar macrophages, mild  
Perivascular mononuclear infiltrate, minimal

Pituitary

-Adenoma

Salivary Gland

-Sialadenitis, chronic, marked

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Spleen, Heart, Stomach, Small Intestine, Large Intestine,

Species: Rat  
Project Number: 0281CR0012

Summarized STAR Page: 121

285

Summarized Single Tabulated Animal Report (continued)  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M  
FD-143: Two Year Oral Toxicity-Oncogenicity Study in Rats

Table: 2

Animal Number: 1R-3635 Sex: Male Group: ( 5) FD-143 300 ppm  
Fate: (Week= 106) Terminal Sacrifice

Microscopic Observations (continued):

The following tissues were found to be within normal limits (continued):

Urinary Bladder, Aorta, Testis/Epididymis, Prostate, Thyroid, Parathyroid, Trachea, Esophagus,  
Lymph Node (mesenteric), Pancreas, Eye.

Animal Number: 1R-3636 Sex: Male Group: ( 5) FD-143 300 ppm  
Fate: (Week= 106) Terminal Sacrifice

Macroscopic Observations:

Bone

-Swollen metatarsal joints, bilateral hind  
limbs.

Testis/Epididymis

-Both testes appear small.

Microscopic Observations:

Bone

-Arthritis, synovitis; joints, hindleg,  
moderate

Heart

-Myocarditis, chronic nonsuppurative, focal,  
minimal

Kidney

-Chronic progressive nephropathy, minimal

Liver

-Portal mononuclear cell infiltrate, mild

Portal bile duct proliferation, mild

Cystoid degeneration, focal, minimal

Megalocytosis, minimal

Lung

-Vascular mineralization, mild

Alveolar macrophages, mild

Lymph Node (mesenteric)

-Granuloma, multifocal, moderate

Pancreas

-Polyarteritis, moderate

Testis/Epididymis

-Tubule atrophy, aspermatogenesis, bilateral,  
marked

Polyarteritis, moderate

Vascular mineralization, mild

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Spleen, Stomach, Small Intestine, Large Intestine,  
Urinary Bladder, Aorta, Prostate, Pituitary, Adrenal, Thyroid, Parathyroid, Trachea, Esophagus,  
Salivary Gland, Eye.

Species: Rat  
Project Number: 0281CR0012

Summarized STAR Page: 122

286

Summarized Single Tabulated Animal Report (continued)  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M  
FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats

Table: 2

Animal Number: 1R-3637 Sex: Male Group: ( 5) FC-143 300 ppm  
Fate: (Week= 106) Terminal Sacrifice

Macroscopic Observations:

Thyroid -Possibly slightly enlarged.  
Pituitary -Mass, 0.5 cm dia.  
Thymus -Slightly enlarged and hemorrhagic.

Microscopic Observations:

Heart -Myocarditis, chronic nonsuppurative,  
multifocal, minimal  
Kidney -Chronic progressive nephropathy, minimal  
Liver -Portal mononuclear cell infiltrate, mild  
Portal bile duct proliferation, mild  
Necrosis, multifocal, moderate  
Lung -Vascular mineralization, mild  
Hemorrhage, local areas, moderate  
Pancreas -Acinar atrophy, minimal  
Pituitary -Adenoma  
Salivary Gland -Not examined, missing  
Thymus -Hemorrhage, marked

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Spleen, Stomach, Small Intestine, Large Intestine,  
Urinary Bladder, Aorta, Testis/Epididymis, Prostate, Adrenal, Thyroid, Parathyroid, Trachea,  
Esophagus, Lymph Node (mesenteric), Eye.

Animal Number: 1R-3639 Sex: Male Group: ( 5) FC-143 300 ppm  
Fate: (Week= 106) Terminal Sacrifice

Macroscopic Observations:

Pituitary -Raised dark mass, 0.7 cm dia.  
Adrenal -Enlarged, right adrenal

Microscopic Observations:

Adrenal -Cortical vacuolation, local areas, moderate  
Sinusoidal ectasia, cortex, marked  
Medullary cell hyperplasia, focal, mild  
Kidney -Mineralization, cortical, mild  
Liver -Portal mononuclear cell infiltrate, minimal  
Lung -Vascular mineralization, mild  
Alveolar macrophages, mild  
Perivascular mononuclear infiltrate, mild  
Hemorrhage, local areas, moderate  
Granuloma  
Fragment of unidentified foreign material in  
granuloma.

Species: Rat  
Project Number: 0281CR0012

Summarized STAR Page: 123

287

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Summarized Single Tabulated Animal Report (continued)  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M  
FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats

Table: 2

Animal Number: 1R-3639 Sex: Male Group: ( 5) FC-143 300 ppm  
Fate: (Week= 106) Terminal Sacrifice

Microscopic Observations (continued):

|             |                                        |
|-------------|----------------------------------------|
| Pancreas    | -Not examined, missing                 |
| Parathyroid | -Not examined, not in plane of section |
| Pituitary   | -Adenoma                               |
| Spleen      | -Hemosiderosis, mild                   |

The following tissues were found to be within normal limits:  
Brain, Spinal Cord, Bone Marrow, Heart, Stomach, Small Intestine, Large Intestine,  
Urinary Bladder, Aorta, Testis/Epididymis, Prostate, Thyroid, Trachea, Esophagus,  
Lymph Node (mesenteric), Salivary Gland, Eye.

Animal Number: 1R-3640 Sex: Male Group: ( 5) FC-143 300 ppm  
Fate: (Week= 72) Sacrificed in extremis

Macroscopic Observations:

|                    |                                                                      |
|--------------------|----------------------------------------------------------------------|
| Spleen             | -Possibly smaller than normal.                                       |
| Abdomen (internal) | -Gastrointestinal tract from stomach to cecum<br>distended with gas. |
| Eye                | -Right eye slightly atrophied                                        |

Microscopic Observations:

|         |                                                                                    |
|---------|------------------------------------------------------------------------------------|
| Adrenal | -Nodular hyperplasia, cortex, focal, minimal                                       |
| Eye     | -Keratitis, acute, marked<br>Lesion in right eye. Extensive corneal<br>ulceration. |
| Kidney  | -Calculus, pelvic, mild                                                            |
| Liver   | -Portal mononuclear cell infiltrate, mild<br>Megalocytosis, minimal                |
| Lung    | -Vascular mineralization, mild                                                     |
| Spleen  | Alveolar macrophages, mild<br>-Hemosiderosis, mild                                 |
| Stomach | Atrophy, moderate<br>-Gastritis, acute, diffuse, mild                              |

The following tissues were found to be within normal limits:  
Brain, Spinal Cord, Bone Marrow, Heart, Small Intestine, Large Intestine, Urinary Bladder,  
Aorta, Testis/Epididymis, Prostate, Pituitary, Thyroid, Parathyroid, Trachea, Esophagus,  
Lymph Node (mesenteric), Pancreas, Salivary Gland.

Species: Rat  
Project Number: 0281CR0012

Summarized STAR Page: 124

288

3MA00027424

1337.0299

Summarized Single Tabulated Animal Report (continued)  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M  
FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats

Table: 2

Animal Number: 1R-3641 Sex: Male Group: ( 5) FC-143 300 ppm  
Fate: (Week= 106) Terminal Sacrifice

Macroscopic Observations:

Liver

-Yellowish foci, 0.3 cm dia., median lobe.

Microscopic Observations:

Adrenal

-Medullary cell hyperplasia, local areas, mild

Heart

-Myocarditis, chronic nonsuppurative,  
multifocal, mild

Kidney

-Chronic progressive nephropathy, moderate

Liver

-Portal mononuclear cell infiltrate, mild  
Cystoid degeneration, multifocal, mild  
Megalocytosis, minimal  
Hyperplastic nodule  
Circumscribed, expansive lesion with  
preservation of normal architecture. Portal  
areas present. Cells in nodule more  
basophilic, vacuolated.

Lung

-Vascular mineralization, mild

Hemorrhage, focal, mild

Pancreas

-Acinar atrophy, moderate

Spleen

-Hemosiderosis, mild

Testis/Epididymis

-Leydig cell adenoma, unilateral

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Stomach, Small Intestine, Large Intestine, Urinary Bladder,  
Aorta, Prostate, Pituitary, Thyroid, Parathyroid, Trachea, Esophagus, Lymph Node (mesenteric),  
Salivary Gland, Eye.

Animal Number: 1R-3644 Sex: Male Group: ( 5) FC-143 300 ppm  
Fate: (Week= 106) Terminal Sacrifice

Macroscopic Observations:

Liver

-Appears mottled; small pale area in median  
lobe.

Microscopic Observations:

Adrenal

-Cortical vacuolation, focal, mild  
Nodular hyperplasia, cortex, focal, mild

Heart

-Myocarditis, chronic nonsuppurative,  
multifocal, mild

Kidney

-Chronic progressive nephropathy, minimal

Liver

-Portal mononuclear cell infiltrate, mild  
Portal bile duct proliferation, mild  
Megalocytosis, minimal  
Hyperplastic nodule  
Cells of nodule have slightly more basophilic  
cytoplasm; many are vacuolated.

Species: Rat  
Project Number: 0281CR0012

Summarized STAR Page: 125

239

3MA00027425

1337.0300

Summarized Single Tabulated Animal Report (continued)  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M  
FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats

Table: 2

Animal Number: 1R-3644 Sex: Male Group: ( 5) FC-143 300 ppm  
Fate: (Week= 106) Terminal Sacrifice

Microscopic Observations (continued):

|                   |                                                              |
|-------------------|--------------------------------------------------------------|
| Lung              | -Vascular mineralization, mild<br>Alveolar macrophages, mild |
| Salivary Gland    | -Sialadenitis, chronic, marked                               |
| Testis/Epididymis | -Vascular mineralization, moderate                           |

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Spleen, Stomach, Small Intestine, Large Intestine,  
Urinary Bladder, Aorta, Prostate, Pituitary, Thyroid, Parathyroid, Trachea, Esophagus,  
Lymph Node (mesenteric), Pancreas, Eye.

Animal Number: 1R-3645 Sex: Male Group: ( 5) FC-143 300 ppm  
Fate: (Week= 106) Terminal Sacrifice

Macroscopic Observations:

|                   |                                          |
|-------------------|------------------------------------------|
| Testis/Epididymis | -Pale mass, 1.3 cm dia., in left testis. |
|-------------------|------------------------------------------|

Microscopic Observations:

|                       |                                                                                                                                                                                       |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Adrenal               | -Nodular hyperplasia, cortex, multifocal, mild                                                                                                                                        |
| Aorta                 | -Metastatic neoplasm                                                                                                                                                                  |
| Esophagus             | -Metastatic neoplasm                                                                                                                                                                  |
| Kidney                | -Chronic progressive nephropathy, mild                                                                                                                                                |
| Liver                 | -Portal mononuclear cell infiltrate, minimal<br>Portal bile duct proliferation, minimal<br>Megalocytosis, minimal                                                                     |
| Lung                  | -Vascular mineralization, mild<br>Pneumonia, interstitial, chronic, multifocal, mild<br>Alveolar macrophages, mild<br>Hemorrhage, focal, mild                                         |
| Pancreas              | -Acinar atrophy, mild                                                                                                                                                                 |
| Parathyroid           | -Adenoma                                                                                                                                                                              |
| Salivary Gland        | -Sialadenitis, chronic, moderate                                                                                                                                                      |
| Soft Tissues (thorax) | -Histiocytoma, malignant<br>Diffuse infiltrate of histiocytic cells in mediastinal tissues. Moderate number of multinucleate giant cells. Infiltrate extends into muscle around bone. |
| Spleen                | -Hemosiderosis, mild                                                                                                                                                                  |
| Testis/Epididymis     | -Leydig cell adenoma, unilateral                                                                                                                                                      |
| Trachea               | -Metastatic neoplasm                                                                                                                                                                  |
| Urinary Bladder       | -Epithelial hyperplasia, simple, diffuse, minimal                                                                                                                                     |

Species: Rat  
Project Number: 0281CR0012

Summarized STAR Page: 126

290

Summarized Single Tabulated Animal Report (continued)  
Individual Macroscopic and Microscopic Observations  
Riker Laboratories, Inc. 3M  
FC-143: Two Year Oral Toxicity-Oncogenicity Study in Rats

Table: 2

Animal Number: 1R-3645 Sex: Male Group: ( 5) FC-143 300 ppm  
Fate: (Week= 106) Terminal Sacrifice

Microscopic Observations (continued):

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Heart, Stomach, Small Intestine, Large Intestine, Prostate,  
Pituitary, Thyroid, Lymph Node (mesenteric), Eye.

Animal Number: 1R-4641 Sex: Female Group: ( 5) FC-143 300 ppm  
Fate: (Week= 73) Sacrificed in extremis

Macroscopic Observations:

Mammary Gland

-Large multilobular subcutaneous mass, left  
inguinal and perineal area,  
10 x 7 x 3.5 cm. Mass ulcerated on the dorsal  
surface; inside cystic with milky  
fluid present.

Microscopic Observations:

Adrenal

-Sinusoidal ectasia, cortex, marked

Esophagus

-Not examined, missing

Kidney

-Chronic progressive nephropathy, minimal

Liver

-Portal bile duct proliferation, mild  
Hepatocyte alteration, vacuolated, focal,  
minimal

Lung

-Hemorrhage, local areas, mild

Mammary Gland

Alveolar macrophages, multifocal, mild

Ovary

-Fibroadenoma

Salivary Gland

-Not examined, missing

-Not examined, missing

The following tissues were found to be within normal limits:

Brain, Spinal Cord, Bone Marrow, Spleen, Heart, Stomach, Small Intestine, Large Intestine,  
Urinary Bladder, Aorta, Uterus, Pituitary, Trachea, Thyroid, Parathyroid,  
Lymph Node (mesenteric), Pancreas, Eye.

Animal Number: 1R-4643 Sex: Female Group: ( 5) FC-143 300 ppm  
Fate: (Week= 78) Sacrificed in extremis

Macroscopic Observations:

Pituitary

-Hemorrhagic mass, 0.8 cm dia.

Microscopic Observations:

Esophagus

-Not examined, missing

Kidney

-Pelvic mineralization, mild

Liver

-Hepatocyte vacuolation, diffuse, mild

Species: Rat

Project Number: 0281CR0012

Summarized STAR Page: 127

291