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G. L. Ter Haar
Vice President, Health and Environment

May 25, 2001

Ms. Erin Birgfeld
US Environmental Protection Agency
Stratospheric Protection Agency
501 3rd St. NW
4th floor (phone 202-564-9079)
Washington, D.C. 20001

EPA AIR DOCKET

RE: Final Report "An Inhalation Two-Generation Reproductive Toxicity Study of 1-bromopropane in Rats"

Dear Ms. Birgfeld,

The Bromine Solvent Consortium (BSOC) is submitting the final report for the two generation rat inhalation study with 1-bromopropane. This study was conducted at Wil Laboratories, and was designed to identify target organ effects with particular emphasis on reproductive and fertility endpoints. Exposure periods covered a substantial length of adult rat life and the in utero and lactational period of offspring.

We have also sent a copy of the report to the attention of Dr. Greg Lawrence, ICF Consulting, Ruston, Louisiana. We will be glad to answer any questions the SNAP staff or Dr. Lawrence might have in review of this study.

The BSOC Toxicology Committee technical contacts are John Biesemeier, Study Monitor (Great Lakes Chemical Corporation, 765-497-6223), Nancy O'Malley (Albemarle Corporation, 225-388-7611), and Hannah Silberberg (Dead Sea Bromine Group, 972-7629-7830)

Sincerely,

Gary Ter Haar

Gary TerHaar
Chairman, BSOC

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Baton Rouge, Louisiana 70801-1780

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A-2001-07
II-D-10

FINAL REPORT

Volume 1 of 7
(Text and Summary Data)

STUDY TITLE

AN INHALATION TWO-GENERATION REPRODUCTIVE TOXICITY STUDY OF 1-BROMOPROPANE IN RATS

DATA REQUIREMENT

EPA OPPTS 870.3800

STUDY DIRECTOR

Donald G. Stump, Ph.D., D.A.B.T.

STUDY INITIATED ON

October 19, 1999

STUDY COMPLETED ON

May 24, 2001

PERFORMING LABORATORY

WIL Research Laboratories, Inc.
1407 George Road
Ashland, OH 44805-9281

LABORATORY STUDY NUMBER

WIL-380001

SPONSOR

Brominated Solvents Consortium
1250 Connecticut Avenue, N.W., Suite 700
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WIL-380001
Brominated Solvents Consortium

An Inhalation Two-Generation Reproductive
Toxicity Study of 1-Bromopropane in Rats

COMPLIANCE STATEMENT

This study, designated WIL-380001, was conducted in compliance with the United States Environmental Protection Agency (EPA) TSCA and FIFRA Good Laboratory Practice Standards (40 CFR Parts 160 and 792, October 16 and September 18, 1989, respectively), and the standard operating procedures of WIL Research Laboratories, Inc. The study was conducted in accordance with the protocol and protocol amendments as approved by the sponsor. The protocol was designed to be in accordance with the EPA Health Effects Testing Guidelines OPPTS 870.3800, Reproductive and Fertility Effects, August, 1998.

Donald G. Stump

Donald G. Stump, Ph.D., D.A.B.T.
Study Director

5/24/01
Date

An Inhalation Two-Generation Reproductive
Toxicity Study of 1-Bromopropane in Rats

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An Inhalation Two-Generation Reproductive
Toxicity Study of 1-Bromopropane in Rats

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An Inhalation Two-Generation Reproductive
Toxicity Study of 1-Bromopropane in Rats

I. SUMMARY

This study was conducted to evaluate the potential adverse effects of whole-body inhalation exposure of F_0 and F_1 parental animals to 1-Bromopropane on the reproductive capabilities of the F_0 and F_1 generations and F_1 and F_2 neonatal survival, growth, and development. Groups of male and female Crl:CD®(SD)IGS BR rats (25/sex/group) were exposed to either clean filtered air or vapor atmospheres of the test article for six hours daily for at least 70 consecutive days prior to mating. F_0 animals were approximately seven weeks of age at the beginning of exposure; offspring selected to become the F_1 animals began exposure at weaning. Exposure of the F_0 and F_1 males continued throughout mating, and through the day prior to euthanasia. The F_0 and F_1 females continued to be exposed throughout mating and gestation through gestation day 20. After parturition, exposure of the F_0 and F_1 females was re-initiated on lactation day 5 and continued through the day prior to euthanasia.

Target test article concentrations were 100, 250, 500 and 750 ppm (parts per million) for the F_0 generation. Target test article concentrations for the F_1 generation were 100, 250 and 500 ppm because infertility in the F_0 750 ppm group precluded having an F_1 750 ppm group. Mean measured exposure concentrations were 99, 252, 505 and 750 ppm for the F_0 generation and 100, 252 and 504 ppm for the F_1 generation.

All animals were observed twice daily for appearance and behavior. Clinical observations, body weights, and food consumption were recorded at appropriate intervals prior to mating and during gestation and lactation. All F_0 and F_1 females were allowed to deliver and rear their pups until weaning on lactation day 21. For both generations (F_1 and F_2) eight pups per litter (four per sex, when possible) were selected on postnatal day (PND) 4 to reduce the variability among the litters.

Exposure of the F_1 animals was initiated on PND 22 (50 weanlings/sex/group, when possible). Offspring (25/sex/group) from the pairing of the F_0 animals were selected on PND 28 to constitute the F_1 generation. Developmental landmarks (balanopreputial separation and vaginal patency) were evaluated for the selected F_1 rats. Unselected F_1 pups were necropsied on PND 21 or 28, and F_2 pups were necropsied on PND 21. Selected organs were weighed of both F_1 and F_2 pups that were necropsied on PND 21. All surviving F_0 and F_1 parental animals received a complete detailed gross necropsy following the completion of weaning of the F_1 and F_2 pups, respectively; selected organs were weighed. Spermatogenic endpoints (sperm motility, morphology and numbers) were recorded for all F_0 and F_1 males, and ovarian primordial follicle counts and the corpora lutea counts were recorded for all F_0 and F_1 females in each of the control and high-exposure groups and the F_0 500 ppm group females. Designated tissues from all F_0 and F_1 parental animals and from all parental animals that were euthanized *in extremis* were examined microscopically.

There were no test article-related deaths in the F_0 treated males and females or exposure-related clinical findings (weekly or at the one hour post-exposure examinations) during the course of the study. One F_1 male in the 500 ppm group was euthanized *in extremis* during the second week of exposure (PND 33). Prior to euthanasia, this animal was lethargic and had shallow respiration and pale eyes. Necropsy findings for this male included a dark red area on the lung and dark red areas in the stomach. A cause of death could not be determined for this animal. One F_0 female in the 500 ppm group was euthanized *in extremis* due to an ocular abnormality. One F_1 control group male was euthanized due to possible mechanical injury. All other adult animals survived to the scheduled necropsies.

Cumulative body weight gains (from study week 0) were reduced and the mean weekly body weights were generally reduced throughout the generation for the 750 ppm group F_0 males. Reductions in mean weekly body weight gains and

food efficiency (during the pre-mating period) were noted in these males during the first five weeks of exposure. Cumulative body weight gains in the 750 ppm group F_0 females were reduced throughout the pre-mating period. Reductions in body weight gains and food efficiency were noted in these females during the first week of exposure. Mean body weights in the 750 ppm group females were reduced during the latter half (weeks 5-10) of the pre-mating period. No test article-related effects on food consumption were observed in the 750 ppm group males and females throughout the generation. Gestation and lactation body weight and food consumption data in the 750 ppm group F_0 females could not be evaluated as there were no gravid females in that group.

Slight reductions in mean weekly body weight gains (F_0 and F_1) and cumulative body weight gain (F_1) were noted in the 500 ppm group males during the first few weeks of exposure of the respective generations. During the latter half of the F_0 generation, mean cumulative body weight gains in these males were reduced. Reduced mean weekly body weights were generally noted in the 500 ppm group males in both generations. With the exception of a decrease for one week following weaning, no effects on food consumption or food efficiency were noted in the 500 ppm group males in either generation. The 500 ppm group F_0 and F_1 females showed no exposure-related effects on food consumption or food efficiency during the pre-mating period. Mean body weight gain was reduced during the first week of exposure of the F_1 females in the 500 ppm group, resulting in reduced mean weekly body weights in these females throughout the pre-mating period. Mean maternal body weights, body weight gains, food consumption (g/animal/day) and/or food efficiency were generally reduced in the 500 ppm group F_0 and F_1 females throughout the majority of gestation and into the lactation period. Reduced mean body weights late in gestation in these females were associated with reduced mean litter sizes in the 500 ppm group females in both generations.

There were no test article-related effects on parental weekly body weights, body weight gains, food consumption or food efficiency in the 250 ppm group males (F_0 and F_1) throughout the generation or in the 250 ppm group females (F_0 and F_1) during the pre-mating period. Slight reductions in mean gestation body weights, body weight gains, food consumption (g/animal/day) and/or food efficiency were noted in these females, primarily during the latter portion of gestation. Food consumption in the 250 ppm group F_0 females was reduced throughout lactation.

There were no effects on body weights, body weight gains, food consumption or food efficiency in the 100 ppm group (F_0 and F_1) males and females.

Infertility in the 750 ppm group F_0 males and females was 100%, resulting in no F_1 offspring for this group. Male and female mating indices were reduced in this group also. Statistically significantly reduced fertility indices were seen in the 500 ppm group F_0 males and females. Fertility indices for the 100 and 250 ppm groups (F_0 and F_1) and the F_1 500 ppm group were not statistically significantly different from the control group values. However, the values in the 100, 250 and 500 ppm F_1 groups were reduced relative to the concurrent control group. Extended mean estrous cycle lengths and an increase in the number of animals for which estrous cycle length could not be determined (because no complete cycles occurred) were observed in the 250 (F_1), 500 (F_0 and F_1) and 750 (F_0) ppm group females compared to the control group values. The mean numbers of days between pairing and coitus and the number of animals for which pre-coital intervals could not be determined (because these females had no evidence of mating and were nongravid) in the F_0 500 and 750 ppm groups were increased, but not statistically different from the control group value. The mean lengths of gestation in the 100, 250 and 500 ppm group females (F_0 and F_1) were unaffected by exposure to the test article. No test article-related signs of dystocia were observed in females in either generation. At the scheduled necropsy, the mean

numbers of former implantation sites were reduced in the 250 and 500 ppm group F_0 and F_1 females. Statistically significant reductions in the number of former implantation sites were noted only in the 500 ppm group F_0 and F_1 females.

Upon gross examination at the scheduled F_0 necropsy, low incidences of possible test article-related changes were observed in the testes (small and/or soft) and epididymides (small) in the 500 and 750 ppm group males. Spermatogenic examination showed reduced sperm motility was observed in the 500 (F_0 and F_1) and 750 (F_0) ppm group males. Reductions in the percentage of morphologically normal sperm were observed in the 500 (F_0 and F_1) and 750 (F_0) ppm group males. Morphological abnormalities in the sperm included normal head separated from flagellum (F_0 and F_1), normal flagellum with absent head (F_0 and F_1) and microcephalic sperm (F_1). In addition, the mean epididymal sperm number in the F_0 750 ppm group males was reduced.

At the scheduled necropsy, comparison of organ weights from treated animals to those of control animals showed some differences. Mean absolute brain weights in the 100 (F_1), 250 (F_0 and F_1), 500 (F_0 and F_1) and 750 ppm (F_0) group males and the 500 (F_0 and F_1) and 750 (F_0) ppm group females were reduced statistically when compared to the control group values. Brain weights relative to final body weight values were not different compared to those in the control group. There were no correlating macroscopic or microscopic changes in the brain tissues of those groups. Brain areas examined in the 750 F_0 ppm group males and females were cerebral cortex, hippocampus, cerebral peduncles, pons, tectum, basal ganglia, central gray matter, thalamus, hypothalamus, cerebellum and nucleus gracilis. Brain weights were in the expected range for the strain, age and sex of rats used. Thus, the biological significance of the change is uncertain.

Mean F_0 ovary weights (absolute and relative to final body weight) in the 500 and 750 ppm group females were reduced. Mean absolute and/or relative epididymal (left and right, total and cauda) weights were reduced in the males

from the 250 (F_0), 500 (F_0 and F_1) and 750 (F_0) ppm groups. Mean absolute prostate weights were reduced in the F_0 males from the 250, 500 and 750 ppm groups. Mean absolute seminal vesicle weights were reduced in the 500 and 750 ppm group F_0 males. Mean pituitary weights (absolute) were reduced in the F_1 male 500 ppm group and F_0 male 750 ppm group. Mean thymus weights (absolute and relative) were increased in the F_1 males of the 250 and 500 ppm groups; the biological significance of the increased thymus weights is unknown as there were no correlating microscopic findings. Mean relative liver weights were increased in the 750 ppm group F_0 males and females, the 500 ppm group F_0 males and the 500 ppm F_1 males and females. The liver weight changes were accompanied microscopically by minimal to mild centrilobular hepatocellular vacuolation (compatible with lipid) and increased glycogen compared to the control group values. Both of the microscopic liver changes were considered reversible changes that were not biologically adverse.

Other microscopic findings were observed in the kidney and ovary. The kidney changes consisted of minimal to mild pelvic mineralization and secondary transitional epithelial hyperplasia, and were observed in the 250 ppm group F_1 females, the 500 ppm group (F_0 and F_1 males and females) and the 750 ppm group (F_0 males and females). The ovaries of females in the 500 ppm groups (F_0 and F_1) and 750 ppm group (F_0) had decreased corpora lutea, increased follicular cysts (including luteinized cysts) and interstitial hyperplasia. The ovarian findings correlated with the lack of fertility in the 500 and 750 ppm groups and were considered to be adverse.

Evaluation of F_1 litter parameters in the 750 ppm group was precluded by F_0 infertility. The mean numbers of pups born and live litter size on PND 0 were statistically reduced in the 500 (F_1 and F_2) ppm group litters. The mean numbers of pups born and live litter size on PND 0 in the 250 (F_1 and F_2) ppm group were reduced compared to the control group values, but not statistically significant.

Postnatal survival in the F_1 and F_2 litters was not affected by parental exposure to the test article. The numbers of F_1 and F_2 pups found dead, euthanized *in extremis*, or missing and presumed cannibalized, and the physical condition of the pups were unaffected by parental test article exposure.

Mean F_1 and F_2 pup body weights and body weight gains in the 500 ppm group were generally reduced in both sexes following standardization of litters on PND 4. Mean F_1 pup body weights and body weight gains in the 250 ppm group males and females were slightly reduced following litter standardization.

The mean day of balanopreputial separation in the 500 ppm group F_1 males was delayed due to the reductions in body weight. Mean body weight of the 500 ppm group F_1 males on the day of balanopreputial separation was similar to the control group value; however, the pups were approximately four days older than the control group males for the same endpoint. The day of acquisition of vaginal patency and mean body weight on that day were not different between the control and exposure group female offspring in the F_1 generation.

No test article-related internal findings were observed in pups at the scheduled necropsies on PND 21 (F_1 and F_2) or PND 28 (F_1). There were no F_1 pups in the 500 ppm group selected for organ weights on PND 21. Mean absolute brain weights of the PND 21 F_1 males in the 100 and 250 ppm groups were reduced, but values in the comparable PND 21 F_2 males were not significantly different from the control group value. Relative brain weight values were not significantly different from the control group values. Mean absolute and relative spleen weights were reduced in the F_2 500 ppm group pups in both sexes on PND 21. Mean absolute brain weights (both sexes) and thymus weights (males) were reduced in the F_2 500 ppm group on PND 21.

In conclusion, whole-body inhalation exposure of Crl:CD®(SD)IGS BR rats and the resulting offspring to vapor concentrations of 1-Bromopropane (100, 250, 500 and 750 ppm [F_0 only]) for 6 hours per day, 7 days per week for a minimum

of 70 days prior to mating and continuing until euthanasia produced no post-exposure clinical observations different from the control group animals exposed to filtered air. There were no mortalities related to exposure in the F_0 generation. One F_1 male in the 500 ppm group was euthanized *in extremis* during the second week of exposure. Body weight data (parental and pup) were reduced in the 500 (F_0, F_1 and F_2) and 750 ppm (F_0) groups. No macroscopic or microscopic pathology in brain tissue was observed. A complete lack of offspring was observed at exposures to 750 ppm (F_0 generation), and a statistically decreased number of offspring compared to the control group was observed at exposures to 500 ppm (both generations). Non-statistically significant reductions in the number of offspring were observed in 250 ppm group for both generations. Fertility indices were statistically significantly reduced for the F_0 500 ppm group. Reductions (not statistically significant) were observed in the 100, 250 and 500 ppm F_1 groups. Extended estrous cycle lengths and an increase in the number of animals for which estrous cycle length could not be determined were observed in the 250 (F_1), 500 (F_0 and F_1) and 750 (F_0) ppm groups. The number of days between pairing and coitus were increased in the 500 and 750 ppm F_0 groups. Reductions in organ weight were observed in the ovaries (500 and 750 ppm F_0 females), epididymides in the 250 (F_0), 500 (F_0 and F_1) and 750 (F_0) ppm group males, prostate (250, 500 and 750 ppm group F_0 males), seminal vesicles (500 and 750 ppm group F_0 males), pituitary in the 500 (F_1) and 750 (F_0) ppm group males and spleen in the F_2 male and female weanlings. Organ weight differences from the control group values were also observed in the thymus (increase), liver (increase) and brain (decrease) in some groups. Generally, absolute values were different in treated animals compared to the control group values, but not when weights were expressed relative to body weights. Absolute brain weights were in the expected range for age, sex and strain, and no clinical or microscopic changes were correlated with the weight differences. No pathology associated with the

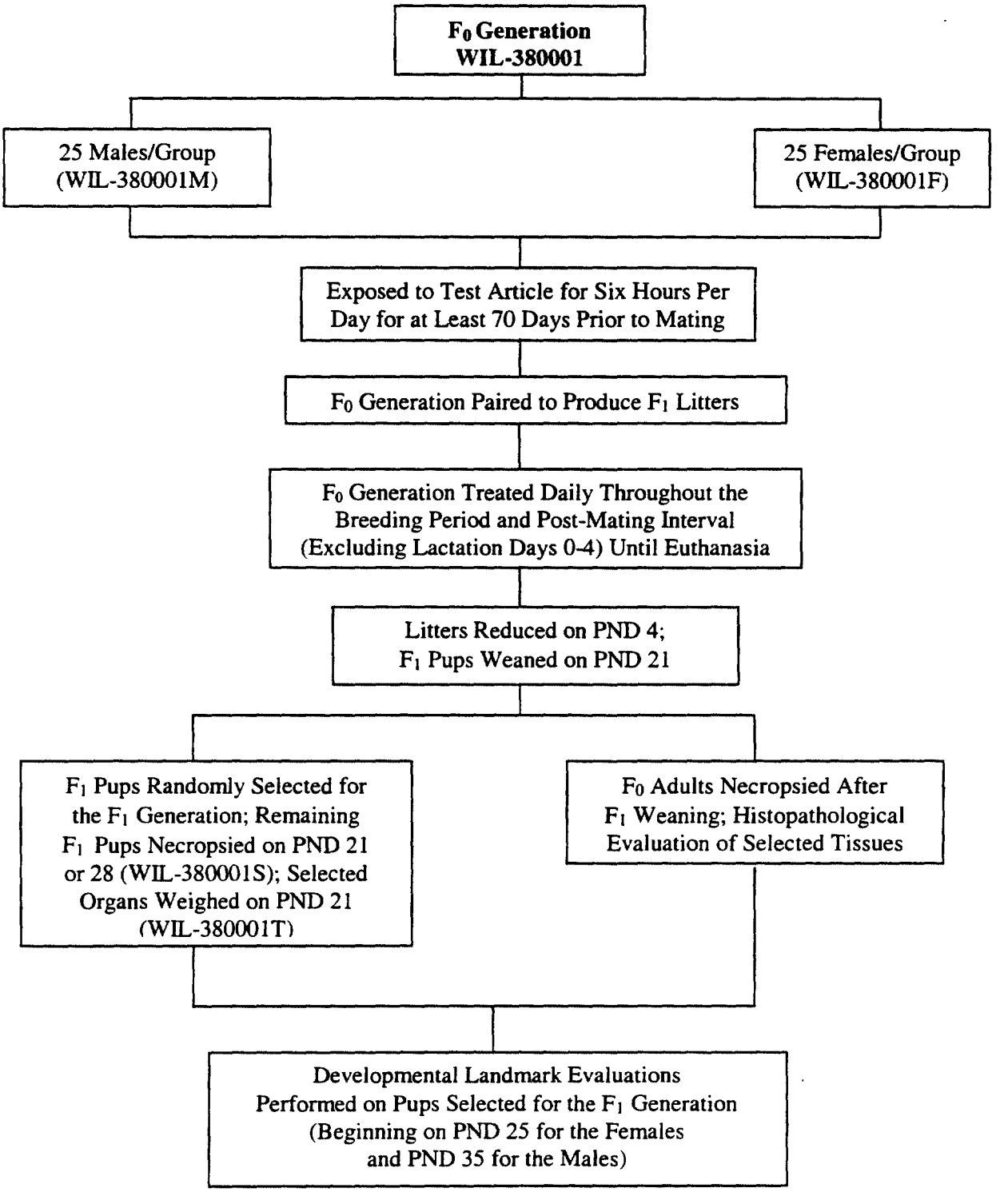
thymus weight increases, and increased lipid vacuolation and glycogen content of the liver was considered reversible, and not of biological significance. Spermatogenic endpoints were adversely affected in the 500 (F_0 and F_1) and 750 (F_0) ppm group males. Microscopic findings were observed in the ovaries in the 500 (F_0 and F_1) and 750 (F_0) ppm group females.

II. OBJECTIVE

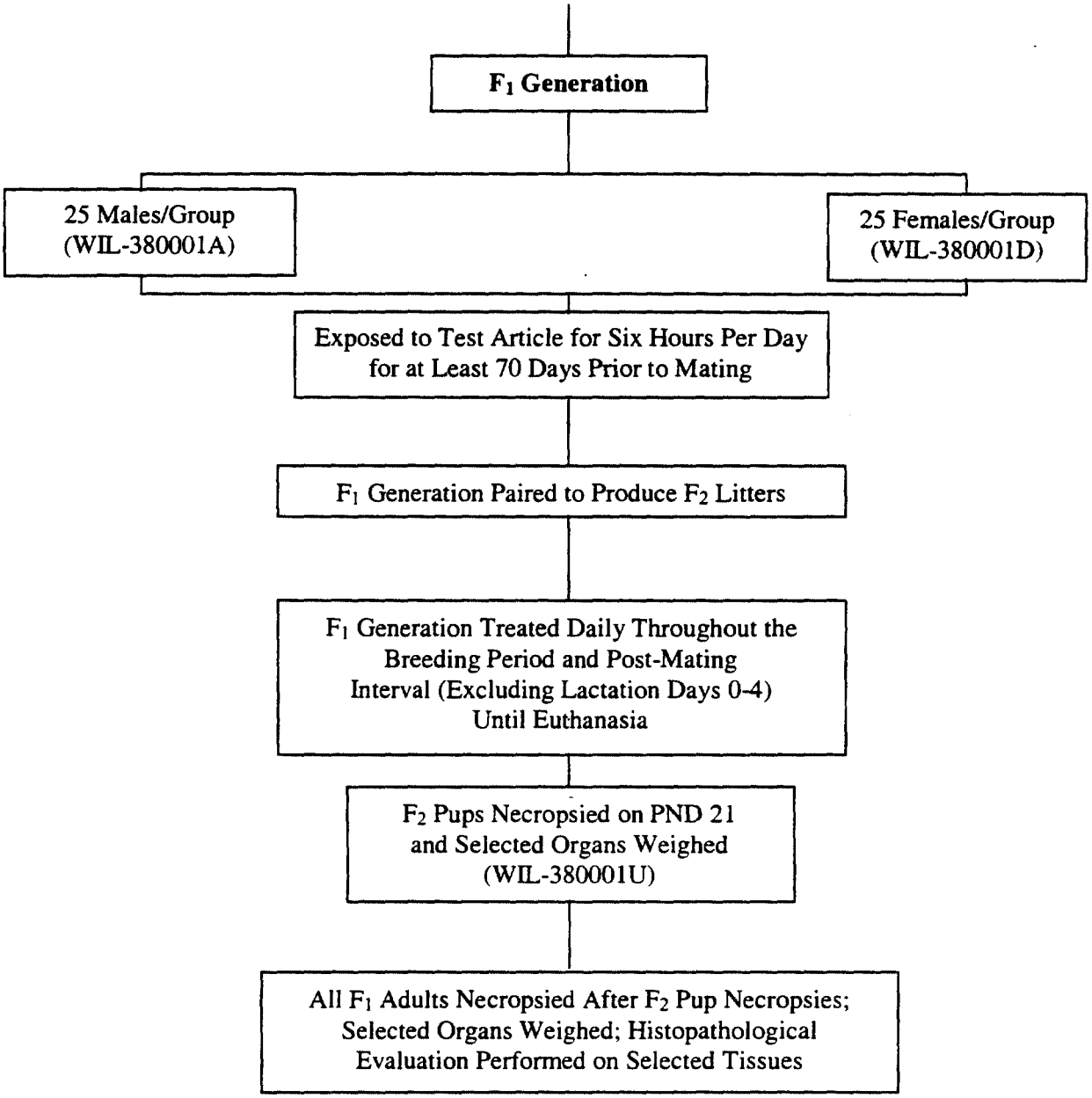
This study was designed to determine the potential adverse effects of 1-Bromopropane on reproductive capabilities in two generations of Crl:CD®(SD)IGS BR rats. One litter was produced in each generation. This report encompasses growth, mating, parturition and lactational phases of the F_0 and F_1 generations and the subsequent growth, development and survival of the offspring from these generations. For clarification of the terminology used to differentiate the generations in the report text, the offspring of the F_0 generation were defined as the F_1 litters; pups from the F_1 litters were selected to constitute the F_1 generation. The offspring of the F_1 generation were defined as the F_2 litters.

The selected route of administration was whole-body inhalation exposure because inhalation is the most likely route of human exposure. The animal model selected, the Crl:CD®(SD)IGS BR rat, is recognized as appropriate for reproduction studies. WIL Research Laboratories, Inc. has reproductive historical control data for the Crl:CD®(SD)IGS BR rat.

III. STUDY DESIGN



III. STUDY DESIGN (continued)



IV. EXPERIMENTAL PROCEDURES

A. INTRODUCTION

The experimental starting date was October 19, 1999 (animal receipt). The experimental phase of the study initiated with F_0 test article exposure on November 3, 1999; test article exposure continued until the day prior to necropsy. Breeding to produce the F_1 offspring was initiated on January 15, 2000, and completed on January 29, 2000. Acquisition of developmental landmarks of the selected F_1 pups was evaluated between March 4, 2000 and April 10, 2000. Necropsy of the F_1 pups not selected for the F_1 breeding phase was completed on March 19, 2000. All F_0 animals were necropsied by March 20, 2000. Treatment of the F_1 generation was initiated on the day after weaning (beginning with the first PND 22 on February 29, 2000) and continued until the day prior to necropsy. Breeding to produce the F_2 offspring was initiated on May 22, 2000 and completed on June 5, 2000. Necropsy of the F_2 pups was completed on July 17, 2000. All F_1 parental animals were necropsied by July 25, 2000. The experimental phase of the study concluded with the last microscopic examination on February 11, 2001. Due to spacing constraints, the study title is presented on the report tables as "Inhalation 2G Reproductive Tox. Study of 1-Bromopropane in Rats."

For computer entry purposes, F_0 parental data (including necropsy data) were designated WIL-380001M (males) and WIL-380001F (females). F_1 litter data was also designated WIL-380001F. F_1 parental data (including necropsy data) were designated WIL-380001A (males) and WIL-380001D (females). F_2 litter data were also designated WIL-380001D. Necropsy and organ weight data for the selected F_1 weanlings were designated WIL-380001T. Necropsy data for the F_1 weanlings on PND 28 were designated WIL-380001S. Necropsy and organ weight data for the selected F_2 weanlings were designated WIL-380001U.

B. TEST AND CONTROL ARTICLES

1. TEST ARTICLE IDENTIFICATION

The test article, 1-Bromopropane, was received for Brominated Solvents Consortium, from DSBG-Ameribrom, Inc., New York, New York, on September 13, 1999, as follows:

Identification	Quantity Received	Description
1-Bromopropane Lot No.: 990110 [WIL Log No. 4400A]	4 Drums Total Gross Weight: 1092.6 kg	Clear, colorless liquid

Stability and purity analyses were performed by the Analytical Chemistry Department at WIL Research Laboratories, Inc. The results of these analyses are presented in Appendix A. A Certificate of Analysis was supplied by the sponsor and is presented in Appendix B. The test article was stored at room temperature and was considered stable under this condition. A reserve sample of the test article was collected from each drum used and stored in the Archives at WIL Research Laboratories, Inc.

2. TEST ATMOSPHERE MONITORING

Exposure concentrations within each chamber were measured 9 to 10 times (approximately every 35 minutes) during each daily exposure period by a validated gas chromatographic method. At least one standard was analyzed each day prior to exposure to confirm gas chromatographic calibration. Chamber temperature, relative humidity, ventilation rate, and negative pressure within the chambers were monitored continuously and were recorded approximately every 35 minutes. Oxygen content within the chamber was measured during pre-study method development and at least once per month during the exposure phase, with the following exception. Oxygen content was not determined during June, 2000. This deviation did

not affect the outcome of the study. Nominal chamber concentrations were determined daily for each chamber by weighing the amount of test article used during atmosphere generation, converting this mass to volume using standard gas laws, and dividing this test article volume by the total volume of air displaced through the chamber during the exposure. Total air volume was calculated by multiplying mean chamber ventilation rate (in liters per minute) by the exposure duration (in minutes). Test atmosphere homogeneity was demonstrated during pre-study method development. Monitoring for aerosol formation in the control and high-concentration chambers was performed daily for the first two weeks of exposure and monthly thereafter, with the following exceptions. Aerosol determinations were not performed for December, 1999. This function was performed twice in January, 2000, once at the beginning of the month and once at the end of the month. Aerosol determinations were not performed during March, 2000. These deviations did not affect the outcome of the study. There were no detectable aerosols at any evaluation interval. The methodology and results of these analyses are presented in Appendix C.

3. EXPOSURE METHODS

Each group of animals was exposed in a 2.0-m^3 stainless-steel and glass whole-body inhalation chamber. The chambers were operated under dynamic conditions at air flows of at least 12 to 15 air changes per hour.

The F_0 and F_1 males and females were exposed to the test atmosphere for daily six-hour exposures (seven days a week) for a minimum of 70 consecutive days prior to mating, with the following exceptions. On March 17, 2000, F_0 female no. 32800 in the 500 ppm group was exposed for only five hours and 30 minutes. On June 14, 2000, animals were only exposed for five hours and 51 minutes due to a power failure. On July 9, 2000, F_1 female no. 32933-13 in the control group was exposed for only five hours

and 33 minutes. These deviations did not affect the outcome of the study. Exposure of the F_0 and F_1 males continued throughout mating and through the day prior to euthanasia. The F_0 and F_1 females continued to be exposed throughout mating and gestation through gestation day 20. Exposure of the F_0 and F_1 females was re-initiated on lactation day 5 and continued through the day prior to euthanasia, with the following exception. On February 23, 2000, female no. 32828 in the 500 ppm group was exposed on lactation day 3. This deviation did not affect the outcome of the study. During lactation, the dams were removed from their litters during each daily six-hour exposure period, with the following exception. At the time of loading for exposure on February 23, 2000, dam no. 32845 in the 250 ppm group was discovered in the wrong cage, while nonlactating female no. 32843 in the 250 ppm group had been placed in the cage with the pups from dam no. 32845. These pups were therefore separated from their dam for approximately 30 hours from PND 14 (a.m.) to PND 15 (p.m.). This deviation did not affect the outcome of the study. The control group was exposed to clean, filtered air under conditions identical to those used for the groups exposed to the test article. The rats were removed from their home cages in the animal room and transported to the inhalation chambers for the six-hour exposure period. The animals were exposed to the test article at approximately the same time each day. Following exposure, the animals were returned to their home cages. Instrumentation was set to maintain the temperature inside the exposure chamber between 18°C and 26°C and relative humidity between 30% and 60%. Exposure methods and conditions are detailed in Appendix C.

Each chamber was dedicated to one exposure group. In order to minimize any potential variation occurring due to positioning within the chamber, the cages were sequentially rotated around the available rack

positions within the chamber on a daily basis throughout the study, in accordance with the standard operating procedures at WIL Research Laboratories, Inc.

The F_0 and F_1 parental animals were assigned to study groups as follows:

Group Number	Test Article	Target Exposure Level (ppm)	Number of Animals Males	Number of Animals Females
1	Control (Filtered Air)	0	25	25
2	1-Bromopropane	100	25	25
3	1-Bromopropane	250	25	25
4	1-Bromopropane	500	25	25
5	1-Bromopropane	750	25[a]	25[a]

[a] = All F_0 females were nongravid. Therefore, there were no F_1 males or females in the 750 ppm group.

Exposure levels were selected by the sponsor.

The offspring of the F_0 generation (F_1 litters) were potentially exposed to the test article *in utero*, through nursing during PND 0-21 and via exposure following weaning (beginning on PND 22). The F_1 pups selected for breeding (25/sex/group) were exposed to the test article for six hours daily for at least 70 days prior to mating and throughout mating, gestation and lactation (with the exception of gestation day 21 through lactation day 4) until the day prior to necropsy. The offspring of the F_1 generation (F_2 litters) were potentially exposed to the test article *in utero* and through nursing during PND 0-21.

4. SAMPLING AND ANALYSES OF THE TEST ARTICLE

Duplicate 10-ml retention samples (collected prior to the initiation of exposure) and residual samples (collected following completion of exposures) were collected; these samples were analyzed for purity. The purity of the test article was a minimum of 99.8%. One 10-ml sample was

collected from the first drum (at the end of the drum) and from the second drum (prior to use). The deviation from the number of samples to be collected (duplicate) did not affect the outcome of the study since these samples were back-up samples. The results of these analyses are presented in Appendix A. The analysis of the residual samples demonstrated that the test article was stable throughout the course of the study.

C. F_0 ANIMAL RECEIPT AND ACCLIMATION

One hundred forty-two male and one hundred forty-one female Crl:CD®(SD)IGS BR rats were received from Charles River Laboratories, Raleigh, North Carolina, on October 19, 1999. The animals were 29 days old upon receipt. Animals were housed three per cage (by sex) in suspended wire-mesh cages for three days to allow for adaptation to the automatic watering system. After three days, the animals were individually housed except during mating. Each animal was examined by a qualified technician upon receipt and weighed the day following receipt. All animals were uniquely identified by a Monel® metal eartag displaying the animal number. During the acclimation period (15 days), the animals were observed twice daily for mortality and moribundity.

D. F_0, F_1 AND F_2 ANIMAL HOUSING

Following the initial acclimation period (F_0) or selection (F_1) and until pairing, all F_0 and F_1 parental test animals were individually housed in clean, wire-mesh cages suspended above cage-board. Cage board was changed three times per week, with the following exception. Cage board was documented as being changed only twice during the week of March 20, 2000. This deviation did not affect the outcome of the study. The animals were paired for mating in the home cage of the male. Following positive evidence of mating, the males were housed in suspended wire-mesh cages until the scheduled necropsy of the parental generations, and the females were transferred to plastic maternity cages

with nesting material (Bed-O'Cobs®; The Andersons, Industrial Products Division, Maumee, OH 43537). The dams were housed in these cages until weaning on lactation day 21. Following weaning of the litters in each generation (F_1 and F_2), the maternal females were individually housed in suspended wire-mesh cages until the scheduled necropsy, and the weaned F_1 pups were housed together by litter for one week. Beginning on PND 28, the F_1 pups were individually housed in suspended wire-mesh cages until the start of the mating period. Maternal females for which there was no evidence of mating were placed in plastic maternity cages with nesting material upon completion of a 14-day mating period. If these animals did not deliver after 25 days, they were returned to individual suspended wire-mesh cages. Animals were housed in accordance with the "Guide for the Care and Use of Laboratory Animals"[1]. The animal facilities at WIL Research Laboratories, Inc., are accredited by the Association for Assessment and Accreditation of Laboratory Animal Care International (AAALAC International).

E. DIET, DRINKING WATER AND MAINTENANCE OF F_0 AND F_1 ANIMALS

The basal ration used in this study was PMI Nutrition International, Inc., Certified Rodent LabDiet® 5002. The diet used at WIL Research Laboratories, Inc., was a certified feed with appropriate analyses performed and provided by the manufacturer. Municipal water supplying the facility is regularly sampled for contaminants according to standard operating procedures. Contaminants were not present in animal feed or water at concentrations expected to interfere with the objectives of this study. The basal diet and reverse-osmosis-treated (on-site) drinking water, delivered by an automatic watering system, were provided *ad libitum* throughout the acclimation period and during the study (except during exposure). On May 24, 2000, control group female nos. 32872-11 and 32891-15 were discovered in litter boxes with no food jar. These animals had no access to food since pre-exposure on the previous day. The

females were offered food for approximately an hour and a half prior to exposure. This deviation did not affect the outcome of the study. Food jars were equipped with retainers to minimize spillage. Feeders were sanitized weekly, with the following exception. Documentation of feeder sanitization was not present for the weeks of January 3 and April 10, 2000. This deviation did not affect the outcome of the study.

F. ENVIRONMENTAL CONDITIONS

Animals were housed throughout the acclimation period and during the study in an environmentally controlled room. Controls were set to maintain temperature at 72° ± 4° F (22.2 ± 2°C) and a relative humidity of 30-70%. Room temperature and relative humidity were monitored continuously and recorded once daily, with the following exceptions. Temperature and humidity were not recorded on December 2 and 15, 1999, February 11, 2000 and July 5, 2000. This deviation did not affect the outcome of the study. Temperature and humidity ranges during the study were 70.9°F-72.9°F (21.6°C-22.7°C) and 29.6%-54.1%, respectively. The single deviation (January 22, 2000) from the protocol-specified humidity range did not affect the outcome of the study. Light timers were calibrated to provide a 12-hour light/12-hour dark photoperiod (6 a.m. to 6 p.m.). It should be noted that on March 11, 2000, lighting was interrupted (lights were off) for approximately one hour and 10 minutes. This single deviation from the 12-hour light/12-hour dark photoperiod would not be expected to affect the outcome of the study. Air handling units were set to provide approximately 10 fresh air changes per hour.

G. ASSIGNMENT OF F_0 ANIMALS TO TREATMENT GROUPS

At the conclusion of the acclimation period, all available F_0 animals were weighed and examined in detail for physical abnormalities. At the discretion of the study director, animals judged to be in good health and meeting acceptable body weight requirements were selected for use in the computerized

randomization procedure. It should be noted that the protocol required the body weight ranges to be 200 to 300 g for males and 150 to 250 g for females at randomization. In order to obtain a sufficient number of animals for randomization, the minimum body weights were lowered to 171 g for males and 141 g for females. This deviation would not be expected to affect the quality or integrity of the study, as all animals were within the protocol-specified age range. At that time, the individual body weights and corresponding animal identification numbers were entered into the WIL Toxicology Data Management System (WTDMS™). A printout containing the animal numbers, corresponding body weights and individual group assignment was generated based on body weight stratification randomized in a block design. The animals were then arranged into groups according to the printout. The animals were approximately seven weeks old at the initiation of test article exposure. Male body weights ranged from 171 g to 229 g and female body weights ranged from 141 g to 184 g on the day of randomization (prior to study initiation). The individual randomization weights are not presented in this report but are contained in the study records.

H. F_0 AND F_1 OBSERVATIONS

1. CLINICAL OBSERVATIONS AND MORTALITY

Detailed physical examinations were recorded weekly for all parental animals throughout the study period. All animals were observed twice daily for moribundity and mortality; in addition the animals were observed for appearance, behavior and pharmacotoxic signs within one hour after completion of exposure. Females expected to deliver were also observed twice daily during the period of expected parturition and at parturition for dystocia (prolonged labor, delayed labor) or other difficulties.

2. BODY WEIGHTS

Individual F_0 and F_1 male body weights were recorded weekly throughout the study and prior to the scheduled necropsy. Individual F_0 and F_1 female body weights were recorded weekly until evidence of copulation was observed. Mean weekly body weights and body weight changes are presented for each interval, with the following exception. Female no. 32890 in the 500 ppm F_0 group had evidence of mating; however, this female did not deliver. A gestation day 20 body weight for this female was collected on February 13, 2000, but a weekly body weight was not recorded until February 23, 2000. This deviation did not affect the outcome of the study. Once evidence of mating was observed, female body weights were recorded on gestation days 0, 4, 7, 11, 14 and 20 and on lactation days 1, 4, 7, 14 and 21. Body weight changes are presented for each of these intervals and for the entire gestation and lactation intervals (days 0-20 and 1-21, respectively). After weaning (lactation day 21), weekly body weights were recorded for these females until the scheduled necropsy.

3. FOOD CONSUMPTION

Individual F_0 and F_1 male and female food consumption was measured weekly until pairing. Food intake was not recorded during the mating period. Male food consumption was measured after mating on a weekly basis until the scheduled necropsy. Female food consumption was recorded on gestation days 0, 4, 7, 11, 14 and 20 and lactation days 1, 4, 7, 14 and 21. Food consumption for female no. 32890 in the 500 ppm F_0 group was recorded on gestation day 20 (February 13, 2000). This female did not deliver, and food consumption was not recorded until February 23, 2000. This deviation did not affect the outcome of the study. Food consumption was calculated and reported as g/animal/day and g/kg/day for the corresponding body weight change intervals. Food efficiency (body weight

gained as a percentage of food consumed) was also calculated and reported for these intervals. When food consumption could not be determined for an animal during a given interval (due to a weighing error, food spillage, obvious erroneous value, etc.), the appropriate interval was footnoted as "NA" (Not Applicable) on the individual tables.

I. F_0 AND F_1 REPRODUCTIVE PERFORMANCE

1. ESTROUS CYCLES

Vaginal smears were prepared daily to determine the stage of estrus for each female, beginning 21 days prior to pairing and continuing until evidence of mating was observed. The F_0 generation was paired on the 22nd day of estrous smears and the F_1 generation was paired on the 21st day of estrous smears. This deviation did not affect the outcome of the study. For females with no evidence of mating, smearing was continued until termination of the mating period. The average cycle length was calculated for complete estrous cycles (i.e. the total number of returns to metestrus [M] or diestrus [D] from estrus [E] or proestrus [P] beginning 21 days prior to initiation of the mating period and until the detection of evidence of mating). Estrous cycle length was determined by counting the number of days from the first M or D in a cycle to the first M or D in a subsequent cycle. The cycle during which evidence of mating was observed for a given animal was not included in the mean individual estrous cycle length calculation. Vaginal smears were also performed on the day of necropsy to determine the stage of estrus.

2. BREEDING PROCEDURES

The animals were paired on a 1:1 basis within each treatment group after a minimum of 70 days of exposure. A breeding record containing the male and female identification numbers and the start date of cohabitation was prepared. Each female was housed in the home cage of the male. Positive

evidence of mating was confirmed by the presence of a copulatory plug or the presence of sperm in a vaginal smear. Each mating pair was examined daily. The day when evidence of mating was identified was termed day 0 of gestation. Then the animals were separated and the female was housed in an individual plastic cage with nesting material. When evidence of mating was not apparent after 14 days, the female was placed in a plastic maternity cage with nesting material.

Each generation was mated once to produce one litter per generation (the F_1 and F_2 litters). Prior to the F_0 pairing (week 10), male body weights ranged from 346 g to 566 g and female body weights ranged from 246 g to 381 g. The animals were approximately 17 weeks old. All animals were randomly selected for pairing.

Prior to the F_1 pairing (week 28), male body weights ranged from 364 g to 660 g and female body weights ranged from 223 g to 355 g. The animals were 13 to 15 weeks old. All animals were randomly selected for pairing avoiding sibling matings.

Pre-coital intervals were calculated according to the following method: rats paired over a 12-hour dark cycle were considered to have been paired for "one" day.

Mating and fertility indices were calculated as follows:

$$\text{Male (Female) Mating Index (\%)} = \frac{\text{No. of Males (Females) with Evidence of Mating}}{\text{Total No. of Males (Females) Used for Mating}} \times 100$$

$$\text{Female Fertility Index (\%)} = \frac{\text{No. of Females with Confirmed Pregnancy}}{\text{Total No. of Females Used for Mating}} \times 100$$

$$\text{Male Fertility Index (\%)} = \frac{\text{No. of Males Siring a Litter}}{\text{Total No. of Males Used for Mating}} \times 100$$

J. F_0 AND F_1 PARTURITION

All females were allowed to deliver naturally and rear their young to weaning (PND 21). During the period of expected parturition, the females were observed twice daily for initiation and completion of parturition and for signs of dystocia. On the day parturition was judged complete (PND 0), pups were sexed and examined for gross malformations, and the numbers of stillborn and live pups were recorded. Individual gestation lengths were calculated using the date delivery started.

K. F_1 AND F_2 LITTER DATA

1. LITTER VIABILITY AND DEATHS

Each litter was examined twice daily for survival, and all deaths were recorded. All pups were individually identified by application of tattoo markings on the digits on PND 0. A daily record of litter size was maintained. Intact offspring dying from PND 0 to 4 were necropsied using a fresh dissection technique described by Stuckhardt and Poppe[2]. Pups with external abnormalities which would warrant further skeletal examination were eviscerated and stained as described by Dawson[3] for subsequent skeletal evaluation. Findings were recorded as either developmental variations (alterations in anatomic structure that are considered to have no significant biological effect on animals health or body conformity, representing slight deviations from normal) or malformations (those anomalies that alter general body conformity, disrupt or interfere with body function, or may be incompatible with life). A detailed gross necropsy was performed on any pup dying after PND 4 and prior to weaning; tissues were preserved for possible future histopathological examination only as deemed necessary by the gross findings.

2. LITTER REDUCTION

To reduce variability among the litters, 8 pups per litter, 4 per sex when possible, were randomly selected on PND 4. All selections were performed by computerized randomization. The remaining offspring were weighed, euthanized and discarded on PND 4. Standardization of litter size was not performed on litters with fewer than eight pups.

3. CLINICAL OBSERVATIONS

Litters were examined daily for survival and any adverse changes in appearance or behavior. Each pup received a detailed physical examination on PND 1, 4, 7, 14 and 21.

4. BODY WEIGHTS

Pups were individually weighed on PND 1, 4, 7, 14 and 21. Mean pup weights were presented by sex for each litter and by exposure group.

5. SEX DETERMINATION

Pups were individually sexed on PND 0, 4, 7, 14 and 21.

6. CALCULATION OF LITTER PARAMETERS

Litter parameters were defined as follows:

$$\text{Live Litter Size} = \frac{\text{Total Viable Pups Day 0}}{\text{No. Litters With Viable Pups Day 0}}$$

$$\text{Postnatal Survival Between Birth and PND 0 or PND 4 (Pre-Selection) (\% Per Litter)} = \frac{\Sigma\,(\text{Viable Pups Per Litter on PND 0 or PND 4/No. of Pups Born Per Litter})}{\text{No. of Litters Per Group}} \times 100$$

$$\text{Postnatal Survival for All Other Intervals (\% Per Litter)} = \frac{\Sigma\,(\text{Viable Pups Per Litter at End of Interval N/Viable Pups Per Litter at Start of Interval N})}{\text{No. of Litters Per Group}} \times 100$$

Where N = PND 0-1, 1-4 (Pre-Selection), 4 (Post-Selection)-7, 7-14, 14-21 or 4 (Post-Selection)-21

7. WEANING AND SELECTION

Each dam and litter remained housed together until weaning on lactation day 21. Twenty-five male and 25 female F_1 pups from each group (control, 100, 250 and 500 ppm) were randomly selected prior to weaning (lactation day 21) to comprise the F_1 generation. These pups (a minimum of one male and one female per litter, when available) were exposed to 1-Bromopropane for six hours per day beginning on day 22 *post partum*. An additional 25 weanlings/sex/group, if possible, were exposed to the test article from PND 22-27, with the following exception. Pup no. 32867-06 in the control group was exposed through PND 28. This deviation did not affect the outcome of the study. The additional pups were selected as potential replacement animals for selected F_1 weanlings dying between PND 22 and 27.

Pups were selected for the F_1 generation as follows. A computerized randomization procedure was used to select a minimum of one male and one female per litter, when available. An additional male and/or female were selected from a litter, if necessary, to obtain 25 males and 25 females for each group. Pups selected for the F_1 generation also retained the dam number, followed by a hyphen "-" and the digit tattoo marking (i.e. 99999-01).

L. F_1 DEVELOPMENTAL LANDMARKS

The following investigations were used to assess the maturation of the selected F_1 pups. These procedures were concluded when the oldest pups were 58 days of age. Cumulative litter values include pups which tested positive for the event but were found dead prior to the end of the testing period.

1. BALANOPREPUTIAL SEPARATION

Each male pup was observed for balanopreputial separation beginning on PND 35 as described by Korenbrot *et al.*[4] The day on which balanopreputial separation was first observed was recorded for each pup.

Examination of the pups continued daily until balanopreputial separation was present. Body weights were recorded on the day of acquisition of this landmark.

2. VAGINAL PATENCY

Each female pup was observed for vaginal perforation beginning on PND 25 as described by Adams *et al.*[5], with the following exception. On March 3, 2000 (the first day of PND 25 pups), females were not observed for vaginal patency. On the following day, these females were examined and vaginal patency had not occurred. Therefore, this deviation did not affect the outcome of the study. The day on which the vaginal lumen was first observed to open was recorded for each pup. Examination of the females was continued daily until vaginal patency was present. Body weights were recorded on the day of acquisition of this landmark.

M. SPERMATOGENIC ENDPOINT EVALUATIONS

Immediately upon euthanasia, the reproductive tract of each F_0 and F_1 male was exposed via a ventral mid-line incision. The right epididymis was excised and weighed. An incision was made in the distal region of the right cauda epididymis. The right cauda epididymis was then placed in Dulbecco's phosphate buffered saline (maintained at approximately 37°C) with 10 mg/ml bovine serum albumin (BSA). After a ten-minute incubation period, a sample of sperm was loaded into a 100-μm cannula for determination of sperm motility. Because sperm motility can be affected by temperature shock, all cannulas and diluents were pre-warmed in an incubator, and motility determinations were performed under constant temperature (approximately 37°C) using the Hamilton-Thorne HTM-IVOS Version 10 computer-assisted sperm analysis (CASA) system. Analysis of a minimum of 200 motile and nonmotile spermatozoa per animal (if possible) in all exposure groups was performed by the analyzer. The motility score (percent) was reported:

$$\text{Percent Motile Sperm} = \frac{\text{Number of Motile Sperm}}{\text{Total Number of Sperm Counted}} \times 100$$

Sperm morphology was evaluated by light microscopy via a modification of the wet-mount evaluation technique described by Linder *et al.*[6] Abnormal forms of sperm (double heads, double tails, microcephalic or megacephalic, etc.) from a differential count of 200 spermatozoa per animal, if possible, were recorded.

The left testis and epididymis from all F_0 and F_1 males from all exposure groups were stored frozen, homogenized and evaluated for determination of homogenization-resistant spermatid count and sperm production rate, using the method described by Blazak *et al.*[7] and the Hamilton-Thorne CASA system.

For determination of homogenization-resistant spermatid count and sperm production rate, the samples were thawed and homogenized, and a sample was retained for subsequent analysis. An aliquot of the sample was added to a solution containing a DNA-specific fluorescent dye (the dye stains DNA that is present in the head of the sperm). For analysis, each sample was mixed, and an aliquot was placed on a slide with a 20-μm chamber depth. Illumination from a xenon lamp within the HTM-IVOS analyzer allowed for the visualization and quantitation of the sperm. A minimum of 200 cells, if possible, or 20 fields were counted for each sample.

N. SCHEDULED NECROPSY EXAMINATIONS

1. F_0 AND F_1 GENERATIONS - ADULTS

All surviving F_0 adults were euthanized following the selection of the F_1 generation and completion of a detailed clinical observation. All surviving F_1 adults were euthanized following weaning of the F_2 pups. A complete necropsy and selective histopathologic examination were conducted as described in Section IV.O.

2. F_1 AND F_2 PUPS

Prior to weaning, 25 F_1 pups/sex/group were randomly selected for the F_1 parental generation and for evaluation of developmental landmarks. Additional F_1 pups (25/sex/group, when possible) were retained as potential replacement animals, and were euthanized by CO_2 inhalation and necropsied on PND 28. In addition, one F_1 and one F_2 pup/sex/litter (when available) were selected from the F_1 and F_2 weanlings for complete necropsy on PND 21; brain, spleen and thymus gland weights were recorded. Due to the small number of F_1 pups available in the 500 ppm group, no pups from this group were selected for necropsy and organ weight collection on PND 21. All remaining non-selected F_1 and F_2 weanlings were euthanized by CO_2 inhalation and necropsied on PND 21, with emphasis on developmental and reproductive system morphology. All gross lesions from F_1 and F_2 weanlings were preserved in 10% neutral-buffered formalin for possible future histopathologic examination; all other tissues were discarded.

O. PATHOLOGY

1. MACROSCOPIC EXAMINATION

A complete necropsy examination was conducted on all parental animals (F_0 and F_1) euthanized *in extremis* or at termination. All animals were euthanized by an injection of sodium pentobarbital. The necropsy included examination of the external surface, all orifices, the cranial cavity, the external surfaces of the brain and spinal cord, and the thoracic, abdominal and pelvic cavities including viscera. At the time of necropsy, the following F_0 and F_1 parental tissues and organs were collected and were placed in 10% neutral-buffered formalin:

Adrenals (2)
Aorta
Bone with marrow (sternebrae)
Brain (forebrain, midbrain, hindbrain)
Coagulating gland
Eyes with optic nerve (2)
Gastrointestinal tract
- Esophagus
- Stomach
- Duodenum
- Jejunum
- Ileum
- Cecum
- Colon
- Rectum

Heart
Kidneys (2)
Liver (sections of two lobes)
Lungs (including bronchi, fixed by inflation with fixative)
Lymph node (mesenteric)
Ovaries[a] and oviducts (2)
Pancreas
Peripheral nerve (sciatic)
Pituitary
Prostate
Salivary gland [mandibular (2)]
Seminal vesicles (2)
Skeletal muscle (vastus medialis)
Skin with mammary gland
Spinal cord (cervical)
Spleen
Testes with epididymides[b] (1) and vas deferens
Thymus
Thyroids [with parathyroids, if present (2)]
Trachea
Urinary bladder
Uterus with vagina
All gross lesions

[a] = Five sections of each ovary from F_0 and F_1 females were examined.
[b] = The right testis and epididymis were fixed in Bouin's solution. Both testes and epididymides from animals euthanized *in extremis* were fixed in Bouin's solution.

2. ORGAN WEIGHTS

The following organs from all F_0 and F_1 parental animals euthanized at scheduled termination were weighed:

Adrenal glands	Prostate
Brain	Seminal vesicles with coagulating glands (with accessory fluids)
Epididymides[a] (total and cauda)	Spleen
Kidneys	Testes[a]
Liver	Thymus gland
Lungs	Uterus with oviducts and cervix
Ovaries	
Pituitary	

[a] = These paired organs were weighed separately.

Except as noted, paired organs were weighed together. Absolute weights and organ to final body weight ratios were reported.

3. HISTOLOGICAL PROCEDURES AND MICROSCOPIC EXAMINATION

Microscopic evaluations were performed on the following tissues for all F_0 and F_1 parental animals from the control and high exposure groups and for all adult animals euthanized *in extremis*:

Adrenal glands: cortex and medulla	Oviducts
Brain	Pituitary
Epididymis[a] (right): caput, corpus and cauda	Prostate
Coagulating gland	Seminal vesicles
Kidneys	Spleen
Liver	Testis[a] (right)
Lungs	Thymus
Ovaries[b]	Uterus
	All gross (internal) lesions

[a] = PAS and hematoxylin staining were used for the right testis and epididymis. Transverse sections of 2 to 4 microns of the testes and longitudinal sections of the epididymides were made.

[b] = Five sections from each ovary from F_0 and F_1 females were examined. Quantitative histopathological evaluation from multiple sections (including enumeration of primordial follicles[8,9] and corpora lutea) was conducted on the F_0 and F_1 females from the control and high exposure groups. A quantitative evaluation of the number of corpora lutea was also performed on 5 sections from the inner third of each ovary from all F_0 females in the 500 and 750 ppm groups and the F_1 females in the 500 ppm group. At the time of F_1 tissue embedding, it was discovered that two sets of ovaries (four ovaries total) were labeled as female no. 32842-10. No ovaries were present for female no. 32842-09. Both females were from the same litter in the 500 ppm group. Microscopic evaluation for both sets of ovaries was entered under female no. 32842-10. Primordial follicle data was also recorded in this manner. However, since follicle count data was recorded as two data sets, the data for one set of ovaries was arbitrarily assigned to female no. 32842-09 on individual report tables. This deviation did not affect the outcome of the study.

After fixation, protocol-specified tissues were trimmed according to standard operation procedures and the protocol. Trimmed tissues were process into paraffin blocks, sections at 5-8 microns, mounted on glass microscope slides and stained with hematoxylin and eosin, except as noted.

In addition, the ovaries (five sections from the inner third of each ovary, at least 100 μm apart), spleen, liver, kidneys, right testis and right epididymis were processed as the above-mentioned tissues, and were examined in the 100, 250 and 500 ppm group F_0 animals. A total of 10 spleens from the F_0 animals (five from the control group and five from the 750 ppm group, selected by the pathologist) were stained with Perl's stain for iron. In addition to the microscopic examination of the brain, the cerebral cortex (two levels), hippocampus/dentate gyrus, basal ganglia, thalamus, hypothalamus, tectum, cerebellum, pons, central gray matter, cerebral peduncles and nucleus gracilus from the brains from the F_0 animals in the control and 750 ppm groups were specifically examined. Basal ganglia were examined from all F_1 animals in the control and 500 ppm groups. The liver, kidneys, spleen (females only) and ovaries (five sections from the inner third of each ovary, at least 100 μm apart) from the F_1 animals in the 100 and 250 ppm groups were also examined. Although not required by the protocol, gross lesions were trimmed, processed and examined microscopically for the F_1 100 and 250 ppm group animals. This deviation did not affect the outcome of the study.

Microscopic examinations were conducted by Karen S. Regan, D.V.M., D.A.C.V.P., D.A.B.T., Director, Pathology and Veterinary Medicine, WIL Research Laboratories, Inc.

P. STATISTICAL METHODS

All analyses were conducted using two-tailed tests (except as noted below) for a minimum significance level of 5% comparing each treated group to the control group. Each mean was presented with the standard deviation (S.D.) and the number of animals (N) used to calculate the mean. Data obtained from nongravid animals were excluded from statistical analyses following the mating period. Statistical analyses were not performed when weekly food or body

weight data for one or more animals were not available because the animals remained in the lactation phase. Statistical tests were performed using appropriate computing devices or programs and are referenced on the report tables:

STATISTICAL TEST	PARAMETER
- Chi-square test[10] with Yates' correction factor	Parental Mating and Fertility Indices
- One-way ANOVA[11] with Dunnett's test[12]	Parental Weekly Body Weights and Weight Changes, Gestation and Lactation Body Weights and Body Weight Changes, Parental Food Consumption, Food Efficiency, Gestation Length, Pre-coital Interval, Implantation Sites, Unaccounted Sites, Offspring Weights and Weight Changes, Absolute and Relative Organ Weights, Live Litter Size, Sperm Production Rate, Epididymal and Testicular Sperm Numbers, Ovarian Primordial Follicle Counts, Number of Pups Born, Balanopreputial Separation (Day of Acquisition and Body Weight), Vaginal Patency (Day of Acquisition and Body Weight)
- Kruskal-Wallis test[13] with Mann-Whitney U-test[13]	Sperm Motility, Percent Morphologically Normal Sperm, Pup Sexes at Birth (% Males Per Litter), Proportional Postnatal Survival
- Fisher's Exact test[14]	Histopathological findings

Q. DATA RETENTION

The sponsor has title to all documentation records, raw data, specimens or other work product generated during the performance of the study. All work product including raw paper data and specimens will be retained in the Archives at WIL Research Laboratories, Inc., until notification from the client regarding final disposition of the said work products.

The raw data, retention samples of the test article and the original final report will be retained at WIL Research Laboratories, Inc., in compliance with regulatory requirements.

V. RESULTS - F_0 GENERATION

A. CLINICAL OBSERVATIONS AND SURVIVAL

Summary Data: Tables 1, 2, 4, 5

Individual Data: Tables 95, 98, 99

Female no. 32821 in the 500 ppm group was euthanized *in extremis* on study day 119 (study week 17) due to an enlarged, glaucomatous eye with a dry cornea and lids that were unable to close. The eye abnormality of this animal was not attributed to the test article. All other F_0 males and females survived to the scheduled necropsy.

There were no exposure-related clinical observations in the F_0 males and females at the weekly examinations or one hour following the completion of exposure. Clinical findings were observed infrequently, with similar incidence in the control group and/or did not occur in an exposure-related manner.

B. REPRODUCTIVE PERFORMANCE

Summary Data: Tables 2, 3

Individual Data: Tables 96, 97

Historical Control Data: Appendix D

Test article-related reductions in reproductive performance were observed in the 500 and 750 ppm group males and females. Male and female fertility indices were 92.0%, 100%, 88.0%, 52.0% and 0.0% in the control, 100, 250, 500 and 750 ppm groups, respectively. The 500 and 750 ppm group differences were statistically significant ($p<0.01$) when compared to the control group values. The mean values for male and female fertility in the WIL historical data are 89.3% and 90.4%, respectively. Male and female mating indices were 96.0%, 100%, 100%, 84.0% and 68.0% in the same respective groups. The 750 ppm group value was statistically significant ($p<0.05$) in comparison to the control group value. In the WIL historical

control data, the mean male and female mating indices are 96.0% and 97.0%, respectively. Males that did not sire a litter numbered 2, 0, 3, 12 and 25 in the control, 100, 250, 500 and 750 ppm groups, respectively. Females that had evidence of mating but did not deliver numbered 1, 0, 3, 10 and 17 in the same respective groups. All of these females were nongravid, with the exception of female nos. 32903 and 32925 in the 500 ppm group. These females had evidence of mating, did not deliver, and were gravid (two and one former implantation sites, respectively).

The mean lengths of estrous cycles were 4.2, 4.5, 4.7, 5.5 and 5.6 days in the control, 100, 250, 500 and 750 ppm groups, respectively. The values for the 500 and 750 ppm groups were above the range in the WIL historical control data (4.1-5.1 days). In addition, the length of estrous cycles could not be determined for 2 and 3 females in the 500 and 750 ppm groups, respectively, because no complete estrous cycles occurred in these females. Therefore, the increases in the 500 and 750 ppm groups were considered to be test article-related.

The mean numbers of days between pairing and coitus were increased in the 500 and 750 ppm groups (4.3 and 4.8 days, respectively) compared to that in the control group (3.4 days). The differences were not statistically significant. However, the values were above the range in the WIL historical control data (2.0-3.5 days). In addition, pre-coital intervals could not be determined for 1, 0, 0, 4 and 8 females in the control, 100, 250, 500 and 750 ppm groups, respectively, because these animals had no evidence of mating and were determined to be nongravid. Therefore, the increases in pre-coital intervals in the 500 and 750 ppm groups were considered to be test article-related. No effects of exposure were observed on the mean number of days between pairing and coitus in the 100 and 250 ppm groups.

C. BODY WEIGHTS

1. WEEKLY

Summary Data: Tables 6, 7, 8, Figures 1, 2

Individual Data: Tables 100, 101

Mean body weight gains were reduced in the 750 ppm group F_0 males during weeks 0-1 to 4-5 when compared to the control group values. The differences for weeks 0-1, 1-2 and 4-5 were statistically significant ($p<0.05$ or $p<0.01$). Throughout the remainder of the generation (weeks 5-6 to 18-19), mean body weight gains in these males were similar to the control group values, with the exception of statistically significant ($p<0.05$ or $p<0.01$) decreases (weeks 7-8, 12-13 and 16-17) or increases (week 13-14). Cumulative body weight gains (from study week 0) in the 750 ppm group males were reduced throughout the generation. The differences from the control group values were statistically significant ($p<0.01$). Mean body weights in these males were 5.4%-12.7% lower than the control group values from week 3 through the end of the generation (study week 19). The differences were statistically significant ($p<0.01$) from week 5 through week 19.

Mean weekly body weight gains in the 750 ppm group F_0 females were reduced during study week 0-1; the difference from the control group value was statistically significant ($p<0.01$). Throughout the remainder of the pre-mating period (weeks 1-2 to 9-10), mean body weight gains in these females were similar to the control group values, with the exception of a statistically significant ($p<0.01$) decrease during week 4-5. Following weaning (week 18-19), mean body weight gain was reduced; the difference was statistically significant ($p<0.01$). Cumulative body weight gains in the 750 ppm group females were reduced when compared to the control group values throughout the pre-mating period. The differences were generally

statistically significant ($p<0.05$ or $p<0.01$). Mean weekly body weights in the 750 ppm group females were comparable to the control group values during weeks 0-4. Mean body weights in these females were 5.0%-5.8% lower than the control group values during weeks 5-10. The differences were statistically significant ($p<0.05$) on study weeks 7 and 8.

Mean body weight gains in the 500 ppm group males were slightly reduced during weeks 0-1 to 4-5; the differences from the control group values were not statistically significant. Throughout the remainder of the generation, mean body weight gains in these males were generally similar to the control group values. The only statistically significant ($p<0.05$) difference from the control group values was a decrease during week 7-8. Cumulative body weight gains in the 500 ppm group males were similar to the control group values during weeks 0-1 to 0-7, but were slightly reduced throughout the remainder of the generation (weeks 0-8 to 0-19); the differences were not statistically significant. Mean body weights in these males were 4.7%-6.3% lower than the control group values during study weeks 12-19. The differences were not statistically significant.

No exposure-related effects on mean weekly body weights, body weight gains and cumulative body weight gains were observed in the 100 and 250 ppm group males and the 100, 250 and 500 ppm group females. The only statistically significant differences from the control group values were reductions ($p<0.01$) in mean body weight gain in the 250 ppm group males during study week 1-2 and in cumulative body weight gain in the 250 ppm group females during study week 0-3. Similar reductions were not observed in the 500 ppm group. Therefore, these transient reductions were attributed to biological variation.

2. GESTATION

Summary Data: Tables 9, 10, Figure 3

Individual Data: Tables 102, 103

There were no gravid females in the 750 ppm group, precluding evaluation of gestation body weight data.

Maternal body weight gains in the 250 and 500 ppm groups were comparable to the control group values during gestation days 0-4, 4-7 and 7-11. Mean body weight gains in these groups were reduced compared to those in the control group during gestation days 11-14, 14-20 and when the overall gestation period (days 0-20) was evaluated. The differences were statistically significant ($p<0.05$ or $p<0.01$) during gestation days 14-20 and 0-20 (500 ppm group only). Mean gestation body weights in the 250 and 500 ppm group females were similar to the control group values on gestation days 0, 4, 7 and 11. Mean gestation body weights in these females were reduced and statistically significant ($p<0.05$ or $p<0.01$) compared to the control group values on gestation days 14 (500 ppm group only) and 20. The reductions in body weights and body weight gains late in gestation were attributed to the reduced litter sizes in these groups.

Mean gestation body weights and body weight gains in the 100 ppm group females were similar to those in the control group. No statistically significant differences were noted.

3. LACTATION

Summary Data: Tables 11, 12, Figure 4

Individual Data: Tables 104, 105

Evaluation of lactation body weight data in the 750 ppm group was precluded by infertility.

Maternal body weight gain in the 500 ppm group females was slightly reduced (not statistically significant) during lactation days 1-4 and 7-14.

Mean body weight gain in this group was similar to the control group value during lactation days 4-7. A mean body weight loss in the 500 ppm group females during lactation days 14-21 was less than the loss in the control group. When the entire lactation period (lactation days 1-21) was evaluated, mean body weight gain in the 500 ppm group females was similar to the control group value. Mean body weights in this group were reduced throughout lactation. The differences from the control group were statistically significant ($p<0.05$ or $p<0.01$) on lactation days 4, 14 and 21.

Mean body weight changes in the 250 ppm group females were similar to those in the control group during lactation, with the following exception. Mean body weight gain in this group was reduced (not statistically significant) during lactation days 7-14. This transient reduction during the middle of the lactation period was not attributed to the test article. When the entire lactation period (days 1-21) was evaluated, mean body weight gain in these females was similar to the control group value. Mean body weights in the 250 ppm group females were similar to the control group values throughout the lactation period. The differences were not statistically significant.

Mean lactation body weights and body weight changes in the 100 ppm group females were similar to those in the control group. No statistically significant differences were observed.

D. FOOD CONSUMPTION

1. WEEKLY

Summary Data: Tables 13, 14, 15

Individual Data: Tables 106, 107, 108

Food consumption, evaluated as g/animal/day and g/kg/day, in the 750 ppm group males and females was not adversely affected by test article exposure during the pre-mating (weeks 0-10) and/or post-mating (weeks

13-19) periods. Differences from the control group values were generally slight and not statistically significant, with the following exceptions. Slight reductions ($p<0.05$ or $p<0.01$) in g/animal/day food consumption were noted for the males in this group during the last three weeks of the generation (weeks 16-17, 17-18 and 18-19) and for the females during the last week of the generation (week 18-19). These slight reductions were not attributed to the test article. Slightly increased g/kg/day food consumption values were noted in the 750 ppm group beginning during week 1-2 and continuing until week 9-10 (females) or week 14-15 (males); the differences from the control group values were generally statistically significant ($p<0.01$ or $p<0.05$). The increases in g/kg/day food consumption were attributed to the reduced mean body weight gains in these animals during the pre-mating period, and were not considered to be direct effects of the test article. Food efficiency in the 750 ppm group males was slightly reduced relative to the control group values throughout the pre-mating period; the differences during weeks 0-1, 1-2, 4-5 and 7-8 were statistically significant ($p<0.01$ or $p<0.05$). During the post-mating period, food efficiency in these males was unaffected by test article exposure; the only statistically significant ($p<0.05$) differences from the control group were an increase during week 13-14 and a decrease during week 16-17. Food efficiency in the 750 ppm group females was slightly reduced in comparison to the control group values during weeks 0-1 through 4-5; the differences for weeks 0-1 and 4-5 were statistically significant ($p<0.01$). Throughout the remainder of the pre-mating period, food efficiency in these females was similar to the control group values. Food efficiency in the 750 ppm group females was reduced ($p<0.05$) during the last week of the generation (week 18-19).

Weekly food consumption (g/animal/day and g/kg/day) and food efficiency in the 500 ppm group males and females were not adversely affected by treatment. Differences from the control group values were generally slight and not statistically significant, with the following exceptions. A slightly decreased ($p<0.01$) g/animal/day value during week 18-19, slightly increased ($p<0.05$ or $p<0.01$) g/kg/day values during weeks 3-4, 4-5, 9-10 and 13-14, and a decreased ($p<0.05$) food efficiency value during week 7-8 were noted in the 500 ppm group males. In the 500 ppm group females, g/animal/day food consumption during week 3-4 and g/kg/day food consumption during weeks 1-2 through 5-6, 8-9 and 9-10 were increased ($p<0.05$ or $p<0.01$). Similar increases were not observed in the 750 ppm group females during this period. Therefore, these increases were not attributed to the test article.

Food consumption (g/animal/day and g/kg/day) and food efficiency in the 100 and 250 ppm group males and females were similar to the control group values during the pre-mating and/or post-mating periods. Differences were slight and were not statistically significant, with the following exceptions. During study week 16-17, g/animal/day food consumption in the 100 ppm group males was decreased ($p<0.05$). The g/kg/day food consumption in the 250 ppm group females was increased ($p<0.05$ and $p<0.01$) during study weeks 4-5 and 5-6, respectively. Food efficiency values for the 250 ppm group males and females during study weeks 1-2 and 0-1, respectively, were reduced ($p<0.05$). No exposure-relationship was noted for these transient changes in food consumption and food efficiency in the 100 and 250 ppm groups, and the differences were attributed to biological variation. No other differences from the control group values were statistically significant.

2. GESTATION

Summary Data: Tables 16, 17, 18

Individual Data: Tables 109, 110, 111

Evaluation of gestation food consumption data in the 750 ppm group was precluded by infertility.

Maternal food consumption, evaluated as g/animal/day, in the 500 ppm group females was slightly reduced (not statistically significant) throughout gestation (days 0-4, 4-7, 11-14 and 14-20) in comparison to the control group values. These slight reductions resulted in a statistically significant ($p<0.01$) reduction in g/animal/day food consumption in these females when the overall gestation period (days 0-20) was evaluated. The g/animal/day food consumption during gestation days 7-11 and the g/kg/day food consumption throughout gestation in the 500 ppm group females were generally similar to the control group values; none of the differences were statistically significant. Food efficiency in these females was similar to the control group values during gestation days 0-4, 4-7, 7-11 and 11-14. During gestation days 14-20 and when the overall gestation period (days 0-20) was evaluated, food efficiency in the 500 ppm group females was reduced relative to the control group values; the differences for gestation days 14-20 and 0-20 were statistically significant ($p<0.01$). The reduction in food efficiency late in gestation was attributed to the reduced number of fetuses developing *in utero*.

Food consumption (g/animal/day and g/kg/day) in the 250 ppm group females was comparable to the control group values throughout gestation, with the following exception. During the last week of gestation (days 14-20), g/animal/day food consumption in the 250 ppm group females was slightly reduced (statistically significant at $p<0.05$) relative to the control

group value. Food efficiency in these females was similar to the control group values throughout gestation.

Gestation food consumption and food efficiency in the 100 ppm group females was unaffected by exposure to the test article.

3. LACTATION

Summary Data: Tables 19, 20, 21

Individual Data: Tables 112, 113, 114

Evaluation of lactation food consumption data in the 750 ppm group females was precluded by infertility.

Food consumption, evaluated as g/animal/day and g/kg/day, in the 250 and 500 ppm group females was reduced (often statistically significant at $p<0.05$ or $p<0.01$) throughout the entire lactation period (days 1-4, 4-7, 7-14 and 14-21) and when the overall lactation period (days 1-21) was evaluated. Food efficiency in these females during lactation was similar to the control group values. None of the differences were statistically significant. The reductions in food consumption during lactation in the 250 and 500 ppm groups were attributed to decreased maternal lactational demand as a result of the reductions in mean litter sizes.

Lactation food consumption and food efficiency in the 100 ppm group females were similar to the control group values. No statistically significant differences were observed.

E. GESTATION LENGTH AND PARTURITION

Summary Data: Table 22

Individual Data: Table 115

Historical Control Data: Appendix D

There were no gravid females in the 750 ppm group. Mean gestation lengths in the 100, 250 and 500 ppm groups were unaffected by test article exposure. The mean lengths of gestation were 21.9, 22.0 and 22.2 days in the

same respective exposure groups compared to 22.0 days in the concurrent control group and 21.8 days in the WIL historical control data. Female no. 32884 in the 100 ppm group had difficulty delivering one pup that was presented in a breech position on gestation day 24. No signs of dystocia were observed in any other exposure group. Therefore, this single incident of difficult parturition in the low exposure group was not attributed to the test article.

F. F_0 SPERMATOGENIC ENDPOINT EVALUATIONS

Summary Data: Tables 23, 24, 25, 26, 27

Individual Data: Tables 116, 117, 118, 119, 120

Historical Control Data: Appendix D

Mean epididymal sperm numbers (369.6 million cells/gram of tissue), sperm motility (53.2%) and the percentage of morphologically normal sperm (90.6%) in the 750 ppm group F_0 males were reduced when compared to the control group values (471.9 million cells/gram of tissue, 86.8% and 99.7%, respectively); the differences were statistically significant ($p<0.01$). Morphologically abnormal sperm observations in the 750 ppm group consisted of normal head separated from flagellum and normal flagellum with absent head. Mean testicular sperm numbers and sperm production rate in the 750 ppm group males were similar to those in the control group.

In the 500 ppm group males, sperm motility (71.9%) and the percentage of morphologically normal sperm (98.2%) were reduced and statistically significant ($p<0.01$) when compared to the above-mentioned control group values. Morphologically abnormal sperm observations in the 500 ppm group consisted of normal head separated from flagellum and normal flagellum with absent head. Mean testicular and epididymal sperm numbers and sperm production rate in the 500 ppm group males were similar to those in the control group.

In the 100 and 250 ppm group males, no exposure-related effects on spermatogenic endpoints were observed. The only statistically significant difference from the concurrent control group values was a slight decrease ($p<0.05$) in the percentage of morphologically normal sperm (99.3%) for the 250 ppm group males. The value was greater than the mean value of the WIL historical control data (99.0%), and the negligible difference from the control group value (99.7%) was not considered to be exposure-related.

G. F_0 NECROPSY EXAMINATIONS

1. MACROSCOPIC EXAMINATION

Summary Data: Tables 28, 29, 30

Individual Data: Tables 121, 122, 123

Historical Control Data: Appendix D

Female no. 32821 in the 500 ppm group was euthanized *in extremis* on study day 119 due to an ocular abnormality. At the time of necropsy, the left eye was enlarged and reddened. This female was also nongravid.

At the scheduled necropsy, possible test article-related macroscopic changes were observed in the testis and epididymis of the 500 and 750 ppm group males. Low incidences of small left and/or right epididymides and small and/or soft testes were observed in one or two of these males. All other macroscopic observations were considered spontaneous, incidental and unrelated to test article exposure.

Evaluation of the calculated differences between the number of pups born and the number of implantation sites counted (unaccounted sites) in the 750 ppm group females was precluded by 100% infertility in this group. In the 500 ppm group, the mean number of unaccounted sites was comparable to the control group value, but the mean number of implantation sites was reduced (statistically significant at $p<0.01$) in comparison to the control group value. A statistically significant ($p<0.01$)

increase in the mean number of unaccounted sites was observed in the 250 ppm group (1.3 unaccounted sites per dam) when compared to the concurrent control group value (0.3 unaccounted sites/dam). However, no exposure-relationship was evident; therefore, this increase was not considered to be an effect of the test article. The mean number of implantation sites was decreased (not statistically significant) in the 250 ppm group. The mean numbers of unaccounted sites and implantation sites in the 100 ppm group females were similar to the control group values; none of the differences were statistically significant.

2. ORGAN WEIGHTS

Summary Data: Tables 31, 32

Individual Data: Tables 124, 125

Organ weight changes were observed in the brain (250 ppm group males and 500 and 750 ppm group males and females), ovary (500 and 750 ppm group females), epididymis (250, 500 and 750 ppm group males), seminal vesicles (500 and 750 ppm group males), prostate (250, 500 and 750 ppm group males) and liver (500 and 750 ppm group males and 750 ppm group females) when compared to the control group values. It should be noted that the physiological condition of the 750 ppm group females was different from the other F_0 females due to the lack of pregnancy and subsequent demands of lactation.

Mean absolute brain weights were reduced compared to the control group values in the 250, 500 and 750 ppm group males and in the 500 and 750 ppm group females. The differences were statistically significant ($p<0.05$ or $p<0.01$). There were no corresponding macroscopic or microscopic findings, and brain weights relative to final body weights in these animals were similar to the control group values. The decreases in the males did not occur in an exposure-related manner. Mean absolute and

relative brain weights in the 100 ppm group males and females and in the 250 ppm group females were similar to those in the control group.

Mean absolute and relative ovary weights were decreased in an exposure-related manner in the 250, 500 and 750 ppm group females. The differences in the 750 ppm group were statistically significant ($p<0.01$) when compared to the control group values. The reductions in the 500 and 750 ppm group females were considered to be test article-related due to the correlation with the microscopic finding of decreased corpora lutea.

Mean absolute left and right epididymal and left and right cauda epididymal weights in the 250, 500 and 750 ppm group males were decreased compared to the control group values, in an exposure-related manner. The differences from the control group values were generally statistically significant ($p<0.05$ or $p<0.01$) in the 500 and 750 ppm groups. Mean relative cauda epididymal (left and right) weights in the 750 ppm group were reduced (statistically significant at $p<0.01$) compared to the control group values. Additionally, the mean absolute prostate weights in the 250, 500 and 750 ppm groups and seminal vesicle weights in the 500 and 750 ppm groups were reduced compared to the control group values. The differences in the prostate weights and the 750 ppm group seminal vesicle weight were statistically significant ($p<0.05$ or $p<0.01$). The reduced epididymal weights in the 750 ppm group correlated with the reduced epididymal sperm numbers observed in this same group. Although there were no macroscopic or microscopic observations that correlated with the changes in prostate and seminal vesicle weights, the reductions were considered to be test article-related because of the reductions in fertility and/or litter size observed in the 250, 500 and 750 ppm groups.

Mean absolute adrenal and pituitary weights in the 750 ppm group males were decreased compared to the control group values. The differences were statistically significant ($p<0.01$). Similar reductions were not observed in the treated females. There were no changes in the relative weights of these organs, and there were no macroscopic or microscopic changes that correlated with the weight reductions; therefore, the decrease in adrenal weight was considered to be incidental and unrelated to exposure to the test article. Because of the infertility observed in the F_0 animals in 750 ppm group and since similar reductions in pituitary weights were observed in the 500 ppm group F_1 males, the reduced pituitary weights were considered to be test article-related.

Mean relative liver weights were increased in the 500 and 750 ppm group males and the 750 ppm group females. The differences from the control group values were statistically significant ($p<0.01$) for the 750 ppm group animals. These increases correlated to the microscopic findings of vacuolation and increased glycogen.

Statistically significant ($p<0.05$ or $p<0.01$) increases in organ weights were observed in the 500 ppm group males (relative liver weight), in the 750 ppm group males (relative kidney, spleen and left testis weights) and in the 750 ppm group females (relative liver and kidney weights). These changes were considered secondary to the decreases in body weights in these animals, and were not direct test article effects.

There were no test article-related effects on organ weights in the 100 ppm group males and females.

3. MICROSCOPIC EXAMINATION

Summary Data: Tables 33, 34, 34A

Individual Data: Tables 121, 122, 126

One female in the 500 ppm group was euthanized *in extremis* due to an ocular abnormality. No microscopic findings related to the moribundity of the animal were observed.

Test article-related microscopic changes were observed in the liver (250, 500 and 750 ppm group males and females), kidney (500 and 750 ppm group males and females), spleen (250, 500 and 750 ppm group males and females) and ovary (500 and 750 ppm group females).

In the liver, an exposure-related increase in the incidence and severity of minimal to mild centrilobular hepatocellular vacuolation, consisting of discrete, nonstaining cytoplasmic vacuoles, was observed in the 250, 500 and 750 ppm group males and the 500 and 750 ppm group females. The differences from the control group values were statistically significant ($p<0.05$). The vacuoles were morphologically compatible with lipid. Increased glycogen, microscopically appearing as cytoplasmic clearing of hepatocytes, was also increased in incidence and severity in the 250, 500 and 750 ppm group males and females; the differences from the control group values were statistically significant ($p<0.05$) in the 500 ppm group females and in both sexes in the 750 ppm group. The increased glycogen was observed throughout the lobule (panlobular distribution). Although test article-related, both of these changes (increased glycogen and centrilobular vacuolation) are considered to be reversible changes that are not biologically adverse.[15]

In the kidney, test article-related increases in the incidences of minimal to mild pelvic mineralization and transitional epithelial hyperplasia were observed in the 500 and 750 ppm group males and females; the differences

from the control group value were generally statistically significant ($p<0.05$) for the 500 and 750 ppm group females. A slight increase in pelvic mineralization was also observed in the 250 ppm group females. Pelvic mineralization was characterized by the presence of small areas of mineral along the transitional epithelium lining the renal pelvis. This change was sometimes associated with hyperplasia of the transitional epithelium, which is considered secondary to irritation from the mineral. No large calculi were observed. There were no associated changes in the renal cortex and/or medulla.

A slight increase in the severity of brown pigment in the spleen was observed in the 250, 500 and 750 ppm group males and females. The differences from the control group values were not statistically significant. Spleens from control group animals had primarily mild amounts of pigment, while spleens of the 250, 500 and 750 ppm group animals had primarily mild to moderate amounts of pigment. The increases in severity were not exposure-related; however, because the consistency of this finding between sexes and between generations, it was considered to be test article-related. The pigment was stained positively for iron with Perl's iron stain, and morphologically consistent with hemoglobin. However, hematology was not conducted on these animals. Because of the minimal nature of the change, this finding was not considered to be toxicologically significant.

Test article-related changes in the ovaries of the females consisted of decreased corpora lutea (500 and 750 ppm groups) and increases in follicular cysts and interstitial cell hyperplasia (750 ppm group only). The differences from the control group values were statistically significant ($p<0.05$) in the 750 ppm group. Decreased corpora lutea was diagnosed when there were either no corpora lutea present (a grade of "severe"

implied that the animals did not ovulate recently, perhaps during the last four to six cycles) or that there were fewer recent corpora lutea present than would be expected for a regularly cycling animal (a grade of "mild" implied that ovulation did not occur consistently within the last few estrous cycles). It should be noted that some of the animals did have new corpora lutea from the most recent cycle, but did not show a good continuum of recent to very old degenerating corpora lutea, as would be expected for a regularly cycling animal. Decreased corpora lutea was considered to be a test article-related effect in the 500 and 750 ppm groups, and although it correlates with the decreased number of litters in these groups, it does not fully account for the absence of litters in the 750 ppm group. Enumeration of the numbers of corpora lutea in five sections per ovary revealed a statistically significant decreased ($p<0.01$) in the number of corpora lutea in the 750 ppm group when compared to the control group value, and confirmed the microscopic findings. Corpora lutea counts in the 500 ppm group females were also decreased compared to those in the control group, although the differences were not statistically significant.

Decreased numbers of corpora lutea were often observed in animals that had follicular and/or luteinized follicular cysts. Both types of cysts were large, fluid-filled, and frequently multiple and bilateral. Follicular cysts were lined by degenerating granulosa and theca cells, and a degenerating oocyte was sometimes observed within the cyst. Luteinized follicular cysts were lined by a variable number of layers of degenerating or viable luteal cells. A slight increase in the incidence of both types of cysts was observed in the 750 ppm group. However, cysts were also observed in the control group females, and in females in the 750 ppm group that had no microscopic evidence of decreased corpora lutea.

Interstitial cell hyperplasia of the ovary was also observed with increased incidence in the 750 ppm group females. The difference from the control group value was not statistically significant. Since interstitial tissue forms from the thecal cells from the atretic follicles (those that grow but are not ovulated and subsequently degenerate), this change was considered to be a reflection of the interruption of the estrous cycle in the affected animals. All of these changes (decreased corpora lutea, increased follicular and luteinized follicular cysts and interstitial cell hyperplasia) are changes that have been described in aging animals.[16] Enumeration of the number of primordial follicles in five sections per ovary did not reveal any statistically significant changes in the numbers of primordial oocytes between the 750 ppm and control groups.

A slight increase (not statistically significant) in the incidence of seminiferous tubule degeneration was observed in the testis of the 750 ppm group males. This change correlated with the macroscopic observation of small and/or soft testes. Affected tubules had layers of germ cells missing. The most severely affected tubules were lined only with Sertoli cells. Although the incidence was 1/25 in the control group and 6/25 in the 750 ppm group, it should be noted that four of the affected males had only one or several tubules affected (graded as "minimal"). Additionally, there were no changes in the testis weight to correlate with the degeneration. Seminiferous tubule degeneration was not increased in the other exposure groups. Therefore, the seminiferous tubule degeneration in the 750 ppm group males was not considered to be an adverse effect of test article exposure. Small epididymides, observed sporadically at necropsy in the 500 and/or 750 ppm groups, were not confirmed microscopically.

Multiple sections of brain were examined microscopically in the F_0 control and 750 ppm groups (males and females) in an effort to determine the cause of the decreased brain weights observed. The areas of the brain specifically examined for these two groups included the cerebral cortex, hippocampus, basal ganglia, cerebral peduncles, pons, tectum, central gray matter, thalamus, hypothalamus, cerebellum and nucleus gracilis. No test article-related morphologic changes were observed in any of the areas.

All other microscopic observations were considered to be spontaneous, incidental and unrelated to test article exposure.

H. F_1 LITTER DATA

1. PND 0 LITTER DATA AND POSTNATAL SURVIVAL

Summary Data: Tables 35, 36

Individual Data: Tables 127, 128

Historical Control Data: Appendix D

Evaluation of pup viability in the 750 ppm group was precluded by F_0 infertility. The mean number of pups born (12.5 and 8.5 pups per dam) and live litter size on PND 0 (12.3 and 8.3 pups per dam) in the 250 and 500 ppm groups, respectively, were reduced compared to the control group values (15.0 pups born per dam and 14.4 viable pups per dam on PND 0). The differences were statistically significant ($p<0.01$) in the 500 ppm group. The percentages of males per litter at birth in these groups were similar to the control group value. The number of pups born, percentage of males per litter at birth and live litter size in the 100 ppm group were unaffected by test article exposure.

Pup survival throughout the pre-weaning period was not affected by parental exposure in the 100, 250 and 500 ppm groups. The only statistically significant difference from the control group was a slight reduction ($p<0.05$) in viability in the 500 ppm group during PND 14-21.

This reduction was not of sufficient magnitude to be considered toxicologically significant.

2. GENERAL PHYSICAL CONDITION AND MORTALITIES

Summary Data: Table 37

Individual Data: Table 129

Pups that were found dead or euthanized *in extremis* during the postnatal period numbered 16, 20, 8 and 5 in the control, 100, 250 and 500 ppm groups, respectively. In the same respective groups, 0, 1, 1 and 1 pups were missing and presumed to have been cannibalized. The general physical condition of the F_1 pups during the postnatal period was similar in all groups, including the control group.

3. OFFSPRING BODY WEIGHTS

Summary Data: Tables 38, 39

Individual Data: Tables 130, 131

Historical Control Data: Appendix D

Mean F_1 pup body weight gains in the 500 ppm group males and females were slightly increased (not statistically significant) before selection (PND 1-4). Mean pup body weight gains in this group were reduced in comparison to the control group values after culling on PND 4 (PND 4-7, 7-14, 14-21 and 21-28); the differences were statistically significant ($p<0.01$) for the males during PND 4-7 and 7-14 and for both sexes during PND 21-28 (first week of F_1 exposure). Mean pup body weights in the 500 ppm group males and females were increased (generally statistically significant at $p<0.05$) on PND 1 and 4 (before selection). The body weight increases in these pups prior to culling were attributed to the reduced litter sizes in this group (decreased intralitter competition) and were not considered to be direct effects of test article exposure. Following culling on PND 4, mean pup body weights in the 500

ppm group males were similar to the control group value on PND 7, 14 and 21 and reduced relative to the control group values on PND 28; the PND 28 difference (13.7%) was statistically significant ($p<0.01$). Mean pup body weights in the 500 ppm group females following culling were similar to the control group values on PND 7, 14 and 21, but were 9.7% lower than the control group value on PND 28 (not statistically significant).

Mean pup body weight gains in the 250 ppm group males and females were similar to the control values during PND 1-4, but were slightly reduced during PND 4-7, 7-14, 14-21 and 21-28; only the PND 21-28 difference for the males was statistically significant ($p<0.01$). Mean pup body weights in the 250 ppm group males were similar to the control group values on PND 1, 4, 7, 14 and 21, but were slightly reduced on PND 28; the PND 28 difference (8.9%) was statistically significant ($p<0.01$). Mean pup body weights in the 250 ppm group females were similar to the control group values at all intervals; no statistically significant differences from the control group were observed.

Mean pup body weight gains and pup body weights in the 100 ppm group males and females were similar to the control group values throughout the postnatal period. The only statistically significant difference ($p<0.05$) was a slight reduction in body weight gain in the 100 ppm group males during PND 21-28. However, the reduction in mean body weight gain was slight and not of sufficient magnitude to affect absolute body weight. Therefore, this reduction was not considered to be test article-related.

4. NECROPSIES OF PUPS FOUND DEAD

Summary Data: Table 40

Individual Data: Table 132

No internal findings that were attributed to parental exposure to the test article were noted at the necropsies of pups that were found dead or euthanized *in extremis* in the 100, 250 and 500 ppm groups. With the exception of the presence or absence of milk in the stomach, no internal findings were observed.

5. NECROPSIES OF WEANLINGS NOT SELECTED FOR ORGAN WEIGHTS

a. PND 21

Summary Data: Table 41

Individual Data: Table 133

There were no internal findings at the necropsies of weanlings not selected for organ weights on PND 21. Due to the limited number of pups available for the selection of the F_1 generation, no pups from the 500 ppm group were necropsied on PND 21.

b. PND 28

Summary Data: Table 42

Individual Data: Table 134

At the necropsy of weanlings not selected for the F_1 generation on PND 28, pup no. 32800-03 in the 500 ppm group had a white area on the liver. All other pups examined on PND 28 were internally normal.

6. NECROPSIES OF WEANLINGS SELECTED FOR ORGAN WEIGHTS - PND 21

Due to the limited number of pups available for the selection of the F_1 generation, no pups from the 500 ppm group were selected for necropsy and organ weight collection in PND 21.

a. MACROSCOPIC EXAMINATION

Summary Data: Table 43

Individual Data: Table 135

At the necropsy of F_1 weanlings selected for organ weights on PND 21, no exposure-related internal findings were observed. The only internal findings noted were a dilated renal pelvis in one pup each in the control and 100 ppm groups and a small spleen in one pup in the 100 ppm group. All other pups were internally normal.

b. ORGAN WEIGHTS

Summary Data: Tables 44, 45

Individual Data: Tables 136, 137

Mean absolute brain weights in the 100 and 250 ppm group males and females were reduced compared to the control group values. With the exception of the value for the 250 ppm group females, the differences were statistically significant ($p<0.05$ or $p<0.01$). The reductions in the females did not occur in an exposure-related manner. Mean brain weights relative to final body weight in these males and females were similar to the control group values. Mean absolute and relative spleen and thymus weights in the 100 and 250 ppm group males and females were similar to the control group values; none of the differences were statistically significant.

I. F_1 DEVELOPMENTAL LANDMARKS

1. BALANOPREPUTIAL SEPARATION

Summary Data: Tables 46, 47

Individual Data: Tables 138, 139

Historical Control Data: Appendix D

A delay in the day of acquisition of balanopreputial separation was observed in the 500 ppm group F_1 males. The mean ages at

balanopreputial separation were 44.2, 45.9, 45.7 and 48.3 days in the control, 100, 250 and 500 ppm groups, respectively. The difference from the control group was statistically significant ($p<0.01$) for the 500 ppm group. All males in the control and exposure groups had balanopreputial separation by PND 58. Mean body weight on the day of acquisition in the 500 ppm group was similar to the control group value. Therefore, the delay in acquisition of balanopreputial separation was attributed to the reduced body weights of the males in the 500 ppm group.

The mean day of acquisition of balanopreputial separation and mean body weight on the day of acquisition in the 100 and 250 ppm group F_1 males were not affected by exposure to the test article. Differences from the control group values were slight and were not statistically significant.

2. VAGINAL PATENCY

Summary Data: Tables 48, 49

Individual Data: Tables 140, 141

Historical Control Data: Appendix D

Vaginal patency was not affected in any of the F_1 female pups. The mean ages at acquisition of vaginal patency were 36.0, 34.1, 36.1 and 37.8 days in the control, 100, 250 and 500 ppm groups, respectively. All female pups had vaginal opening by PND 45.

Mean body weights in the exposure group females on the day of acquisition of vaginal patency were similar to the control group values. No statistically significant differences were noted.

VI. RESULTS - F_1 GENERATION

A. CLINICAL OBSERVATIONS AND SURVIVAL

Summary Data: Tables 50, 51, 53, 54

Individual Data: Tables 142, 145, 146

F_1 male no. 32800-04 in the 500 ppm group was euthanized *in extremis* during the second week of exposure (PND 33, study week 18). Prior to euthanasia, this animal was lethargic and had shallow respiration and pale eyes. Male no. 32923-04 in the control group was euthanized *in extremis* on study day 154 due to possible mechanical trauma (nose and upper incisors deviated to the right). Prior to euthanasia, this animal had red material around the eyes and nose and an unkempt appearance. All other F_1 males and females survived to the scheduled necropsy.

There were no exposure-related clinical observations in the F_1 treated males and females at the weekly examinations or one hour following completion of exposure. Clinical findings were observed infrequently, with similar incidence in the control group and/or did not occur in an exposure-related manner.

B. REPRODUCTIVE PERFORMANCE

Summary Data: Tables 51, 52

Individual Data: Tables 143, 144

Historical Control Data: Appendix D

Male fertility indices were 87.5%, 68.0%, 64.0% and 70.8% in the control, 100, 250 and 500 ppm groups, respectively. Female fertility indices were 88.0%, 68.0%, 64.0% and 72.0% in the same respective groups. The differences from the control group values were not statistically significant. However, in the WIL historical control data only one of 33 data sets had a value less than the fertility indices observed in the 100, 250 and 500 ppm groups. The mean values for male and female fertility in the WIL historical

control data are 89.3% and 90.4%, respectively. Although the reduction in fertility indices did not occur in an exposure-related manner, because of the reduced fertility (52%) in the F_0 500 ppm group, only 11 litters of the F_0 generation were represented in the F_1 500 ppm group. Therefore, the fertility index in the F_1 500 ppm group may have been biased because the F_0 animals most sensitive to the effects of the test article were not represented in the F_1 generation.

Male mating indices were 100.0%, 84.0%, 80.0% and 100.0% in the control, 100, 250 and 500 ppm groups, respectively. Female mating indices were 100.0, 84.0%, 80.0% and 100.0% in the same respective groups. The differences from the control group values were not statistically significant. Males that did not sire a litter numbered 3, 8, 9 and 7 in the control, 100, 250 and 500 ppm groups, respectively. Females that had evidence of mating, but did not deliver, numbered 3, 4, 4 and 8 in the same respective groups. All of these females were nongravid, with one exception. Female no. 32825-02 in the 500 ppm group had evidence of mating, did not deliver and was gravid (two former implantation sites).

The mean lengths of the estrous cycle were 4.5, 4.5, 4.9 and 5.1 days in the control, 100, 250 and 500 ppm groups, respectively. Although all the values were within the WIL historical control range (4.1-5.1 days), estrous cycle lengths could not be determined for three and four animals in the 250 and 500 ppm groups, respectively, compared to one each in the control and 100 ppm groups because no complete estrous cycles occurred in these females. Therefore, the increases in the 250 and 500 ppm group values were attributed to the test article.

No effects of exposure were observed on the mean number of days between pairing and coitus in the exposure groups. Differences from the control group value were slight and were not statistically significant.

C. BODY WEIGHTS

1. WEEKLY

Summary Data: Tables 55, 56, 57, Figures 5, 6

Individual Data: Tables 147, 148

Mean body weight gains in the 500 ppm group F_1 males were reduced compared to the control group values during study weeks 19-20 and 20-21. The difference was statistically significant ($p<0.01$). During the remainder of the F_1 generation (study weeks 21-22 through 36-37), mean body weight gains in these males were similar to the control group values. Cumulative body weight gains (from study week 20) in the 500 ppm group males (study weeks 20-22 through 20-37) were similar to the control group values. Mean body weights in the 500 ppm group males were 9.3%-18.5% lower than the control group values throughout the generation (study weeks 19-37). The differences were statistically significant ($p<0.01$).

In the 500 ppm group F_1 females, mean body weight gains and cumulative body weight gains were similar to the control group values throughout the pre-mating period (study weeks 19-28); none of the differences were statistically significant. Mean body weights in these females were 6.7%-11.8% lower than those in the control group during weeks 19-28. The differences were statistically significant ($p<0.05$ or $p<0.01$). The reductions in F_1 female body weights in the 500 ppm group were attributed to the reduced mean body weight gain observed during the first week of F_1 exposure (PND 21-28). Following weaning (study week 37), mean body weight in the 500 ppm group females was comparable to that in the control group.

Mean body weights, body weight gains and cumulative body weight gains in the 100 and 250 ppm group males and females were generally similar to the control group values, with the following exceptions. Mean

body weights in the 100 ppm group males were reduced and usually statistically significant ($p<0.05$) when compared to the control group values during study weeks 26-37. These reductions did not occur in an exposure-related manner; therefore, these changes were not attributed to test article exposure.

2. GESTATION

Summary Data: Tables 58, 59, Figure 7

Individual Data: Tables 149, 150

Mean maternal body weight gain in the 500 ppm group females was similar to that in the control group during gestation days 0-4 and 4-7. Mean body weight gains in these females were reduced (generally statistically significant at $p<0.05$ or $p<0.01$) throughout the remainder of gestation (days 7-11, 11-14 and 14-20) and when the entire gestation period (days 0-20) was evaluated. Mean body weights in the 500 ppm group females were similar to the control group values during gestation days 0, 4 and 7, but were slightly reduced throughout the remainder of gestation (days 11, 14 and 20) when compared to the control group values. The differences were statistically significant ($p<0.05$ or $p<0.01$) on gestation days 14 and 20. Mean body weight in these females was lower than the control group value at the initiation of breeding, and therefore was reduced (4.3% lower than the control group value) on gestation day 0. The reductions in body weights and body weight gains late in gestation were attributed to the reduced litter size in this group.

Mean body weight gains in the 250 ppm group females were similar to the control group values during gestation days 0-4, 4-7, 7-11 and 11-14, but were reduced during gestation days 14-20 and when the overall gestation period (days 0-20) was evaluated; the differences were not

statistically significant. Mean gestation body weight in the 250 ppm group females were similar to the control group values throughout gestation.

Mean gestation body weights and body weight gains in the 100 ppm group females were not affected by exposure to the test article. The only statistically significant difference from the control group was a transient reduction ($p<0.05$) in mean body weight gain in the 100 ppm group during gestation days 4-7. A similar reduction was not observed in the next highest exposure group; therefore, the decrease was not attributed to the test article.

3. LACTATION

Summary Data: Tables 60, 61, Figure 8

Individual Data: Tables 151, 152

There were no test article-related effects on lactation body weights or body weight changes in the 100, 250 and 500 ppm groups. The only statistically significant differences ($p<0.05$) were reduced mean body weights on lactation days 4, 7 and 14 in the 500 ppm group. The reductions in mean body weight in the 500 ppm group were slight; therefore, the reductions were not considered to be test article-related.

D. FOOD CONSUMPTION

1. WEEKLY

Summary Data: Tables 62, 63, 64

Individual Data: Tables 153, 154, 155

Food consumption (g/animal/day) in the 500 ppm group F_1 males was reduced during weeks 19-20. The difference from the control group values was statistically significant ($p<0.05$). No other adverse effects on food consumption, g/animal/day and g/kg/day, or food efficiency were observed in the 100, 250 and 500 ppm group F_1 males and females during the pre-mating (males and females) or post-mating (males only) periods. A

statistically significant reduction in g/animal/day food consumption was noted for the 100 ppm group males during weeks 31-32. However, the reduction was not observed in an exposure-related manner; therefore, no relationship to treatment was apparent. Statistically significant ($p<0.05$ or $p<0.01$) increases in g/kg/day food consumption were noted in the 250 ppm group males (weeks 25-26 and 26-27) and the 500 ppm group males and females (weeks 20-21 through 27-28 for both sexes and weeks 31-32, 32-33 and 33-34 for the males). These increased g/kg/day food consumption values were not considered to be direct effects of test article exposure, but were attributed to the reduced body weights noted in these groups. No other statistically significant differences from the control group values were noted.

2. GESTATION

Summary Data: Tables 65, 66, 67

Individual Data: Tables 156, 157, 158

Mean maternal food consumption, evaluated as g/animal/day and g/kg/day, in the 500 ppm group females was similar to that in the control group throughout gestation (days 0-4, 4-7, 7-11, 11-14 and 14-20) and when the entire gestation period (days 0-20) was evaluated. Food efficiency in these females was similar to the control group values during gestation days 0-4 and 4-7. During the remainder of gestation (days 7-11, 11-14 and 14-20) and when the entire gestation period (days 0-20) was evaluated, food efficiency in the 500 ppm group females was reduced; except for the gestation days 11-14 difference, all of the differences were statistically significant ($p<0.05$ or $p<0.01$). The reduction in food efficiency late in gestation was attributed to the reduced number of fetuses developing *in utero*.

Food consumption in the 250 ppm group females was similar to that in the control group during gestation, with the following exception. During gestation days 4-7, g/kg/day food consumption was increased and statistically significant ($p<0.05$) compared to the control group value. No exposure-related increases were observed in the 500 ppm group; therefore, no relationship to treatment was evident. Food efficiency in the 250 ppm group females was similar to that in the control group during gestation days 0-4 and 4-7. During gestation days 7-11, 11-14 and 14-20, food efficiency in these females was slightly reduced compared to the control group values. The differences were not statistically significant. However, when the entire gestation period (days 0-20) was evaluated, food efficiency in these females was reduced. The difference from the control group value was statistically significant ($p<0.05$).

Food consumption (g/animal/day and g/kg/day) and food efficiency in the 100 ppm group females were unaffected by treatment throughout gestation. Food efficiency was slightly reduced in these females during gestation days 4-7 and 11-14 compared to the control group values. The difference was statistically significant ($p<0.05$) during gestation days 4-7. However, no exposure-related reductions in food efficiency were noted at the high exposure levels during gestation days 4-7, and consistent, sustained reductions were not observed in the 100 ppm group females. Therefore, the slight reductions in food efficiency in these females were not considered to be exposure-related.

3. <u>LACTATION</u>

Summary Data: Tables 68, 69, 70

Individual Data: Tables 159, 160, 161

Food consumption, evaluated as g/animal/day and g/kg/day, in the 500 ppm group females was reduced throughout the entire lactation period

(lactation days 1-4, 4-7, 7-14, 14-21 and 1-21). The majority of the differences from the control group values were statistically significant ($p<0.05$ or $p<0.01$). Food efficiency in these females was similar to the control group values throughout lactation; differences were slight and not statistically significant. The reduction in food consumption during lactation was attributed to the reduced mean litter size in this group that caused reduced maternal lactational demand.

Food consumption and food efficiency in the 100 and 250 ppm group females throughout lactation were not affected by exposure to the test article. Differences from the control group were slight and not statistically significant.

E. GESTATION LENGTH AND PARTURITION

Summary Data: Table 71

Individual Data: Table 162

Historical Control Data: Appendix D

The mean lengths of gestation in the F_1 exposure groups were similar to those in the control group. The mean gestation lengths were 21.8, 21.9 and 22.2 days in the 100, 250 and 500 ppm groups, respectively, compared to 22.0 days in the concurrent control group and 21.8 days in the WIL historical control data. The differences from the concurrent control group were not statistically significant. During the period of delivery, female no. 32818-11 in the 250 ppm group was observed to be lethargic and having difficulty with parturition; this female delivered pups over three days (PND 0-2). No signs of dystocia were observed in the 100 and 500 ppm groups; therefore, the single occurrence of difficult delivery in the 250 ppm group was not attributed to test article exposure.

F. F_1 SPERMATOGENIC ENDPOINT EVALUATIONS

Summary Data: Tables 72, 73, 74, 75, 76

Individual Data: Tables 163, 164, 165, 166, 167

Historical Control Data: Appendix D

Test article-related reductions were observed in sperm motility (74.4%) and the percentage of morphologically normal sperm (95.3%) in the 500 ppm group F_1 males compared to the control group values (88.9% and 99.5%, respectively). The differences were statistically significant ($p<0.01$). Abnormal sperm morphology consisted of normally shaped head separated from the flagellum, normal flagellum with absent head and misshapen head (microcephalic) with normal flagellum. The mean testicular and epididymal sperm numbers and the sperm production rate in the 500 ppm group males were similar to those in the control group.

Sperm motility (84.8%) in the 250 ppm group males was slightly reduced compared to the control group value (88.9%). The difference was statistically significant ($p<0.05$). However, the 250 ppm group value was slightly higher than the mean value in the WIL historical control data (83.2%). Therefore, this reduction was not attributed to exposure to the test article. The mean testicular and epididymal sperm numbers, sperm production rate and the percentage of morphologically normal sperm in the 250 ppm group males were similar to those in the control group.

Spermatogenic endpoints in the 100 ppm group males were not affected by test article exposure. The only statistically significant difference from the control group was a reduction ($p<0.01$) in the percentage of morphologically normal sperm. However, a similar reduction was not observed at the next highest exposure level. Therefore, this reduction was not attributed to the test article.

G. F_1 NECROPSY EXAMINATIONS

1. MACROSCOPIC EXAMINATION

Summary Data: Tables 77, 78, 79

Individual Data: Tables 168, 169, 170

Historical Control Data: Appendix D

F_1 male no. 32800-04 in the 500 ppm group was euthanized *in extremis* during the second week of exposure (PND 33). At necropsy, this animal had a dark red area on the lung and dark red areas in the stomach. Male no. 32923-04 in the control group was euthanized *in extremis* on study day 154 due to possible mechanical trauma. This animal had a distended and gas-filled cecum, dark red area on the lungs, small seminal vesicles and malaligned upper incisors. No internal evidence of mechanical injury was observed. All other animals survived to the scheduled necropsy.

No exposure-related internal findings were observed in males or females in the treated groups at the scheduled necropsy. Findings were observed infrequently, were noted in single animals and/or did not occur in an exposure-related manner.

The calculated difference between the number of pups born and the number of implantation sites counted (unaccounted sites) at the scheduled necropsy was increased (not statistically significant) in the 500 ppm group females (1.2 unaccounted sites per dam) when compared to the concurrent control group value (0.5 unaccounted sites per dam). The 500 ppm group value was above the range of the WIL reproductive historical control data (0.8 ± 0.17 unaccounted sites per dam). This increase was attributed to the test article. The mean number of implantation sites in the 500 ppm group females (9.8 sites per dam) and the 250 ppm group females (13.5 sites per dam) were reduced compared to the control group value (15.5 sites per

dam). The difference was statistically significant ($p<0.01$) for the 500 ppm group. The mean numbers of unaccounted sites in the 100 and 250 ppm group females and the mean number of implantation sites in the 100 ppm group females were similar to those in the control group.

2. ORGAN WEIGHTS

Summary Data: Tables 80, 81

Individual Data: Tables 171, 172

Organ weight changes relative to the control group were observed in the brain (100, 250 and 500 ppm group males and 500 ppm group females), liver (500 ppm group males and females), left and right epididymis (500 ppm group males), thymus (250 and 500 ppm group males) and pituitary gland (500 ppm group males).

Mean absolute brain weights were reduced (statistically significant at $p<0.01$) in the 100, 250 and 500 ppm group males and in the 500 ppm group females. The mean brain weights relative to final body weights were similar to the control group values in these animals. The decreases in the 100 and 250 ppm group males did not occur in an exposure-related manner. There were no corresponding macroscopic or microscopic changes in the brain.

Mean liver weights (absolute and relative) were increased in the 500 ppm group males and females. The difference from the control group value for relative liver weight was statistically significant ($p<0.01$) for the males. These increases, although slight, were considered to be test article-related since the liver weight increased despite decreasing body weight. Microscopically, increased glycogen and centrilobular hepatocellular vacuolation correlated with the weight increase.

Mean absolute left and right epididymal weights (total and cauda) in the 500 ppm group males were reduced compared to the control group

values; the majority of the values were statistically significant ($p<0.05$ or $p<0.01$) when compared to the control group values. A similar decrease in weight was observed in these organs in the F_0 males. Although there were no correlating macroscopic or microscopic changes, these reductions in epididymal weights were considered to be test article-related because of the consistency between generations and the effects observed on fertility in the F_1 generation.

Mean absolute pituitary weight in the 500 ppm group males was decreased compared to the control group value; the difference was statistically significant ($p<0.01$). There was no change in relative weight of this organ, and there were no macroscopic or microscopic changes that correlated with the weight reductions. However, because similar reductions in pituitary weights were observed in the 750 ppm group F_0 males, the reduced pituitary weights were considered to be test article-related.

Thymus gland weights (absolute and relative) were increased in the 250 and 500 ppm group males; the differences were often statistically significant ($p<0.05$ or $p<0.01$). No correlating microscopic changes were observed; therefore, the biological significance of the increased thymus weights in the 250 and 500 ppm group males is unknown.

Other statistically significant changes in organ weights (mean absolute seminal vesicle/coagulating gland and mean absolute kidney) were not considered test article-related effects because the changes were not exposure-related and the mean relative weights were unaffected.

3. MICROSCOPIC EXAMINATION

Summary Data: Tables 82, 83, 84

Individual Data: Tables 168, 169, 173

One male in each of the control and 500 ppm group were euthanized *in extremis*. The cause of moribundity for these two animals could not be determined from the microscopic examination.

Test article-related effects were observed microscopically in the liver (100, 250 and 500 ppm group females and 250 and 500 ppm group males), spleen and ovary (500 ppm group females) and the kidney (500 ppm group males and 250 and 500 ppm group females).

In the liver, increased incidences of minimal to mild centrilobular hepatocellular vacuolation were observed in the 250 and 500 ppm group males and females when compared to that in the control group; with the exception of the 250 ppm group females, the differences were statistically significant ($p<0.05$). The vacuolation was much more prominent in the males than in the females, and the incidence was exposure-related in the affected groups. The amount of glycogen (incidence and/or degree) observed was increased all treated group males and females. When compared to the control group value, the differences were statistically significant ($p<0.05$) for the value of the 500 ppm group males and the 100, 250 and 500 ppm group females. Glycogen, although present in many control group animals, was increased in degree in the affected animals (primarily graded as "minimal" to "mild" in the control groups and "mild" to "moderate" in the treated groups), although the increased degree was not exposure-related. Both of these changes were also observed in the treated males and females in the F_0 generation, and both were considered to be reversible and not biologically adverse.[15]

In the spleen, an increase in the severity of brown pigment was observed in the 500 ppm group females. The difference from the control group value was not statistically significant. This lesion was also observed in the F_0 750 ppm group males and females. The pigment was morphologically compatible with hemosiderin, and was demonstrated to contain iron by Perl's iron stain applied to spleens from selected F_0 animals. The slight increase in pigment, although test article-related, was not considered to be toxicologically significant, as the increase was slight, there were no correlating macroscopic changes or clinical signs referable to anemia (such as pale tissues), and there were no correlating weight changes in the spleen.

In the ovary, test article-related findings were limited to the 500 ppm group and consisted of an increased incidence of cysts (combined follicular and luteinized follicular) and an increased incidence of interstitial cell hyperplasia. Both of these changes were observed as test article-related effects in the F_0 750 ppm group females. Decreased numbers of corpora lutea were observed in 3, 3, 7 and 4 animals in the control, 100, 250 and 500 ppm group F_1 females, respectively. Although this change was considered to be test article-related in the F_0 females in the 750 ppm group and possibly in the 500 ppm group, a test article-related effect was not demonstrated in the F_1 500 ppm group because of the lack of dose response and the minimal nature of the increase. Additionally, the qualitative change was not supported by quantitative evaluation of the number of corpora lutea in the control and 500 ppm groups. However, in this study, enumeration of the corpora lutea per ovary may have been an insensitive method for detecting subtle morphologic changes in the type of corpora lutea present. Enumeration of the number of primordial follicles in five sections per ovary resulted in a

statistically significant ($p<0.05$) increase in the 500 ppm group. This increase was not considered to be an adverse effect.

In the kidney, a very slight increase in pelvic mineralization, sometimes associated with transitional epithelial hyperplasia, was observed in the 250 ppm group females and the 500 ppm group males and females. The differences from the control group values were not statistically significant. The mineral was considered to be an effect of exposure, since a slight increase was also observed in the 500 and 750 ppm group F_0 animals. Transitional epithelial hyperplasia was sometimes observed in the mineralized areas, but was also observed in animals without mineral, associated with inflammation or other changes. The hyperplasia was considered to be a secondary effect of the mineral, and not a direct effect of the test article. Minimal mononuclear cell infiltration was observed in the kidney of some animals in all groups, including the control group. Although the difference was statistically significant ($p<0.05$) in the 500 ppm group males, this change is a common incidental finding in rats of this strain and age, and the increase was considered to be incidental.

All other microscopic observations were considered to be spontaneous, incidental and unrelated to exposure to the test article.

H. F_2 LITTER DATA

1. PND 0 LITTER DATA AND POSTNATAL SURVIVAL

Summary Data: Tables 85, 86

Individual Data: Tables 174, 175

Historical Control Data: Appendix D

The mean number of pups born (8.6 pups per dam) and live litter size on PND 0 (8.6 pups per dam) in the 500 ppm group were reduced compared to the control group values (14.9 pups per dam and 14.5 pups on

PND 0, respectively). The differences were statistically significant ($p<0.01$). The percentage of males per litter in this group was not statistically significantly different from the control group value. The mean number of pups born (13.1 pups per dam) and live litter size on day 0 (12.5 pups per dam) in the 250 ppm group were reduced compared to the control group values; the differences were not statistically significant. The mean numbers of pups born and live litter size in the 100 ppm group and the percentage of males per litter in the 100 and 250 ppm groups were similar in the control group.

Pup survival throughout the postnatal period was not affected by parental exposure in the 100, 250 and 500 ppm groups; none of the differences from the control group were statistically significant.

2. GENERAL PHYSICAL CONDITION AND MORTALITIES

Summary Data: Table 87

Individual Data: Table 176

F_2 pups that were found dead or euthanized *in extremis* during the postnatal period numbered 11, 5, 20 and 2 in the control, 100, 250 and 500 ppm groups, respectively. In the same respective exposure groups, 1, 2, 2 and 0 pups were missing and presumed cannibalized. The general physical condition of the F_2 pups during the postnatal period was unaffected by parental exposure to the test article. Clinical findings noted in the 100, 250 and 500 ppm groups, including smallness of size, edema, malrotation of the forelimbs and uneven hair growth, were not observed in an exposure-related manner or were noted for only one or two pups per group, and were considered to be incidental.

3. OFFSPRING BODY WEIGHTS

Summary Data: Tables 88, 89

Individual Data: Tables 177, 178

Historical Control Data: Appendix D

Mean F_2 pup body weight gains in the 500 ppm group males and females were similar to the control group values before selection (PND 1-4). After culling on PND 4 (PND 4-7, 7-14 and 14-21), mean pup body weight gains in this group were reduced in comparison to the control group values; the differences were statistically significant ($p<0.01$). Mean pup body weights in the 500 ppm group males and females were similar to the control group values on PND 1, 4 (before selection) and 7. On PND 14 and 21, mean pup body weights in these animals were reduced and statistically significant ($p<0.01$) relative to the control group values.

Mean pup body weights and body weight gains in the 100 and 250 ppm group males and females were similar to those in the control group. Differences were slight and not statistically significant.

4. NECROPSIES OF PUPS FOUND DEAD

Summary Data: Table 90

Individual Data: Table 179

No internal findings that were attributed to parental exposure to the test article were noted at the necropsies of pups that were found dead or euthanized *in extremis*. With the exception of the presence or absence of the milk in the stomach, remarkable findings were limited to the following. One control group pup had mandibular micrognathia, aglossia and a hemorrhagic ring around the iris. Skeletally, mandibular micrognathia consisted of small mandibular bones that were fused medially and tympanic rings that were moderately reduced in ossification. Another pup in the control group had renal papillae that were not fully

developed. One pup in the 250 ppm group had hemorrhagic rings around the irides. No other internal findings were observed.

5. NECROPSIES OF WEANLINGS NOT SELECTED FOR ORGAN WEIGHTS - PND 21

Summary Data: Table 91

Individual Data: Table 180

At the necropsy of F_2 pups not selected for organ weights on PND 21, no macroscopic finds that could be attributed to F_1 parental exposure were observed. Two pups in the 100 ppm group had a dilated renal pelvis; one of these pups also had a distended ureter. One pup in the control group had white areas on the lungs. No other internal findings were observed.

6. NECROPSIES OF WEANLINGS SELECTED FOR ORGAN WEIGHTS - PND 21

a. MACROSCOPIC EXAMINATION

Summary Data: Table 92

Individual Data: Table 181

At the PND 21 necropsy of the F_2 weanling pups selected for organ weights, no macroscopic findings that could be attributed to F_1 parental exposure were observed. One male and one female in the control group and one male in the 250 ppm group had an enlarged spleen. One male in the 250 ppm group had an accessory spleen. No other internal findings were observed.

b. ORGAN WEIGHTS

Summary Data: Tables 93, 94

Individual Data: Tables 182, 183

Mean spleen weights (absolute and relative to final body weight) in the 500 ppm group F_2 male and female pups were reduced compared to the control group values. The differences were statistically significant ($p<0.01$). These decreases were considered to be test article-related.

Mean absolute brain weights in the 500 ppm group males and females and the mean absolute thymus weight in the 500 ppm group males were reduced compared to those in the control group. The differences were statistically significant ($p<0.05$ or $p<0.01$). However, the relative brain weights in the 500 ppm group males and females and relative thymus weight in the males were similar to those in the control group.

Mean absolute and relative organ weights in the 100 and 250 ppm group F_2 pups were similar to those in the control group. No statistically significant differences were observed.

VII. DISCUSSION AND CONCLUSIONS

No test article-related deaths were observed in the F_0 exposure group animals or exposure-related clinical findings (weekly or at the one hour post-exposure examinations) during the course of the study. One F_1 male in the 500 ppm group was euthanized *in extremis* during the second week of exposure (PND 33). Prior to euthanasia, this animal was lethargic and had shallow respiration and pale eyes; necropsy findings included a dark red area on the lung and dark red areas in the stomach. The cause of death could not be determined for this animal. One F_0 female in the 500 ppm group was euthanized *in extremis* due to an ocular abnormality. One F_1 male in the control group was euthanized due to possible mechanical injury. All other F_0 and F_1 adults survived to the scheduled necropsies.

Cumulative body weight gains (from study week 0) and mean weekly body weights in the 750 ppm group F_0 males were reduced and generally statistically significant throughout the generation. Reductions in mean weekly body weight gains and food efficiency (during the pre-mating period) were noted in these males during the first five weeks of exposure. The differences were occasionally statistically significant. Cumulative body weight gains in the 750 ppm group F_0 females were reduced throughout the pre-mating period. Reductions in mean body weight gains and food efficiency were noted in these females during the first week of exposure. Mean body weights in the 750 ppm group females were reduced (sometimes statistically significant) during the latter half (weeks 5-10) of the pre-mating period. No test article-related effects on food consumption were observed in the 750 ppm group males and females throughout the generation. Gestation and lactation body weight and food consumption data in the 750 ppm F_0 females could not be evaluated as there were no gravid females in this group.

Slight reductions (occasionally statistically significant) in mean weekly body weight gains (F_0 and F_1) and cumulative body weight gain (F_1) were noted in the

500 ppm group males during the first few weeks of exposure of the respective generations. During the latter half of the F_0 generation, mean cumulative body weight gains in these males were reduced (not statistically significant). Reduced mean weekly body weights were generally noted in the 500 ppm group males in both generations; the differences were statistically significant in the F_1 generation. With the exception of a statistically significant decrease for one week following weaning (F_1), no effects on food consumption or food efficiency were noted in the 500 ppm group males in either generation. The 500 ppm group F_0 and F_1 females showed no exposure-related effects on food consumption or food efficiency during the pre-mating period. Mean body weight gain was reduced (not statistically significant) during the first week of exposure of the F_1 females in the 500 ppm group, resulting in reduced mean weekly body weights in these females throughout the pre-mating period. Mean maternal body weights, body weight gains, food consumption (g/animal/day) and/or food efficiency were generally reduced (occasionally statistically significant) in the 500 ppm group F_0 and F_1 females throughout the majority of gestation and into the lactation period. Statistically significant reduced mean body weights late in gestation in these females were associated with reduced mean litter sizes in the 500 ppm group females in both generations.

There were no test article-related effects on parental weekly body weights, body weight gains, food consumption or food efficiency in the 250 ppm group males (F_0 and F_1) throughout the generation or in the 250 ppm group females (F_0 and F_1) during the pre-mating period. Slight reductions in mean gestation body weights, body weight gains, food consumption (g/animal/day) and/or food efficiency were noted in these females, primarily during the latter portion of gestation. Food consumption in the 250 ppm group F_0 females was reduced throughout lactation.

There were no effects on body weights, body weight gains, food consumption or food efficiency in the 100 ppm group (F_0 and F_1) males and females.

Infertility in the 750 ppm group F_0 males and females was 100% (statistically significant), resulting in no F_1 offspring in this group. Male and female mating indices in the F_0 750 ppm group were also statistically significantly reduced. Fertility indices were reduced in the 100 (F_1), 250 (F_1) and 500 (F_0 and F_1) ppm group males and females. The differences were statistically significant in the F_0 500 ppm group males and females. Extended mean estrous cycle lengths and an increase in the number of animals for which estrous cycle lengths could not be determined (because no complete cycles occurred) were observed in the 250 (F_1), 500 (F_0 and F_1) and 750 (F_0) ppm group females. The mean numbers of days between pairing and coitus and the number of animals for which pre-coital intervals could not be determined (because these females had no evidence of mating and were nongravid) in the F_0 500 and 750 ppm groups were increased.

The mean lengths of gestation in the 100, 250 and 500 ppm group F_0 and F_1 females were not affected by test article exposure. No test article-related signs of dystocia were observed. At the scheduled necropsy, the differences between the number of pups born and the number of implantation sites counted (unaccounted sites) in the 100, 250 and 500 ppm group F_0 and F_1 females were similar to the control group values. However, the mean numbers of former implantation sites were reduced in the 250 (not statistically significant) and 500 (statistically significant) ppm group F_0 and F_1 females.

At the scheduled F_0 necropsy, low incidences in the number of F_0 males with small epididymides (left and/or right) and small and/or soft testes were observed in the 500 and 750 ppm groups. These findings were considered potentially related to test article exposure. Statistically significant reductions in sperm motility were observed in the 500 (F_0 and F_1) and 750 (F_0) ppm group males. Reductions (statistically significant) in the percentage of morphologically normal

sperm were observed in the 500 (F_0 and F_1) and 750 (F_0) ppm group males. Morphological abnormalities in the sperm included normal head separated from flagellum (F_0 and F_1), normal flagellum with absent head (F_0 and F_1) and microcephalic sperm (F_1). In addition, the mean epididymal sperm number in the F_0 750 ppm group males was statistically significantly reduced.

Mean absolute parental brain weights in the 100 (F_1), 250 (F_0 and F_1), 500 (F_0 and F_1) and 750 ppm (F_0) group males and the 500 (F_0 and F_1) and 750 (F_0) ppm group females were reduced and statistically significant relative to the control group values. In addition, mean absolute PND 21 weanling brain weights were statistically significantly reduced in the 100 (F_1), 250 (F_1) and 500 (F_2) ppm group males and the 500 ppm group F_2 females. The greatest decrease was in the highest exposure group (750 ppm), but frequently, the decreases observed in the lower exposure groups did not follow an exposure-response. No changes were observed in the relative weights (brain to body weights) in any exposure group. The majority of the reductions in absolute brain weights relative to the corresponding control values were 5% or less. A thorough histopathological examination of the brain was conducted in the F_0 parental animals (control and 750 ppm groups) in an attempt to correlate the decrease in weight with a morphologic change. Numerous regions of the brain were specifically examined, including the cerebral cortex (two levels), thalamus, hypothalamus, hippocampus/dentate gyrus, tectum, basal ganglia, pons, cerebral peduncles, central grey matter, cerebellum and nucleus gracilis. These are the regions that are typically examined in a neurotoxicity screen, and are representative of each of the developmental regions of the brain (telencephalon, diencephalon, mesencephalon, metencephalon and myelencephalon). Additionally, the nucleus gracilis was examined because morphologic findings in this area were reported with 1-bromopropane when administered at 800 ppm for 12 weeks[17]. No differences in size, structure, or cellularity of any of these brain regions were

detected in this study. There were no inflammatory infiltrates noted. Additionally, no evidence of changes in myelination, as evidenced by vacuolation or rarefaction, was observed. It is noteworthy that a significant reduction in brain weight was also observed at 800 ppm 1-bromopropane[17] and 1000 ppm 2-bromopropane[18] administered via inhalation exposure for 12 weeks, but no histopathological or clinical evidence of central nervous system changes was found in either of these studies. It is also significant to note that, despite our extensive examination of the central nervous system, we did not confirm the cerebellar Purkinje cell degeneration previously reported for this compound when administered at 1000 and 1500 ppm for 4-5 weeks[17,19].

Detailed physical examinations (including changes in respiration, gait, posture, activity level, presence of clonic or tonic movements, stereotypies, bizarre behaviors or unusual excreta, reaction to touch, and changes in muscle tone) were recorded weekly for all parental animals throughout the study period. All animals were observed twice daily for moribundity and mortality; in addition the animals were observed for appearance, behavior and pharmacotoxic signs within one hour after completion of exposure. Females expected to deliver were also observed twice daily during the period of expected parturition and at parturition for dystocia (prolonged labor, delayed labor) or other difficulties. Despite the thorough examination, clinically, there were no signs referable to peripheral or central nervous system dysfunction.

The lack of clinical or morphological changes referable to the central nervous system, despite the extensive examination conducted, brings into question the relevance of the reductions in absolute brain weight observed at various times at all exposure levels in this study. Although decreases in brain weights have been reported with this and related compounds[17,18,19], the exposure levels were much higher than those used here, and in none of those studies was evidence of central nervous system dysfunction found. Additionally, the brain weight decreases in

this study were minimal (the majority were 5% or less), did not occur in an exposure-related manner, and occurred only in the mean absolute weights; relative weights did not change, implying that the brain weight difference in the F_1 and F_2 generations may be related to the smaller birth weight of these animals. Because of the small magnitude of the change, and the lack of clinical or morphological correlates, the reductions in brain weight were considered to be of unclear toxicological significance.

Mean relative liver weight in the F_0 500 and 750 ppm group males and 750 ppm group females were increased; the differences were statistically significant relative to the control group values. Mean relative liver weights were increased in the 500 ppm F_1 males and females. The liver weight changes were accompanied microscopically by minimal to mild centrilobular hepatocellular vacuolation (compatible with lipid) and increased glycogen compared to the control group values. Both of the microscopic liver changes were considered reversible changes that were not biologically adverse. Mean absolute and relative ovary weights in the 500 and 750 ppm group F_0 females were reduced, and statistically significant in the 750 ppm group females. Mean absolute and/or relative epididymal weights (left and right, total and/or cauda) in the 250 (F_0), 500 (F_0 and F_1) and 750 (F_0) ppm group males were reduced and generally statistically significant. Mean absolute prostate weights were reduced (statistically significant) in the 250, 500 and 750 ppm F_0 males. Mean absolute and relative seminal vesicle weights were reduced in the 500 and 750 ppm F_0 males; the difference was statistically significant in the 750 ppm group. Statistically significant reduction in male pituitary weights (absolute) were observed in the 500 (F_1) and 750 ppm (F_0) groups. Mean thymus (absolute and relative) weights were increased (generally statistically significant) in the 250 and 500 ppm group F_1 males. The biological significance of the increased thymus weights is unknown as there were no correlating microscopic findings.

Other microscopic changes were observed in the kidney in the F_0 500 and 750 ppm group males and females and F_1 500 ppm group males and 250 and 500 ppm group females and the ovaries of the F_0 and F_1 500 ppm group and F_0 750 ppm group females. Increased incidences of minimal to mild pelvic mineralization and transitional epithelial hyperplasia in the kidney were observed in these males and females. The difference from the control group value were generally statistically significant in the 500 and 750 ppm F_0 females. Decreased corpora lutea and increases in luteinized follicular and/or follicular cysts correlated with the lack of fertility observed in the 500 and 750 ppm groups. The differences from the control group values were statistically significant for decreased corpora lutea and luteinized cysts in the 750 ppm group F_0 females. Decreased corpora lutea were often observed in females with follicular and/or luteal cysts. Luteinized follicular cysts were large, fluid-filled and often multiple. Follicular cysts sometimes contained a degenerating oocyte. Increased incidences of interstitial hyperplasia of the ovary were also observed in the 500 ppm (F_1) and 750 (F_0) ppm group females. This change was considered to be a reflection of the interruption of the estrous cycle in the affected females.

Evaluation of F_1 litter parameters in the 750 ppm group was precluded by F_0 infertility. The mean numbers of pups born and live litter size on PND 0 were statistically significantly reduced in the 500 (F_1 and F_2) ppm group litters. The numbers of pups born and live litter size on PND 0 were also reduced (not statistically significant) in the 250 (F_1 and F_2) ppm group litters. Postnatal survival in the F_1 and F_2 litters was not affected by parental exposure to the test article. The numbers of F_1 and F_2 pups found dead, euthanized *in extremis*, or missing and presumed cannibalized, and the physical condition of the pups were unaffected by parental test article exposure.

Mean F_1 and F_2 pup body weights and body weight gains in the 500 ppm group were generally reduced in both sexes following standardization of litters on PND

4. Mean F_1 pup body weights and body weight gains in the 250 ppm group males and females were slightly reduced following litter standardization.

The mean day of balanopreputial separation in the 500 ppm group F_1 males was delayed due to the reductions in body weight. Mean body weight on the day of balanopreputial separation was similar to the control group value; however, the pups were approximately four days older. Vaginal patency and mean body weight on the day of acquisition were unaffected by test article exposure in the F_1 female pups.

No test article-related internal findings were observed in pups at the scheduled necropsies on PND 21 (F_1 and F_2) or PND 28 (F_1). There were no F_1 pups in the 500 ppm group selected for organ weights. Mean absolute brain weights of the PND 21 F_1 males in the 100 and 250 ppm groups were reduced. Mean absolute and relative spleen weights were reduced in the F_2 500 ppm group pups in both sexes on PND 21. Mean absolute brain weights (both sexes) and thymus weights (males) were reduced in the F_2 500 ppm group on PND 21.

In conclusion, whole-body inhalation exposure of Crl:CD®(SD)IGS BR rats and the resulting offspring to vapor concentrations of 1-Bromopropane (100, 250, 500 and 750 ppm [F_0 only]) for 6 hours per day, 7 days per week for a minimum of 70 days prior to mating and continuing until euthanasia produced no post-exposure clinical observations different from the control group animals exposed to filtered air. There were no mortalities related to exposure in the F_0 generation. One F_1 male in the 500 ppm group was euthanized *in extremis* during the second week of exposure. Body weight data (parental and pup) were reduced in the 500 (F_0, F_1 and F_2) and 750 ppm (F_0) groups. No macroscopic or microscopic pathology in brain tissue was observed. Complete lack of offspring was observed at exposures to 750 ppm, and a statistically decreased number of offspring compared to the control group was observed at exposures to 500 ppm (both generations). Non-statistically significant reductions in the number of offspring

were observed in 250 ppm group for both generations. Fertility indices were statistically significantly reduced for the F_0 500 ppm group. Reductions (not statistically significant) were observed in the 100, 250 and 500 ppm F_1 groups. Extended estrous cycle lengths and an increase in the number of animals for which estrous cycle length could not be determined were observed in the 250 (F_1), 500 (F_0 and F_1) and 750 (F_0) ppm groups. The number of days between pairing and coitus were increased in the 500 and 750 ppm F_0 groups. Reductions in organ weights were observed in the ovaries (500 and 750 ppm group F_0 females), epididymides in the 250 (F_0), 500 (F_0 and F_1) and 750 (F_0) ppm group males, prostate (250, 500 and 750 ppm group F_0 males), seminal vesicles (500 and 750 ppm group F_0 males), pituitary in the 500 (F_1) and 750 (F_0) ppm group males and spleen in the F_2 male and female weanlings. Organ weight differences from the control group values were also observed in the thymus (increase), liver (increase) and brain (decrease) in some groups. Generally, absolute values were different in treated animals compared to the control group values, but not when weights were expressed relative to body weights. Absolute brain weights were in the expected range for age, sex and strain, and no clinical or microscopic changes were correlated with the weight differences. No pathology associated with the thymus weight increases, and increased lipid vacuolation and glycogen content of the liver was considered reversible, and not of biological significance. Spermatogenic endpoints were adversely affected in the 500 (F_0 and F_1) and 750 (F_0) ppm group males. Microscopic findings were observed in the ovaries in the 500 (F_0 and F_1) and 750 (F_0) ppm group females.

Donald G. Stump

Donald G. Stump, Ph.D., D.A.B.T.
Study Director

5/24/01
Date

VIII. KEY STUDY PERSONNEL AND REPORT SUBMISSION

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VIII. KEY STUDY PERSONNEL AND REPORT SUBMISSION (continued)

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IX. QUALITY ASSURANCE UNIT STATEMENT

Date(s) of Inspection(s)	Phase Inspected	Date(s) Findings Reported to Study Director	Date(s) Findings Reported to Management
11/3/99	Test Article Exposure	11/4/99	12/30/99
12/13/99	Animal Care/Equipment	12/14/99	1/27/00
1/17/00	Gestation Body and Food Weights	1/17/00	2/28/00
2/28/00	Test Article Exposure	2/29/00	3/30/00
3/8/00	Clinical Observations and Body Weights	3/8/00	4/25/00
3/14/00	Necropsy F_0 Including Spermatogenesis	3/14/00	4/25/00
3/20/00	Animal Care/Equipment	3/21/00	4/25/00
4/5/00	Trimming of Tissues	4/5/00	5/26/00
5/22/00	Animal Care/Equipment	5/23/00	6/29/00
6/13/00	Parturition	6/13/00	7/31/00
7/12/00	Test Article Exposure	2/19/01*	8/31/00
7/19/00	Necropsy F_1 Including Spermatogenesis	7/19/00	8/31/00
8/9/00	Trimming of Tissues	8/9/00	9/27/00
7/26, 10/17/00	Study Records (Ex-3)	10/17/00	11/30/00
7/26, 10/17/00	Study Records (Ex-4)	10/17/00	11/30/00
7/27, 10/17/00	Study Records (Ex-5)	10/17/00	11/30/00
7/27, 10/17/00	Study Records (Ex-6)	10/17/00	11/30/00
7/27, 10/17/00	Study Records (Ex-7)	10/17/00	11/30/00
7/27, 10/17/00	Study Records (Ex-8)	10/17/00	11/30/00
7/27, 10/17/00	Study Records (Ex-9)	10/17/00	11/30/00
7/28, 10/17/00	Study Records (Ex-10)	10/17/00	11/30/00
7/28, 10/17/00	Study Records (Ex-11)	10/17/00	11/30/00
7/28, 10/17/00	Study Records (Ex-12)	10/17/00	11/30/00
7/31, 10/23/00	Study Records (Ex-13)	10/25/00	11/30/00
7/31, 10/20/00	Study Records (Ex-14)	10/20/00	11/30/00
7/31, 10/17/00	Study Records (Ex-15)	10/17/00	11/30/00
7/31, 10/17/00	Study Records (Ex-16)	10/17/00	11/30/00
7/31, 10/17/00	Study Records (Ex-18)	10/17/00	11/30/00
7/31, 10/17/00	Study Records (Ex-19)	10/17/00	11/30/00
8/1, 10/31/00	Study Records (Ex-20)	11/1/00	12/22/00
8/1, 9/19, 10/25/00	Study Records (Ex-21)	10/25/00	11/30/00
8/31, 10/13/00	Study Records (N-4)	10/16/00	11/30/00
9/1, 10/13/00	Study Records (N-7)	10/16/00	11/30/00
9/4/00	Study Records (I-4)	9/20/00	10/30/00
9/14-15/00	Study Records (I-5)	9/20/00	10/30/00
9/14, 15, 18/00	Study Records (I-6)	9/20/00	10/30/00
9/15, 16, 23, 10/25, 26/00	Study Records (Ex-2)	10/26/00	11/30/00
9/18, 19/00	Study Records (N-1)	9/20/00	10/30/00
9/18, 10/25, 26/00	Study Records (Ex-1)	10/26/00	11/30/00

* Audit was re-issued, original was misplaced

Date(s) of Inspection(s)	Phase Inspected	Date(s) Findings Reported to Study Director	Date(s) Findings Reported to Management
9/24, 10/19, 20/00	Study Records (Ex-17)	10/20/00	11/30/00
10/5, 6/00	Study Records (I-10)	10/9/00	11/30/00
10/6/00	Study Records (I-11)	10/9/00	11/30/00
10/9/00	Study Records (I-12)	10/9/00	11/30/00
10/10/00	Study Records (I-14)	10/10/00	11/30/00
10/10/00	Study Records (I-16)	10/10/00	11/30/00
10/10/00	Study Records (I-18)	10/10/00	11/30/00
10/11/00	Study Records (I-9)	10/11/00	11/30/00
10/11/00	Study Records (I-15)	10/11/00	11/30/00
10/12, 13/00	Study Records (N-2)	10/16/00	11/30/00
10/13, 17/00	Study Records (N-3)	10/17/00	11/30/00
10/14, 16/00	Study Records (N-5)	10/16/00	11/30/00
10/16/00	Study Records (N-6)	10/16/00	11/30/00
10/27, 30, 31/00, 2/3-8/01	Draft Report (No Histopathology) Tables Only	2/8/01	3/30/01
10/27, 30/00	Study Records (I-1)	10/30/00	11/30/00
10/29, 30/00, 2/4-7,12/01	Draft Report (w/o Analytical Appendix) Text Only	2/15/01	3/30/01
10/30/00	Study Records (I-2)	10/30/00	11/30/00
10/30/00	Study Records (I-3)	10/30/00	11/30/00
10/30/00	Study Records (I-19)	10/30/00	11/30/00
10/31/00	Study Records (I-7)	10/31/00	11/30/00
10/31/00	Study Records (I-8)	10/31/00	11/30/00
10/31/00	Study Records (I-13)	10/31/00	11/30/00
10/31/00	Study Records (I-17)	10/31/00	11/30/00
11/1/00	Study Records (A-1, A-2, A-3)	11/2/00	12/22/00
11/1/00	Draft Report (Purity Analysis Appendix)	11/2/00	12/22/00
2/13, 14, 18/01	Study Records (P-1)	2/19/01	3/30/01
2/15, 16, 18/01	Study Records (P-2)	2/19/01	3/30/01
2/15, 18/01	Study Records (H-1)	2/19/01	3/30/01
2/18/01	Study Records (H-2)	2/19/01	3/30/01
2/20/01	Study Records (H-3, H-4)	2/20/01	3/30/01
2/18, 20/01	Draft Report (Inhalation Appendix)	2/20/01	3/30/01

This study was inspected in accordance with the current EPA/TSCA and EPA/FIFRA Good Laboratory Practice Standards, the standard operating procedures of WIL Research Laboratories, Inc., and the protocol and protocol amendments as approved by the sponsor, with the following exception. The data presented in Appendix B were the responsibility of the sponsor. Quality Assurance findings,

derived from the inspections during the conduct of the study and from the inspections of the raw data and draft report, are documented and have been reported to the study director. A status report is submitted to management monthly.

This report accurately reflects the data generated during the study. The methods and procedures used in the study were those specified in the protocol, its amendments and the standard operating procedures of WIL Research Laboratories, Inc.

The raw data, a retention sample of the test article and the original final report will be retained at WIL Research Laboratories, Inc., or another location specified by the sponsor.

Report Audited By:

Margaret A. Franklin — 5/24/01

Margaret A. Franklin
Unit Supervisor, Quality Assurance

Date

Report Reviewed By:

Heather L. Skelton — 5/24/01

Heather L. Skelton, B.S.
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X. REFERENCES

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WIL-380001
Brominated Solvents Consortium

An Inhalation Two-Generation Reproductive
Toxicity Study of 1-Bromopropane in Rats

TABLES 1-183

TABLE 1 (F0)

PROJECT NO.:WIL-380001M INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS SUMMARY OF SURVIVAL AND DISPOSITION

MALES

GROUP :	1				2				3				4				5			
WEEK	LIVE	FD	EE	SE	LIVE	FD	EE	SE	LIVE	FD	EE	SE	LIVE	FD	EE	SE	LIVE	FD	EE	SE
0	25	0	0	0	25	0	0	0	25	0	0	0	25	0	0	0	25	0	0	0
1	25	0	0	0	25	0	0	0	25	0	0	0	25	0	0	0	25	0	0	0
2	25	0	0	0	25	0	0	0	25	0	0	0	25	0	0	0	25	0	0	0
3	25	0	0	0	25	0	0	0	25	0	0	0	25	0	0	0	25	0	0	0
4	25	0	0	0	25	0	0	0	25	0	0	0	25	0	0	0	25	0	0	0
5	25	0	0	0	25	0	0	0	25	0	0	0	25	0	0	0	25	0	0	0
6	25	0	0	0	25	0	0	0	25	0	0	0	25	0	0	0	25	0	0	0
7	25	0	0	0	25	0	0	0	25	0	0	0	25	0	0	0	25	0	0	0
8	25	0	0	0	25	0	0	0	25	0	0	0	25	0	0	0	25	0	0	0
9	25	0	0	0	25	0	0	0	25	0	0	0	25	0	0	0	25	0	0	0
10	25	0	0	0	25	0	0	0	25	0	0	0	25	0	0	0	25	0	0	0
11	25	0	0	0	25	0	0	0	25	0	0	0	25	0	0	0	25	0	0	0
12	25	0	0	0	25	0	0	0	25	0	0	0	25	0	0	0	25	0	0	0
13	25	0	0	0	25	0	0	0	25	0	0	0	25	0	0	0	25	0	0	0
14	25	0	0	0	25	0	0	0	25	0	0	0	25	0	0	0	25	0	0	0
15	25	0	0	0	25	0	0	0	25	0	0	0	25	0	0	0	25	0	0	0
16	25	0	0	0	25	0	0	0	25	0	0	0	25	0	0	0	25	0	0	0
17	25	0	0	0	25	0	0	0	25	0	0	0	25	0	0	0	25	0	0	0
18	20	0	0	5	20	0	0	5	20	0	0	5	20	0	0	5	20	0	0	5
19	0	0	0	20	0	0	0	20	0	0	0	20	0	0	0	20	0	0	0	20

WEEK = WEEK OF STUDY FD = FOUND DEAD EE = EUTHANIZED IN EXTREMIS SE = SCHEDULED EUTHANASIA

1- 0 PPM 2- 100 PPM 3- 250 PPM 4- 500 PPM 5- 750 PPM

PSURVv4.01
08/16/2000

TABLE 1 (F0)

PROJECT NO.:WIL-380001F INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS SUMMARY OF SURVIVAL AND DISPOSITION

FEMALES

GROUP :	1				2				3				4				5			
WEEK	LIVE	FD	EE	SE	LIVE	FD	EE	SE	LIVE	FD	EE	SE	LIVE	FD	EE	SE	LIVE	FD	EE	SE
0	25	0	0	0	25	0	0	0	25	0	0	0	25	0	0	0	25	0	0	0
1	25	0	0	0	25	0	0	0	25	0	0	0	25	0	0	0	25	0	0	0
2	25	0	0	0	25	0	0	0	25	0	0	0	25	0	0	0	25	0	0	0
3	25	0	0	0	25	0	0	0	25	0	0	0	25	0	0	0	25	0	0	0
4	25	0	0	0	25	0	0	0	25	0	0	0	25	0	0	0	25	0	0	0
5	25	0	0	0	25	0	0	0	25	0	0	0	25	0	0	0	25	0	0	0
6	25	0	0	0	25	0	0	0	25	0	0	0	25	0	0	0	25	0	0	0
7	25	0	0	0	25	0	0	0	25	0	0	0	25	0	0	0	25	0	0	0
8	25	0	0	0	25	0	0	0	25	0	0	0	25	0	0	0	25	0	0	0
9	25	0	0	0	25	0	0	0	25	0	0	0	25	0	0	0	25	0	0	0
10	25	0	0	0	25	0	0	0	25	0	0	0	25	0	0	0	25	0	0	0
11	25	0	0	0	25	0	0	0	25	0	0	0	25	0	0	0	25	0	0	0
12	25	0	0	0	25	0	0	0	25	0	0	0	25	0	0	0	25	0	0	0
13	25	0	0	0	25	0	0	0	25	0	0	0	25	0	0	0	25	0	0	0
14	25	0	0	0	25	0	0	0	25	0	0	0	25	0	0	0	25	0	0	0
15	25	0	0	0	25	0	0	0	25	0	0	0	25	0	0	0	25	0	0	0
16	25	0	0	0	25	0	0	0	25	0	0	0	25	0	0	0	25	0	0	0
17	25	0	0	0	25	0	0	0	25	0	0	0	24	0	1	0	25	0	0	0
18	20	0	0	5	20	0	0	5	20	0	0	5	19	0	0	5	20	0	0	5
19	0	0	0	20	0	0	0	20	0	0	0	20	0	0	0	19	0	0	0	20

WEEK = WEEK OF STUDY FD = FOUND DEAD EE = EUTHANIZED IN EXTREMIS SE = SCHEDULED EUTHANASIA

1- 0 PPM 2- 100 PPM 3- 250 PPM 4- 500 PPM 5- 750 PPM

PSURVv4.01
08/16/2000

TABLE 2 (F0)

PROJECT NO.:WIL-380001F INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS PAGE 1

SPONSOR:BROMINATED SOLVENTS SUMMARY OF REPRODUCTIVE PERFORMANCE

DOSE GROUP :	1		2		3		4		5	
	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%
FEMALES ON STUDY	25		25		25		25		25	
FEMALES THAT DIED DURING STUDY	0		0		0		1-A		0	
FEMALES ALLOWED TO DELIVER	25		25		25		25		25	
NONGRAVID	2	8.0	0	0.0	3	12.0	12	48.0	25	100.0
GRAVID	23	92.0	25	100.0	22	88.0	13B	52.0	0	0.0
DELIVERED	23	100.0	25	100.0	22	100.0	11	84.6	0	0.0
FEMALES WITH TOTAL LITTER LOSS	0	0.0	1	4.0	1	4.5	0	0.0	0	0.0
FEMALES WITH VIABLE PUPS	23	100.0	24	96.0	21	95.5	11	100.0	0	0.0
FEMALES WITH EVIDENCE OF MATING	24	96.0	24	96.0	25	100.0	21	84.0	17	68.0
NUMBER THAT DELIVERED	23	95.8	24	100.0	22	88.0	11	52.4	0	0.0
NUMBER THAT DID NOT DELIVER	1	4.2	0	0.0	3	12.0	10	47.6	17	100.0
FEMALES WITH NO EVIDENCE OF MATING	1	4.0	1	4.0	0	0.0	4	16.0	8	32.0
NUMBER THAT DELIVERED	0	0.0	1	100.0	0	0.0	0	0.0	0	0.0
NUMBER THAT DID NOT DELIVER	1	100.0	0	0.0	0	0.0	4	100.0	8	100.0
TOTAL FEMALES GRAVID	23	92.0	25	100.0	22	88.0	13	52.0	0	0.0

1- 0 PPM 2- 100 PPM 3- 250 PPM 4- 500 PPM 5- 750 PPM

NOTE: POSITIVE EVIDENCE OF MATING DURING THE BREEDING PERIOD WAS CONFIRMED BY THE PRESENCE OF SPERM IN A VAGINAL SMEAR OR A COPULATORY PLUG.

A = FEMALE NO. 32821 WAS EUTHANIZED IN EXTREMIS FOLLOWING MATING - INCLUDED IN CALCULATIONS

B = INCLUDES FEMALE NOS. 32903 AND 32925 THAT DID NOT DELIVER

TABLE 2 (F0)

PROJECT NO.:WIL-380001F INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS SUMMARY OF REPRODUCTIVE PERFORMANCE

DOSE GROUP :	1		2		3		4		5	
	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%
MALES ON STUDY	25		25		25		25		25	
MALES THAT DIED DURING STUDY	0		0		0		0		0	
MALES WITH EVIDENCE OF MATING	24	96.0	24	96.0	25	100.0	21	84.0	17	68.0
NO. THAT SIRED A LITTER	23	95.8	24	100.0	22	88.0	13	61.9	0	0.0
NO. THAT DID NOT SIRE A LITTER	1	4.2	0	0.0	3	12.0	8	38.1	17	100.0
MALES WITH NO EVIDENCE OF MATING	1	4.0	1	4.0	0	0.0	4	16.0	8	32.0
NO. THAT SIRED A LITTER	0	0.0	1	100.0	0	0.0	0	0.0	0	0.0
NO. THAT DID NOT SIRE A LITTER	1	100.0	0	0.0	0	0.0	4	100.0	8	100.0

1- 0 PPM 2- 100 PPM 3- 250 PPM 4- 500 PPM 5- 750 PPM

NOTE: MALES WERE CONSIDERED TO HAVE SIRED A LITTER IF THE PAIRED FEMALE WAS GRAVID, REGARDLESS OF DELIVERY STATUS

NOTE: POSITIVE EVIDENCE OF MATING DURING THE BREEDING PERIOD WAS CONFIRMED BY THE PRESENCE OF SPERM IN A VAGINAL SMEAR OR A COPULATORY PLUG.

TABLE 2 (F0)

PROJECT NO.:WIL-380001F INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS SUMMARY OF REPRODUCTIVE PERFORMANCE

DOSE GROUP :	1		2		3		4		5	
	NO.	%	NO.	%	NO.	%	NO.	%	NO.	%
MALE MATING INDEX	24/25	96.0	25/25	100.0	25/25	100.0	21/25	84.0	17/25	68.0*
FEMALE MATING INDEX	24/25	96.0	25/25	100.0	25/25	100.0	21/25	84.0	17/25	68.0*
MALE FERTILITY INDEX	23/25	92.0	25/25	100.0	22/25	88.0	13/25	52.0**	0/25	0.0**
FEMALE FERTILITY INDEX	23/25	92.0	25/25	100.0	22/25	88.0	13/25	52.0**	0/25	0.0**
MEAN PRE-COITAL INTERVALS (DAYS)	3.4	NA	3.0	NA	3.2	NA	4.3	NA	4.8	NA
S.D.	1.76	NA	2.11	NA	1.73	NA	3.02	NA	3.53	NA
N	24		24		25		21		17	

$$\text{MALE (FEMALE) MATING INDEX (\%)} = \frac{\text{NO. OF MALES (FEMALES) WITH EVIDENCE OF MATING (OR CONFIRMED PREGNANCY)}}{\text{TOTAL NO. OF MALES (FEMALES) USED FOR MATING}} \times 100$$

$$\text{MALE FERTILITY INDEX (\%)} = \frac{\text{NO. OF MALES SIRING A LITTER}}{\text{TOTAL NO. OF MALES USED FOR MATING}} \times 100$$

$$\text{FEMALE FERTILITY INDEX (\%)} = \frac{\text{NO. OF FEMALES WITH CONFIRMED PREGNANCY}}{\text{TOTAL NO. OF FEMALES USED FOR MATING}} \times 100$$

1- 0 PPM 2- 100 PPM 3- 250 PPM 4- 500 PPM 5- 750 PPM

NOTE: MALES WERE CONSIDERED TO HAVE SIRED A LITTER IF THE PAIRED FEMALE WAS GRAVID, REGARDLESS OF DELIVERY STATUS

PRE-COITAL INTERVALS NOT SIGNIFICANTLY DIFFERENT FROM CONTROL GROUP USING DUNNETT'S TEST

* = SIGNIFICANTLY DIFFERENT FROM CONTROL GROUP AT 0.05 USING CHI-SQUARE TEST

** = SIGNIFICANTLY DIFFERENT FROM CONTROL GROUP AT 0.01 USING CHI-SQUARE TEST

NA = NOT APPLICABLE

TABLE 3 (F0)

PROJECT NO.:WIL-380001F INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS PAGE 1

SPONSOR:BROMINATED SOLVENTS ESTROUS CYCLE LENGTH - SUMMARY OF MEANS

	----- F E M A L E -----				
GROUP:	0 PPM	100 PPM	250 PPM	500 PPM	750 PPM
ESTROUS CYCLE LENGTH (IN DAYS)					
MEAN	4.2	4.5	4.7	5.5	5.6
S.D.	0.49	1.05	0.90	2.17	1.79
N	25	25	25	23	22

NO STATISTICAL ANALYSES PERFORMED

MANUALv1.0
08/24/2000
R:04/28/2001

TABLE 4 (F0 - DETAILED PHYSICAL EXAMINATIONS)

PROJECT NO.:WIL-380001M INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS SUMMARY OF CLINICAL FINDINGS: TOTAL OCCURRENCE/NO. OF ANIMALS

----- M A L E -----

TABLE RANGE: 11-03-99 TO 03-20-00

GROUP:	1	2	3	4	5
NORMAL					
-NO SIGNIFICANT CLINICAL OBSERVATIONS	482/25	460/25	439/25	478/25	453/25
DISPOSITION					
-SCHEDULED EUTHANASIA	25/25	25/25	25/25	25/25	25/25
BODY/INTEGUMENT					
-APPARENT MECHANICAL INJURY TO TAIL	0/ 0	0/ 0	0/ 0	4/ 1	0/ 0
-HAIR LOSS LEFT FORELIMB	5/ 3	52/ 5	49/ 4	21/ 2	34/ 4
-HAIR LOSS RIGHT FORELIMB	23/ 3	54/ 5	51/ 5	14/ 1	36/ 4
-HAIR LOSS VENTRAL NECK	0/ 0	0/ 0	18/ 2	0/ 0	2/ 1
-SCABBING RIGHT FORELIMB	0/ 0	1/ 1	0/ 0	0/ 0	1/ 1
-DRIED YELLOW MATTING UROGENITAL AREA	1/ 1	0/ 0	0/ 0	2/ 1	8/ 5
-SCABBING LEFT FORELIMB	0/ 0	1/ 1	0/ 0	0/ 0	2/ 1
-FIRM MOVEABLE MASS LEFT LATERAL THORACIC AREA; 10MM X 5MM X5MM	0/ 0	0/ 0	0/ 0	0/ 0	2/ 1
-HAIR LOSS VENTRAL ABDOMINAL AREA	0/ 0	0/ 0	0/ 0	2/ 1	0/ 0
-WET YELLOW MATERIAL UROGENITAL AREA	0/ 0	0/ 0	0/ 0	1/ 1	0/ 0
-FIRM UNMOVEABLE MASS LEFT FACIAL AREA	0/ 0	0/ 0	1/ 1	0/ 0	0/ 0
-HAIR LOSS LEFT INGUINAL AREA	0/ 0	0/ 0	0/ 0	3/ 1	0/ 0
-HAIR LOSS LEFT HINDLIMB	0/ 0	0/ 0	0/ 0	2/ 1	0/ 0
-HAIR LOSS LEFT LATERAL ABDOMINAL AREA	0/ 0	0/ 0	0/ 0	1/ 1	0/ 0

1- 0 PPM 2- 100 PPM 3- 250 PPM 4- 500 PPM 5- 750 PPM

TABLE 4 (F0 - DETAILED PHYSICAL EXAMINATIONS)

PROJECT NO.:WIL-380001M — INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 2

SPONSOR:BROMINATED SOLVENTS — SUMMARY OF CLINICAL FINDINGS: TOTAL OCCURRENCE/NO. OF ANIMALS

----- M A L E -----

TABLE RANGE: 11-03-99 TO 03-20-00

GROUP:	1	2	3	4	5
BODY/INTEGUMENT					
-OPEN LESION LEFT LATERAL THORACIC AREA	0/ 0	0/ 0	0/ 0	0/ 0	2/ 1
-OPEN LESION LEFT FORELIMB	0/ 0	0/ 0	0/ 0	0/ 0	1/ 1
EYES/EARS/NOSE					
-DRIED RED MATERIAL AROUND LEFT EYE	0/ 0	0/ 0	3/ 2	0/ 0	5/ 1
-DRIED RED MATERIAL AROUND RIGHT EYE	0/ 0	0/ 0	1/ 1	0/ 0	0/ 0
-DRIED RED MATERIAL AROUND RIGHT EYE	1/ 1	1/ 1	9/ 2	0/ 0	1/ 1
-DRIED RED MATERIAL AROUND NOSE	1/ 1	0/ 0	2/ 2	3/ 3	0/ 0
-LEFT EAR APPEARS RED AND SWOLLEN	0/ 0	0/ 0	4/ 1	0/ 0	0/ 0
-RIGHT EAR APPEARS RED AND SWOLLEN	0/ 0	0/ 0	3/ 1	0/ 0	2/ 1
EXCRETA					
-SOFT STOOL	1/ 1	0/ 0	4/ 3	2/ 2	1/ 1
ORAL/DENTAL					
-UPPER INCISORS MALALIGNED	9/ 3	0/ 0	7/ 2	0/ 0	11/ 1
-TEETH LONG, TRIMMED	4/ 3	0/ 0	6/ 2	0/ 0	5/ 1
-UPPER INCISORS WORN TO GUM	0/ 0	0/ 0	1/ 1	0/ 0	0/ 0
-UPPER INCISORS MISSING	0/ 0	0/ 0	1/ 1	0/ 0	2/ 1
-RIGHT UPPER INCISOR BROKEN	1/ 1	0/ 0	0/ 0	0/ 0	0/ 0

1- 0 PPM 2- 100 PPM 3- 250 PPM 4- 500 PPM 5- 750 PPM

PCSUv4.0
02/12/2001

TABLE 4 (F0 - DETAILED PHYSICAL EXAMINATIONS)

PROJECT NO.:WIL-380001F INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS SUMMARY OF CLINICAL FINDINGS: TOTAL OCCURRENCE/NO. OF ANIMALS

----- F E M A L E -----

TABLE RANGE:	11-03-99 TO 03-20-00				
GROUP:	1	2	3	4	5
NORMAL					
-NO SIGNIFICANT CLINICAL OBSERVATIONS	391/25	363/25	438/25	423/25	502/25
DISPOSITION					
-EUTHANIZED IN EXTREMIS	0/ 0	0/ 0	0/ 0	1/ 1	0/ 0
-SCHEDULED EUTHANASIA	25/25	25/25	25/25	24/24	25/25
BODY/INTEGUMENT					
-HAIR LOSS RIGHT FORELIMB	106/13	116/12	53/ 8	68/10	9/ 1
-HAIR LOSS LEFT FORELIMB	108/13	120/13	54/ 8	64/10	9/ 1
-HAIR LOSS DORSAL ABDOMINAL AREA	0/ 0	0/ 0	0/ 0	0/ 0	2/ 1
-DISTAL END OF TAIL MISSING	0/ 0	0/ 0	0/ 0	10/ 2	0/ 0
-HAIR LOSS VENTRAL ABDOMINAL AREA	0/ 0	0/ 0	0/ 0	4/ 1	0/ 0
-HAIR LOSS RIGHT HINDLIMB	0/ 0	0/ 0	0/ 0	4/ 1	0/ 0
-HAIR LOSS LEFT HINDLIMB	0/ 0	0/ 0	0/ 0	5/ 1	0/ 0
-FIRM UNMOVABLE MASS RIGHT FACIAL AREA; 10MM x 10MM x 10MM	0/ 0	3/ 1	0/ 0	0/ 0	0/ 0
-SCABBING RIGHT FACIAL AREA	0/ 0	10/ 1	0/ 0	0/ 0	0/ 0
-HAIR LOSS VENTRAL NECK AREA	2/ 1	0/ 0	0/ 0	0/ 0	0/ 0
-SCABBING RIGHT FORELIMB	0/ 0	0/ 0	1/ 1	3/ 1	0/ 0
-SCABBING LEFT FORELIMB	0/ 0	0/ 0	1/ 1	3/ 1	0/ 0
-SECOND DIGIT RIGHT FORELIMB APPEARS RED AND SWOLLEN	0/ 0	0/ 0	0/ 0	0/ 0	2/ 1

1- 0 PPM 2- 100 PPM 3- 250 PPM 4- 500 PPM 5- 750 PPM

TABLE 4 (F0 - DETAILED PHYSICAL EXAMINATIONS)

PROJECT NO.:WIL-380001F INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS SUMMARY OF CLINICAL FINDINGS: TOTAL OCCURRENCE/NO. OF ANIMALS

----- F E M A L E -----

TABLE RANGE: 11-03-99 TO 03-20-00

GROUP:	1	2	3	4	5
BODY/INTEGUMENT					
-WET RED MATERIAL AROUND VAGINAL AREA	0/ 0	1/ 1	0/ 0	0/ 0	0/ 0
-PUP LODGED AT VAGINAL OPENING	0/ 0	1/ 1	0/ 0	0/ 0	0/ 0
EYES/EARS/NOSE					
-DRIED RED MATERIAL AROUND RIGHT EYE	0/ 0	0/ 0	1/ 1	0/ 0	0/ 0
-DRIED RED MATERIAL AROUND LEFT EYE	7/ 1	0/ 0	7/ 1	1/ 1	0/ 0
-APPARENT MECHANICAL INJURY	0/ 0	2/ 1	0/ 0	0/ 0	0/ 0
-APPARENT MECHANICAL INJURY TO LEFT EYE	0/ 0	3/ 1	0/ 0	0/ 0	0/ 0
-LEFT EYE APPEARS LARGER THAN NORMAL	0/ 0	0/ 0	0/ 0	9/ 1	0/ 0
-LEFT EYE MISSING	0/ 0	12/ 1	0/ 0	0/ 0	0/ 0
-RIGHT EAR APPEARS RED AND SWOLLEN	3/ 1	1/ 1	5/ 1	0/ 0	0/ 0
-DRIED RED MATERIAL AROUND NOSE	2/ 2	1/ 1	0/ 0	0/ 0	0/ 0
-LEFT EAR APPEARS RED AND SWOLLEN	0/ 0	1/ 1	0/ 0	0/ 0	0/ 0
-GLAUCOMATOUS LEFT EYE, CORNEA DRY- UNABLE TO CLOSE LIDS, ALMOST TWICE NORMAL SIZE, SLIGHT HEAD TILT TO RIGHT	0/ 0	0/ 0	0/ 0	1/ 1	0/ 0
ORAL/DENTAL					
-UPPER INCISORS MALALIGNED	5/ 1	0/ 0	4/ 1	0/ 0	0/ 0
-TEETH LONG, TRIMMED	2/ 1	0/ 0	3/ 1	0/ 0	0/ 0
-UPPER INCISORS MISSING	0/ 0	0/ 0	1/ 1	0/ 0	0/ 0

1- 0 PPM 2- 100 PPM 3- 250 PPM 4- 500 PPM 5- 750 PPM

TABLE 4 (F0 - DETAILED PHYSICAL EXAMINATIONS)

PROJECT NO.:WIL-380001F — INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 3

SPONSOR:BROMINATED SOLVENTS — SUMMARY OF CLINICAL FINDINGS: TOTAL OCCURRENCE/NO. OF ANIMALS

----- F E M A L E -----

TABLE RANGE: 11-03-99 TO 03-20-00

GROUP:	1	2	3	4	5
ORAL/DENTAL					
-LEFT UPPER INCISOR BROKEN	1/ 1	0/ 0	0/ 0	0/ 0	0/ 0
SPECIAL II					
-ESTROUS SMEAR DETERMINED TO BE ESTRUS PRIOR TO NECROPSY	5/ 5	7/ 7	5/ 5	2/ 2	3/ 3
-ESTROUS SMEAR DETERMINED TO BE DIESTRUS PRIOR TO NECROPSY	18/18	14/14	14/14	15/15	14/14
-ESTROUS SMEAR DETERMINED TO BE PROESTRUS PRIOR TO NECROPSY	1/ 1	0/ 0	0/ 0	2/ 2	1/ 1
-ESTROUS SMEAR DETERMINED TO BE METESTRUS PRIOR TO NECROPSY	1/ 1	4/ 4	6/ 6	5/ 5	7/ 7

1- 0 PPM 2- 100 PPM 3- 250 PPM 4- 500 PPM 5- 750 PPM

PCSUv4.0
02/22/2001

TABLE 5 (F0 - 1-HOUR POST-EXPOSURE)

PROJECT NO.:WIL-380001M INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS SUMMARY OF CLINICAL FINDINGS: TOTAL OCCURRENCE/NO. OF ANIMALS

----- M A L E -----

TABLE RANGE:	11-03-99 TO 03-19-00				
GROUP:	1	2	3	4	5
BODY/INTEGUMENT					
-WET YELLOW MATERIAL UROGENITAL AREA	0/ 0	0/ 0	0/ 0	0/ 0	1/ 1

1- 0 PPM 2- 100 PPM 3- 250 PPM 4- 500 PPM 5- 750 PPM

PCSUv4.0
08/16/2000

TABLE 5 (F0 - 1-HOUR POST-EXPOSURE)

PROJECT NO.:WIL-380001F INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS SUMMARY OF CLINICAL FINDINGS: TOTAL OCCURRENCE/NO. OF ANIMALS

----- F E M A L E -----

TABLE RANGE: 11-03-99 TO 03-19-00

GROUP:	1	2	3	4	5
BODY/INTEGUMENT					
-DRIED CLEAR MATTING RIGHT FORELIMB	0/ 0	0/ 0	0/ 0	0/ 0	1/ 1
-DRIED CLEAR MATTING LEFT FORELIMB	0/ 0	0/ 0	0/ 0	0/ 0	1/ 1
-DRIED YELLOW STAINING UROGENITAL AREA	0/ 0	0/ 0	0/ 0	1/ 1	0/ 0
EYES/EARS/NOSE					
-DRIED RED MATERIAL AROUND RIGHT EYE	0/ 0	0/ 0	0/ 0	1/ 1	1/ 1
-DRIED RED MATERIAL AROUND LEFT EYE	0/ 0	0/ 0	1/ 1	1/ 1	1/ 1
ORAL/DENTAL					
-SALIVATION	0/ 0	0/ 0	0/ 0	0/ 0	1/ 1

1- 0 PPM 2- 100 PPM 3- 250 PPM 4- 500 PPM 5- 750 PPM

PCSUv4.0
08/16/2000

TABLE 6 (F0)

PROJECT NO.:WIL-380001M INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS BODY WEIGHTS (GRAMS) - SUMMARY OF MEANS

		----- M A L E -----				
	GROUP:	0 PPM	100 PPM	250 PPM	500 PPM	750 PPM
WEEK 0						
	MEAN	204.	203.	204.	202.	204.
	S.D.	12.6	12.9	13.5	14.6	12.7
	N	25	25	25	25	25
1						
	MEAN	260.	257.	260.	255.	252.
	S.D.	16.4	16.6	17.2	20.6	16.2
	N	25	25	25	25	25
2						
	MEAN	311.	302.	303.	302.	297.
	S.D.	18.9	18.8	21.4	24.0	18.9
	N	25	25	25	25	25
3						
	MEAN	350.	337.	341.	338.	331.
	S.D.	23.9	20.7	27.9	26.5	20.9
	N	25	25	25	25	25
4						
	MEAN	378.	362.	367.	364.	356.
	S.D.	28.2	23.2	33.3	31.0	23.5
	N	25	25	25	25	25

None significantly different from control group

TABLE 6 (F0)

PROJECT NO.:WIL-380001M INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS BODY WEIGHTS (GRAMS) - SUMMARY OF MEANS

		----- M A L E -----				
	GROUP:	0 PPM	100 PPM	250 PPM	500 PPM	750 PPM
WEEK 5						
	MEAN	402.	385.	390.	385.	373.**
	S.D.	31.0	25.8	37.0	32.7	26.8
	N	25	25	25	25	25
6						
	MEAN	420.	403.	409.	405.	388.**
	S.D.	34.3	27.2	40.3	35.7	29.8
	N	25	25	25	25	25
7						
	MEAN	437.	420.	427.	420.	402.**
	S.D.	35.4	30.9	43.5	38.8	32.7
	N	25	25	25	25	25
8						
	MEAN	454.	437.	440.	432.	414.**
	S.D.	40.6	32.3	46.1	40.1	34.9
	N	25	25	25	25	25
9						
	MEAN	468.	451.	454.	446.	426.**
	S.D.	41.5	35.9	49.2	43.6	35.4
	N	25	25	25	25	25

** = Significantly different from the control group at 0.01 using Dunnett's test

TABLE 6 (F0)

PROJECT NO.:WIL-380001M INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS BODY WEIGHTS (GRAMS) - SUMMARY OF MEANS

		----- M A L E -----				
	GROUP:	0 PPM	100 PPM	250 PPM	500 PPM	750 PPM
WEEK 10						
	MEAN	477.	463.	467.	455.	433.**
	S.D.	43.5	38.1	51.4	46.5	36.3
	N	25	25	25	25	25
11						
	MEAN	486.	474.	476.	464.	436.**
	S.D.	44.3	38.7	50.9	47.2	40.0
	N	25	25	25	25	25
12						
	MEAN	499.	485.	489.	472.	446.**
	S.D.	46.1	41.0	52.1	48.9	37.4
	N	25	25	25	25	25
13						
	MEAN	512.	496.	499.	484.	453.**
	S.D.	48.6	42.8	57.0	52.2	38.4
	N	25	25	25	25	25
14						
	MEAN	515.	497.	504.	491.	462.**
	S.D.	48.7	47.1	59.1	54.9	38.7
	N	25	25	25	25	25

** = Significantly different from the control group at 0.01 using Dunnett's test

TABLE 6 (F0)

PROJECT NO.:WIL-380001M INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS BODY WEIGHTS (GRAMS) - SUMMARY OF MEANS

		----- M A L E -----				
	GROUP:	0 PPM	100 PPM	250 PPM	500 PPM	750 PPM
WEEK 15						
	MEAN	520.	498.	505.	491.	465.**
	S.D.	51.5	49.5	60.4	56.2	37.8
	N	25	25	25	25	25
16						
	MEAN	536.	516.	516.	507.	474.**
	S.D.	51.3	54.4	65.1	59.5	39.5
	N	25	25	25	25	25
17						
	MEAN	545.	523.	524.	513.	476.**
	S.D.	52.0	53.3	64.9	60.8	42.0
	N	25	25	25	25	25
18						
	MEAN	548.	525.	530.	516.	479.**
	S.D.	54.7	51.9	62.2	62.2	44.1
	N	25	25	25	25	25
19						
	MEAN	552.	530.	534.	517.	483.**
	S.D.	55.8	51.4	65.8	62.1	45.4
	N	25	25	25	25	25

** = Significantly different from the control group at 0.01 using Dunnett's test

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TABLE 6 (F0)

PROJECT NO.:WIL-380001F INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS BODY WEIGHTS (GRAMS) - SUMMARY OF MEANS

		----- F E M A L E -----				
	GROUP:	0 PPM	100 PPM	250 PPM	500 PPM	750 PPM
WEEK 0						
	MEAN	161.	161.	161.	161.	161.
	S.D.	10.2	10.0	10.2	10.1	10.4
	N	25	25	25	25	25
1						
	MEAN	189.	187.	186.	186.	185.
	S.D.	13.0	12.4	10.2	10.0	12.4
	N	25	25	25	25	25
2						
	MEAN	213.	209.	208.	209.	209.
	S.D.	14.6	14.6	14.4	12.0	12.4
	N	25	25	25	25	25
3						
	MEAN	232.	232.	225.	229.	225.
	S.D.	15.4	17.1	10.9	16.0	14.8
	N	25	25	25	25	25
4						
	MEAN	245.	246.	239.	242.	237.
	S.D.	15.2	20.1	12.7	15.7	15.2
	N	25	25	25	25	25

None significantly different from control group

TABLE 6 (F0)

PROJECT NO.:WIL-380001F INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS BODY WEIGHTS (GRAMS) - SUMMARY OF MEANS

		----- F E M A L E -----				
	GROUP:	0 PPM	100 PPM	250 PPM	500 PPM	750 PPM
WEEK 5						
	MEAN	260.	258.	254.	255.	247.
	S.D.	15.9	19.2	13.7	18.6	15.3
	N	25	25	25	25	25
6						
	MEAN	270.	270.	262.	262.	256.
	S.D.	17.5	22.4	15.6	20.6	17.2
	N	25	25	25	25	25
7						
	MEAN	278.	277.	270.	270.	263.*
	S.D.	18.6	22.6	16.1	20.4	16.6
	N	25	25	25	25	25
8						
	MEAN	285.	285.	279.	277.	269.*
	S.D.	19.2	23.8	17.9	25.0	16.6
	N	25	25	25	25	25
9						
	MEAN	292.	290.	284.	284.	275.
	S.D.	18.6	22.9	19.1	26.4	17.8
	N	25	25	25	25	25

* = Significantly different from the control group at 0.05 using Dunnett's test

TABLE 6 (F0)

PROJECT NO.:WIL-380001F INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS BODY WEIGHTS (GRAMS) - SUMMARY OF MEANS

		----- F E M A L E -----				
	GROUP:	0 PPM	100 PPM	250 PPM	500 PPM	750 PPM
WEEK 10						
	MEAN	295.	293.	290.	289.	280.
	S.D.	19.4	23.9	21.6	27.0	17.3
	N	25	25	25	25	25
11						
	MEAN	314.	321.	293.	306.	290.
	S.D.	20.8	25.7	15.8	31.5	18.4
	N	5	5	8	11	14
12						
	MEAN	354.	336.	A	332.	303.
	S.D.	0.0	0.0		55.6	27.0
	N	1	1		5	10
13						
	MEAN	352.	354.	A	334.	303.
	S.D.	0.0	0.0		71.1	28.6
	N	1	1		4	8
14						
	MEAN	361.	302.	319.	321.	305.
	S.D.	0.0	0.0	32.3	57.5	25.2
	N	1	1	3	5	10

None significantly different from control group

A = REFER TO F0 GESTATION/LACTATION BODY WEIGHT TABLES

TABLE 6 (F0)

PROJECT NO.:WIL-380001F INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS BODY WEIGHTS (GRAMS) - SUMMARY OF MEANS

		----- F E M A L E -----				
	GROUP:	0 PPM	100 PPM	250 PPM	500 PPM	750 PPM
WEEK 15						
	MEAN	338.	283.	319.	323.	297.
	S.D.	23.3	0.0	30.0	36.7	23.3
	N	2	1	4	13	23
16						
	MEAN	345.	308.	324.	325.	305.
	S.D.	19.1	0.0	33.7	36.2	21.9
	N	2	1	4	14	25
17						
	MEAN	324.	323.	319.	326.	311.
	S.D.	26.1	36.6	26.0	36.0	23.5
	N	10	14	12	17	25
18						
	MEAN	318.	316.	314.	324.	316.
	S.D.	20.5	21.6	23.7	35.4	24.3
	N	25	25	25	23	25
19						
	MEAN	329.	328.	325.	330.	319.
	S.D.	20.3	23.7	25.2	37.7	26.5
	N	25	25	25	24	25

None significantly different from control group

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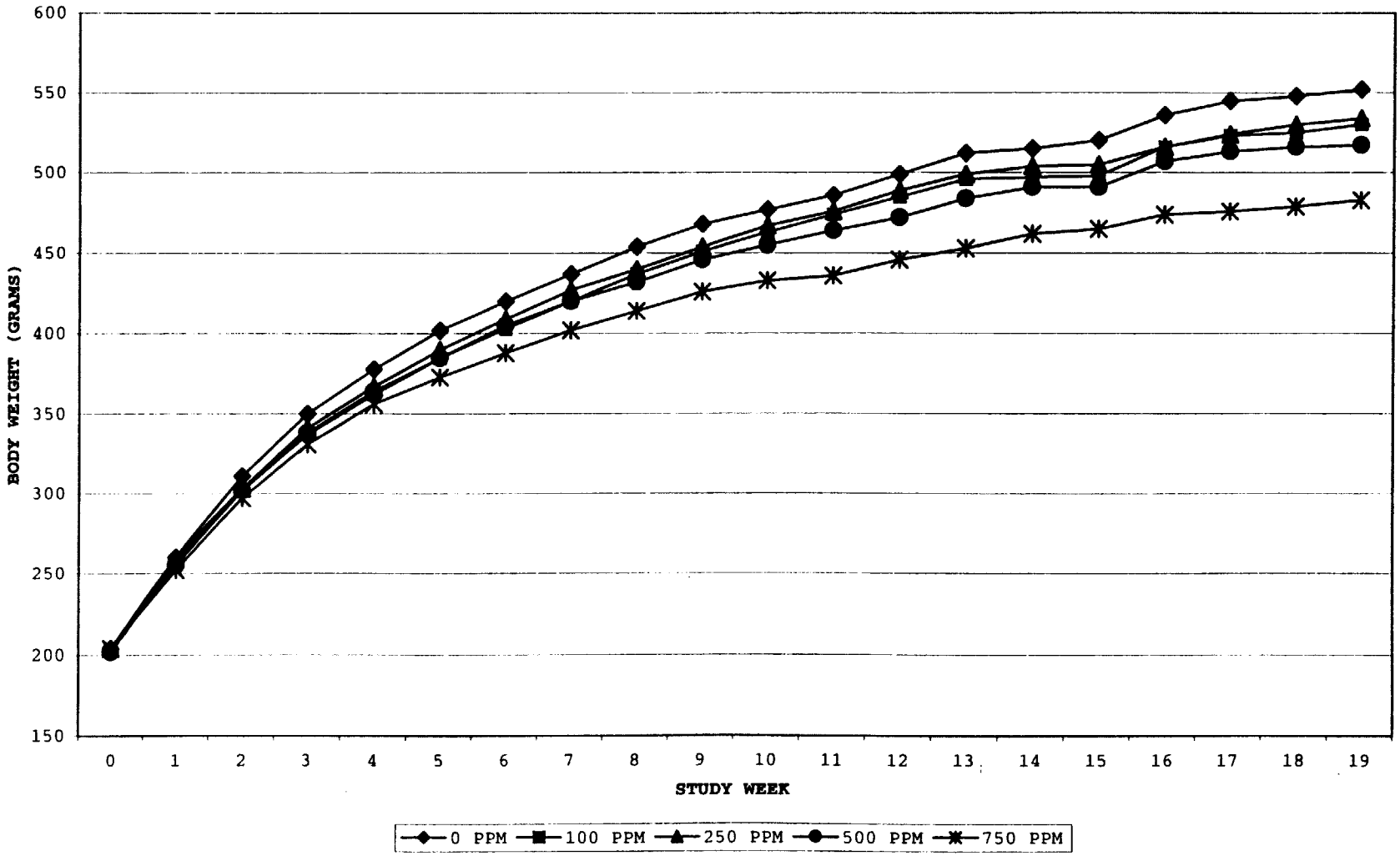
PROJECT NO.:WIL-380001M
SPONSOR:BROMINATED SOLVENTS

FIGURE 1 (F0 MALES)
INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS
BODY WEIGHTS (GRAMS) - SUMMARY OF MEANS



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SPONSOR:BROMINATED SOLVENTS

FIGURE 2 (F0 FEMALES)
INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS
BODY WEIGHTS (GRAMS) - SUMMARY OF MEANS

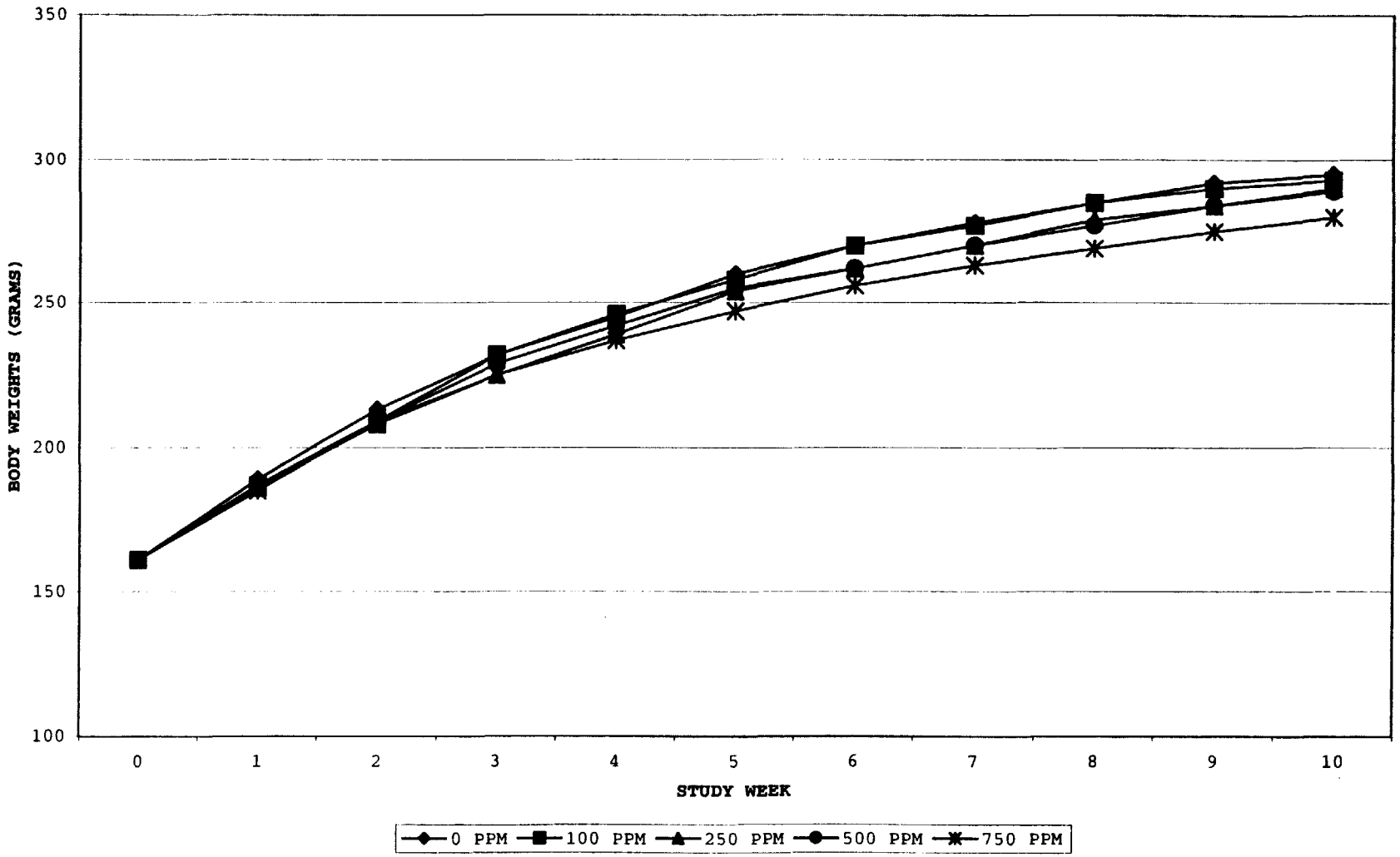

TABLE 7 (F0)

PROJECT NO.:WIL-380001M INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS BODY WEIGHT GAINS (GRAMS) - SUMMARY OF MEANS

		----- M A L E -----				
	GROUP:	0 PPM	100 PPM	250 PPM	500 PPM	750 PPM
WEEK	0 TO 1					
	MEAN	57.	54.	56.	53.	48.**
	S.D.	8.1	7.3	8.7	8.8	7.3
	N	25	25	25	25	25
	1 TO 2					
	MEAN	51.	45.	43.**	47.	45.*
	S.D.	8.2	5.0	11.7	8.2	6.3
	N	25	25	25	25	25
	2 TO 3					
	MEAN	39.	35.	38.	36.	34.
	S.D.	9.3	5.5	12.8	6.6	7.9
	N	25	25	25	25	25
	3 TO 4					
	MEAN	28.	25.	26.	26.	25.
	S.D.	7.9	5.9	6.9	8.6	6.4
	N	25	25	25	25	25
	4 TO 5					
	MEAN	24.	22.	23.	21.	18.**
	S.D.	7.0	5.3	5.8	5.7	6.0
	N	25	25	25	25	25

* = Significantly different from the control group at 0.05 using Dunnett's test

** = Significantly different from the control group at 0.01 using Dunnett's test

TABLE 7 (F0)

PROJECT NO.:WIL-380001M INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS BODY WEIGHT GAINS (GRAMS) - SUMMARY OF MEANS

		----- M A L E -----				
	GROUP:	0 PPM	100 PPM	250 PPM	500 PPM	750 PPM
WEEK	5 TO 6					
	MEAN	18.	18.	19.	20.	15.
	S.D.	6.0	7.1	6.9	6.2	5.7
	N	25	25	25	25	25
	6 TO 7					
	MEAN	16.	17.	18.	15.	14.
	S.D.	5.1	7.1	7.1	7.1	5.3
	N	25	25	25	25	25
	7 TO 8					
	MEAN	17.	17.	14.	12.*	11.**
	S.D.	7.8	6.6	6.2	5.6	4.3
	N	25	25	25	25	25
	8 TO 9					
	MEAN	15.	13.	14.	14.	12.
	S.D.	5.6	8.4	5.9	5.7	3.1
	N	25	25	25	25	25
	9 TO 10					
	MEAN	9.	13.	13.	9.	7.
	S.D.	7.9	7.2	5.5	6.3	4.3
	N	25	25	25	25	25

* = Significantly different from the control group at 0.05 using Dunnett's test
** = Significantly different from the control group at 0.01 using Dunnett's test

TABLE 7 (F0)

PROJECT NO.:WIL-380001M INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS BODY WEIGHT GAINS (GRAMS) - SUMMARY OF MEANS

		----- M A L E -----				
	GROUP:	0 PPM	100 PPM	250 PPM	500 PPM	750 PPM
WEEK 10 TO 11						
	MEAN	9.	10.	8.	9.	3.
	S.D.	7.7	6.8	7.1	6.4	14.1
	N	25	25	25	25	25
11 TO 12						
	MEAN	13.	12.	14.	8.	10.
	S.D.	7.1	4.1	5.8	9.5	9.1
	N	25	25	25	25	25
12 TO 13						
	MEAN	13.	11.	9.	12.	7.*
	S.D.	5.4	5.1	10.7	6.8	5.6
	N	25	25	25	25	25
13 TO 14						
	MEAN	2.	1.	5.	7.	8.*
	S.D.	8.6	10.9	9.6	5.6	4.8
	N	25	25	25	25	25
14 TO 15						
	MEAN	5.	1.	1.	0.	3.
	S.D.	8.5	11.7	6.9	8.1	4.1
	N	25	25	25	25	25

* = Significantly different from the control group at 0.05 using Dunnett's test

TABLE 7 (F0)

PROJECT NO.:WIL-380001M INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS BODY WEIGHT GAINS (GRAMS) - SUMMARY OF MEANS

		----- M A L E -----				
GROUP:		0 PPM	100 PPM	250 PPM	500 PPM	750 PPM
WEEK 15 TO 16						
	MEAN	17.	17.	11.	16.	9.
	S.D.	15.8	12.4	19.8	6.6	5.2
	N	25	25	25	25	25
16 TO 17						
	MEAN	9.	7.	8.	5.	2.*
	S.D.	6.6	6.4	12.7	5.4	5.6
	N	25	25	25	25	25
17 TO 18						
	MEAN	3.	2.	6.	3.	3.
	S.D.	10.3	8.9	15.4	6.0	5.4
	N	25	25	25	25	25
18 TO 19						
	MEAN	4.	5.	4.	2.	4.
	S.D.	8.6	6.3	7.6	5.2	5.1
	N	25	25	25	25	25

* = Significantly different from the control group at 0.05 using Dunnett's test

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TABLE 7 (F0)

PROJECT NO.:WIL-380001F INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS PAGE 1

SPONSOR:BROMINATED SOLVENTS BODY WEIGHT GAINS (GRAMS) - SUMMARY OF MEANS

		----- F E M A L E -----				
	GROUP:	0 PPM	100 PPM	250 PPM	500 PPM	750 PPM
WEEK	0 TO 1					
	MEAN	28.	26.	25.	25.	24.**
	S.D.	5.4	5.3	5.2	4.5	4.7
	N	25	25	25	25	25
	1 TO 2					
	MEAN	24.	22.	22.	23.	24.
	S.D.	5.0	7.6	7.2	5.1	4.6
	N	25	25	25	25	25
	2 TO 3					
	MEAN	19.	23.	17.	20.	16.
	S.D.	6.0	6.5	8.6	7.2	6.0
	N	25	25	25	25	25
	3 TO 4					
	MEAN	13.	14.	15.	13.	13.
	S.D.	4.3	7.8	6.1	6.8	5.0
	N	25	25	25	25	25
	4 TO 5					
	MEAN	14.	12.	14.	13.	9.**
	S.D.	3.8	6.3	6.6	6.4	6.0
	N	25	25	25	25	25

** = Significantly different from the control group at 0.01 using Dunnett's test

TABLE 7 (F0)

PROJECT NO.:WIL-380001F — INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 2

SPONSOR:BROMINATED SOLVENTS — BODY WEIGHT GAINS (GRAMS) - SUMMARY OF MEANS

		----- F E M A L E -----				
	GROUP:	0 PPM	100 PPM	250 PPM	500 PPM	750 PPM
WEEK	5 TO 6					
	MEAN	10.	12.	8.	7.	9.
	S.D.	4.8	6.7	6.2	5.8	6.2
	N	25	25	25	25	25
	6 TO 7					
	MEAN	8.	8.	8.	8.	7.
	S.D.	6.0	4.5	6.2	4.8	5.5
	N	25	25	25	25	25
	7 TO 8					
	MEAN	7.	8.	9.	7.	6.
	S.D.	6.4	5.6	6.6	7.2	4.9
	N	25	25	25	25	25
	8 TO 9					
	MEAN	7.	5.	5.	8.	7.
	S.D.	5.3	4.6	7.6	6.5	4.9
	N	25	25	25	25	25
	9 TO 10					
	MEAN	3.	3.	6.	5.	5.
	S.D.	8.2	8.3	7.1	6.6	6.4
	N	25	25	25	25	25

None significantly different from control group

TABLE 7 (F0)

PROJECT NO.:WIL-380001F — INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 3

SPONSOR:BROMINATED SOLVENTS — BODY WEIGHT GAINS (GRAMS) - SUMMARY OF MEANS

	----- F E M A L E -----				
GROUP:	0 PPM	100 PPM	250 PPM	500 PPM	750 PPM
WEEK 10 TO 11					
MEAN	10.	6.	0.	5.	5.
S.D.	13.4	8.1	8.7	9.4	7.2
N	5	5	8	11	14
11 TO 12					
MEAN	6.	19.	A	16.	10.
S.D.	0.0	0.0		13.5	11.9
N	1	1		5	10
12 TO 13					
MEAN	-2.	18.	A	2.	-3.
S.D.	0.0	0.0		8.9	6.8
N	1	1		4	8
13 TO 14					
MEAN	9.	A	A	0.	5.
S.D.	0.0			15.1	7.6
N	1			4	8
14 TO 15					
MEAN	-7.	-19.	1.	9.	-4.
S.D.	0.0	0.0	7.8	6.9	8.2
N	1	1	3	5	10

None significantly different from control group

A = REFER TO F0 GESTATION/LACTATION BODY WEIGHT GAIN TABLES

TABLE 7 (F0)

PROJECT NO.:WIL-380001F INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS BODY WEIGHT GAINS (GRAMS) - SUMMARY OF MEANS

	----- F E M A L E -----				
GROUP:	0 PPM	100 PPM	250 PPM	500 PPM	750 PPM
WEEK 15 TO 16					
MEAN	7.	25.	6.	4.	8.
S.D.	4.2	0.0	16.5	9.3	8.0
N	2	1	4	13	23
16 TO 17					
MEAN	2.	9.	7.	6.	6.
S.D.	7.8	0.0	9.8	8.5	6.2
N	2	1	4	14	25
17 TO 18					
MEAN	1.	-10.	4.	7.	5.
S.D.	16.9	13.2	14.1	8.5	5.6
N	10	14	12	16	25
18 TO 19					
MEAN	11.	11.	11.	7.	3.**
S.D.	8.1	10.5	8.9	9.3	5.8
N	25	25	25	23	25

** = Significantly different from the control group at 0.01 using Dunnett's test

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TABLE 8 (F0)

PROJECT NO.:WIL-380001M — INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 1

SPONSOR:BROMINATED SOLVENTS — SUMMARY OF BODY WEIGHT CHANGES FROM INTERVAL 0 (GRAMS)

		----- M A L E -----				
	GROUP:	0 PPM	100 PPM	250 PPM	500 PPM	750 PPM
WEEK	0 TO 1					
	MEAN	57.	54.	56.	53.	48.**
	S.D.	8.1	7.3	8.7	8.8	7.3
	N	25	25	25	25	25
	0 TO 2					
	MEAN	107.	99.	99.	100.	93.**
	S.D.	12.0	10.6	17.3	14.3	11.9
	N	25	25	25	25	25
	0 TO 3					
	MEAN	146.	134.	137.	136.	127.**
	S.D.	18.4	14.2	22.3	18.8	15.8
	N	25	25	25	25	25
	0 TO 4					
	MEAN	174.	159.	163.	162.	152.**
	S.D.	22.9	17.1	27.9	24.6	17.9
	N	25	25	25	25	25
	0 TO 5					
	MEAN	198.	181.	186.	183.	169.**
	S.D.	25.3	19.9	31.4	26.7	20.1
	N	25	25	25	25	25

** = Significantly different from the control group at 0.01 using Dunnett's test

TABLE 8 (F0)

PROJECT NO.:WIL-380001M INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS SUMMARY OF BODY WEIGHT CHANGES FROM INTERVAL 0 (GRAMS)

		----- M A L E -----				
	GROUP:	0 PPM	100 PPM	250 PPM	500 PPM	750 PPM
WEEK	0 TO 6					
	MEAN	216.	200.	205.	203.	184.**
	S.D.	28.8	23.2	34.4	30.4	22.8
	N	25	25	25	25	25
	0 TO 7					
	MEAN	233.	217.	223.	217.	198.**
	S.D.	30.0	27.7	38.1	32.7	25.5
	N	25	25	25	25	25
	0 TO 8					
	MEAN	250.	234.	237.	230.	209.**
	S.D.	35.3	29.3	40.8	34.2	27.8
	N	25	25	25	25	25
	0 TO 9					
	MEAN	265.	248.	250.	244.	222.**
	S.D.	36.7	32.2	44.0	37.5	28.6
	N	25	25	25	25	25
	0 TO 10					
	MEAN	274.	260.	263.	253.	229.**
	S.D.	39.7	34.3	46.3	40.8	29.7
	N	25	25	25	25	25

** = Significantly different from the control group at 0.01 using Dunnett's test

TABLE 8 (F0)

PROJECT NO.:WIL-380001M — INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 3

SPONSOR:BROMINATED SOLVENTS — SUMMARY OF BODY WEIGHT CHANGES FROM INTERVAL 0 (GRAMS)

		----- M A L E -----				
	GROUP:	0 PPM	100 PPM	250 PPM	500 PPM	750 PPM
WEEK	0 TO 11					
	MEAN	283.	270.	272.	262.	232.**
	S.D.	40.3	35.5	45.2	41.8	34.8
	N	25	25	25	25	25
	0 TO 12					
	MEAN	296.	282.	285.	270.	242.**
	S.D.	41.6	37.2	46.3	43.2	31.5
	N	25	25	25	25	25
	0 TO 13					
	MEAN	309.	293.	295.	282.	249.**
	S.D.	44.0	39.3	51.3	46.3	32.2
	N	25	25	25	25	25
	0 TO 14					
	MEAN	311.	293.	300.	289.	258.**
	S.D.	45.0	42.8	54.0	49.2	32.0
	N	25	25	25	25	25
	0 TO 15					
	MEAN	316.	295.	301.	289.	261.**
	S.D.	48.3	45.8	55.2	50.6	31.6
	N	25	25	25	25	25

** = Significantly different from the control group at 0.01 using Dunnett's test

TABLE 8 (F0)

PROJECT NO.:WIL-380001M — INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 4

SPONSOR:BROMINATED SOLVENTS — SUMMARY OF BODY WEIGHT CHANGES FROM INTERVAL 0 (GRAMS)

		----- M A L E -----				
	GROUP:	0 PPM	100 PPM	250 PPM	500 PPM	750 PPM
WEEK	0 TO 16					
	MEAN	333.	312.	312.	305.	269.**
	S.D.	48.6	50.4	59.2	54.2	33.2
	N	25	25	25	25	25
	0 TO 17					
	MEAN	342.	319.	320.	311.	272.**
	S.D.	49.5	49.4	59.3	55.4	35.5
	N	25	25	25	25	25
	0 TO 18					
	MEAN	344.	321.	326.	314.	275.**
	S.D.	51.4	47.7	56.5	57.1	37.9
	N	25	25	25	25	25
	0 TO 19					
	MEAN	348.	326.	330.	315.	279.**
	S.D.	52.7	47.2	60.0	57.2	39.3
	N	25	25	25	25	25

** = Significantly different from the control group at 0.01 using Dunnett's test

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TABLE 8 (F0)

PROJECT NO.:WIL-380001F — INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 1

SPONSOR:BROMINATED SOLVENTS — SUMMARY OF BODY WEIGHT CHANGES FROM INTERVAL 0 (GRAMS)

		----- F E M A L E -----				
	GROUP:	0 PPM	100 PPM	250 PPM	500 PPM	750 PPM
WEEK	0 TO 1					
	MEAN	28.	26.	25.	25.	24.**
	S.D.	5.4	5.3	5.2	4.5	4.7
	N	25	25	25	25	25
	0 TO 2					
	MEAN	53.	48.	47.	48.	47.
	S.D.	8.1	9.1	9.6	6.8	6.1
	N	25	25	25	25	25
	0 TO 3					
	MEAN	71.	71.	64.*	68.	63.*
	S.D.	9.8	9.5	10.4	10.6	7.9
	N	25	25	25	25	25
	0 TO 4					
	MEAN	85.	85.	79.	81.	76.*
	S.D.	10.6	14.1	11.8	12.3	8.7
	N	25	25	25	25	25
	0 TO 5					
	MEAN	99.	97.	93.	94.	85.**
	S.D.	11.4	12.5	13.4	13.9	10.0
	N	25	25	25	25	25

* = Significantly different from the control group at 0.05 using Dunnett's test

** = Significantly different from the control group at 0.01 using Dunnett's test

TABLE 8 (F0)

PROJECT NO.:WIL-380001F — INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 2

SPONSOR:BROMINATED SOLVENTS — SUMMARY OF BODY WEIGHT CHANGES FROM INTERVAL 0 (GRAMS)

		----- F E M A L E -----				
	GROUP:	0 PPM	100 PPM	250 PPM	500 PPM	750 PPM
WEEK	0 TO 6					
	MEAN	109.	108.	101.	102.	95.**
	S.D.	13.6	15.3	14.7	16.6	11.8
	N	25	25	25	25	25
	0 TO 7					
	MEAN	117.	116.	109.	109.	101.**
	S.D.	14.9	16.3	14.5	16.2	12.5
	N	25	25	25	25	25
	0 TO 8					
	MEAN	124.	124.	118.	116.	107.**
	S.D.	16.5	17.4	16.8	21.5	12.7
	N	25	25	25	25	25
	0 TO 9					
	MEAN	131.	129.	123.	124.	114.**
	S.D.	16.0	16.6	17.4	22.5	14.6
	N	25	25	25	25	25
	0 TO 10					
	MEAN	134.	132.	129.	129.	119.*
	S.D.	16.5	17.9	20.2	22.4	14.8
	N	25	25	25	25	25

* = Significantly different from the control group at 0.05 using Dunnett's test

** = Significantly different from the control group at 0.01 using Dunnett's test

TABLE 8 (F0)

PROJECT NO.:WIL-380001F — INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 3

SPONSOR:BROMINATED SOLVENTS — SUMMARY OF BODY WEIGHT CHANGES FROM INTERVAL 0 (GRAMS)

		----- F E M A L E -----				
	GROUP:	0 PPM	100 PPM	250 PPM	500 PPM	750 PPM
WEEK	0 TO 11					
	MEAN	155.	159.	132.	142.	127.
	S.D.	17.2	15.6	18.5	30.3	15.9
	N	5	5	8	11	14
	0 TO 12					
	MEAN	189.	177.	A	173.	139.
	S.D.	0.0	0.0		50.3	21.5
	N	1	1		5	10
	0 TO 13					
	MEAN	187.	195.	A	176.	140.
	S.D.	0.0	0.0		65.6	22.2
	N	1	1		4	8
	0 TO 14					
	MEAN	196.	149.	146.	160.	142.
	S.D.	0.0	0.0	25.4	55.8	18.4
	N	1	1	3	5	10
	0 TO 15					
	MEAN	180.	130.	147.	162.	136.
	S.D.	13.4	0.0	24.1	34.5	20.0
	N	2	1	4	13	23

None significantly different from control group

A = REFER TO F0 GESTATION/LACTATION BODY WEIGHT TABLES

TABLE 8 (F0)

PROJECT NO.:WIL-380001F — INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 4

SPONSOR:BROMINATED SOLVENTS — SUMMARY OF BODY WEIGHT CHANGES FROM INTERVAL 0 (GRAMS)

		----- F E M A L E -----				
	GROUP:	0 PPM	100 PPM	250 PPM	500 PPM	750 PPM
WEEK	0 TO 16					
	MEAN	187.	155.	153.	164.	144.
	S.D.	9.2	0.0	29.6	34.4	19.1
	N	2	1	4	14	25
	0 TO 17					
	MEAN	164.	162.	156.	166.	149.
	S.D.	25.0	28.6	20.2	33.1	20.8
	N	10	14	12	17	25
	0 TO 18					
	MEAN	158.	155.	153.	164.	155.
	S.D.	18.7	15.8	20.3	33.3	22.0
	N	25	25	25	23	25
	0 TO 19					
	MEAN	168.	167.	164.	169.	158.
	S.D.	18.4	18.4	21.7	35.2	24.5
	N	25	25	25	24	25

None significantly different from control group

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TABLE 9 (F0)

PROJECT NO.:WIL-380001F INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS PAGE 1

SPONSOR:BROMINATED SOLVENTS MEAN BODY WEIGHTS (GRAMS) DURING GESTATION

GROUP :		1	2	3	4	5
DAY 0	MEAN	296.	296.	286.	282.	0.
	S.D./N	20.0/23	24.0/24	18.9/21	23.0/13	0.0/ 0
DAY 4	MEAN	317.	315.	309.	300.	0.
	S.D./N	19.4/23	26.1/24	20.5/21	24.7/13	0.0/ 0
DAY 7	MEAN	328.	326.	321.	309.	0.
	S.D./N	20.0/23	28.0/24	22.1/21	22.4/13	0.0/ 0
DAY 11	MEAN	345.	340.	337.	323.	0.
	S.D./N	20.2/23	29.0/24	24.4/21	21.1/13	0.0/ 0
DAY 14	MEAN	358.	353.	347.	332.**	0.
	S.D./N	21.4/23	28.3/24	23.6/21	20.6/13	0.0/ 0
DAY 20	MEAN	431.	423.	408.*	371.**	0.
	S.D./N	25.8/23	34.7/24	32.7/21	32.4/13	0.0/ 0

1- 0 PPM 2- 100 PPM 3- 250 PPM 4- 500 PPM 5- 750 PPM

* = Significantly different from the control group at 0.05 using Dunnett's test

** = Significantly different from the control group at 0.01 using Dunnett's test

NONGRAVID WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

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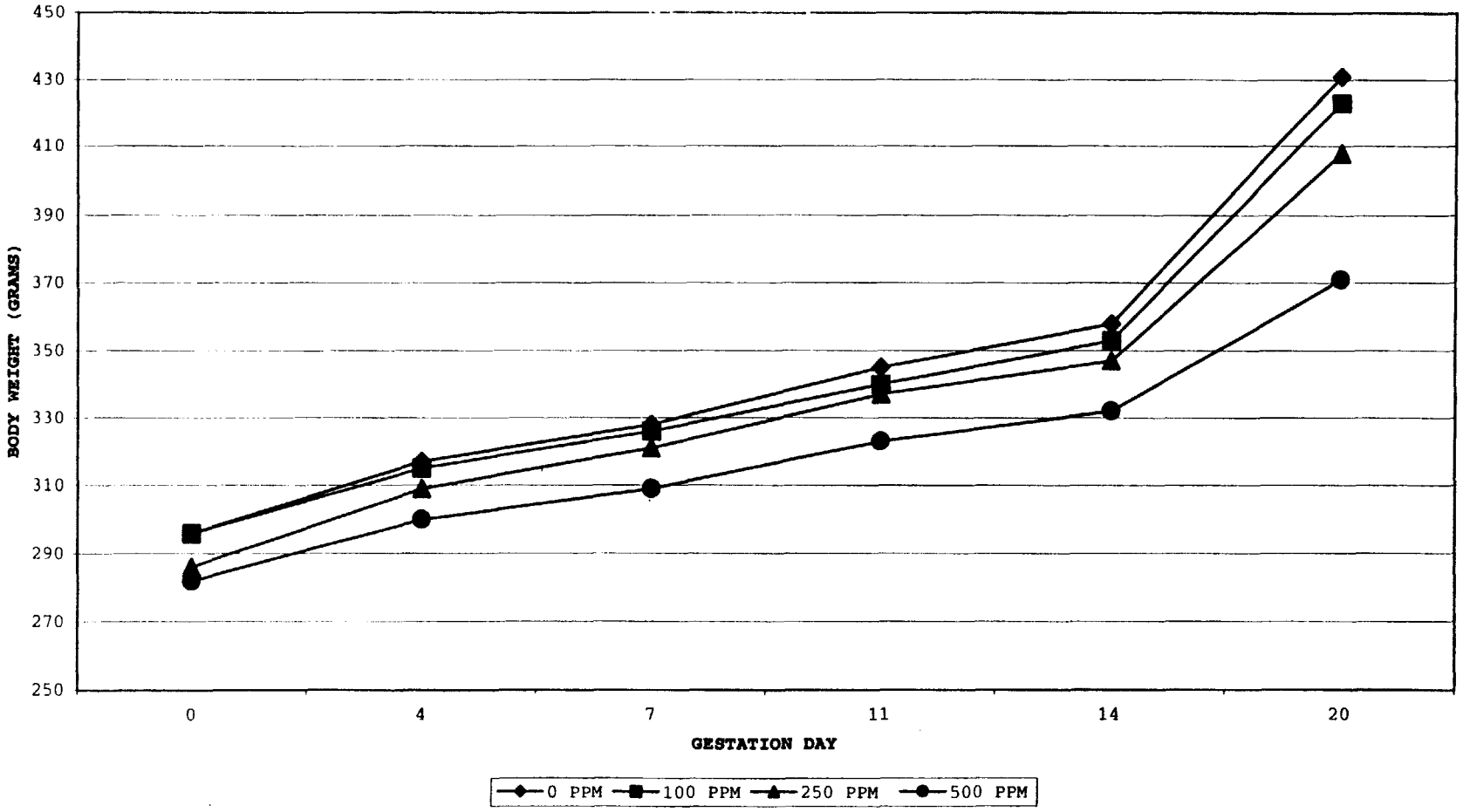
SPONSOR:BROMINATED SOLVENTS

FIGURE 3 (F0 FEMALES)
INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS
MEAN BODY WEIGHTS (GRAMS) DURING GESTATION



NOTE: There were no gravid females in the 750 mg/kg/day group, precluding evaluation of gestation body weight data.

TABLE 10 (F0)

PROJECT NO.:WIL-380001F INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS MEAN BODY WEIGHT CHANGES (GRAMS) DURING GESTATION

GROUP :	1	2	3	4	5
DAY 0- 4 MEAN	21.	19.	23.	18.	0.
S.D./N	4.4/23	5.7/24	6.0/21	22.4/13	0.0/ 0
DAY 4- 7 MEAN	11.	11.	13.	9.	0.
S.D./N	4.5/23	4.1/24	4.1/21	5.6/13	0.0/ 0
DAY 7- 11 MEAN	17.	14.	16.	14.	0.
S.D./N	5.5/23	9.5/24	5.2/21	9.5/13	0.0/ 0
DAY 11- 14 MEAN	13.	13.	9.	9.	0.
S.D./N	6.2/23	6.4/24	4.1/21	4.0/13	0.0/ 0
DAY 14- 20 MEAN	73.	70.	61.*	39.**	0.
S.D./N	11.3/23	13.8/24	19.0/21	21.6/13	0.0/ 0
DAY 0- 20 MEAN	135.	127.	122.	89.**	0.
S.D./N	17.7/23	17.7/24	24.5/21	26.4/13	0.0/ 0

1- 0 PPM 2- 100 PPM 3- 250 PPM 4- 500 PPM 5- 750 PPM

* = Significantly different from the control group at 0.05 using Dunnett's test
** = Significantly different from the control group at 0.01 using Dunnett's test
MEAN DIFFERENCES CALCULATED FROM INDIVIDUAL DIFFERENCES
NONGRAVID WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

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TABLE 11 (F0)

PROJECT NO.:WIL-380001F INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS PAGE 1

SPONSOR:BROMINATED SOLVENTS MEAN BODY WEIGHTS (GRAMS) DURING LACTATION

GROUP :		1	2	3	4	5
DAY 1	MEAN	326.	323.	318.	306.	0.
	S.D./N	20.2/23	27.1/24	24.0/21	19.1/11	0.0/ 0
DAY 4	MEAN	337.	334.	325.	312.*	0.
	S.D./N	18.6/23	28.4/24	26.0/21	17.5/11	0.0/ 0
DAY 7	MEAN	335.	338.	332.	314.	0.
	S.D./N	23.2/23	27.4/24	24.2/21	15.2/11	0.0/ 0
DAY 14	MEAN	358.	354.	346.	324.**	0.
	S.D./N	20.4/23	25.0/24	19.2/21	23.2/11	0.0/ 0
DAY 21	MEAN	339.	340.	334.	317.*	0.
	S.D./N	14.9/23	24.1/24	21.0/21	28.9/11	0.0/ 0

1- 0 PPM 2- 100 PPM 3- 250 PPM 4- 500 PPM 5- 750 PPM

* = Significantly different from the control group at 0.05 using Dunnett's test

** = Significantly different from the control group at 0.01 using Dunnett's test

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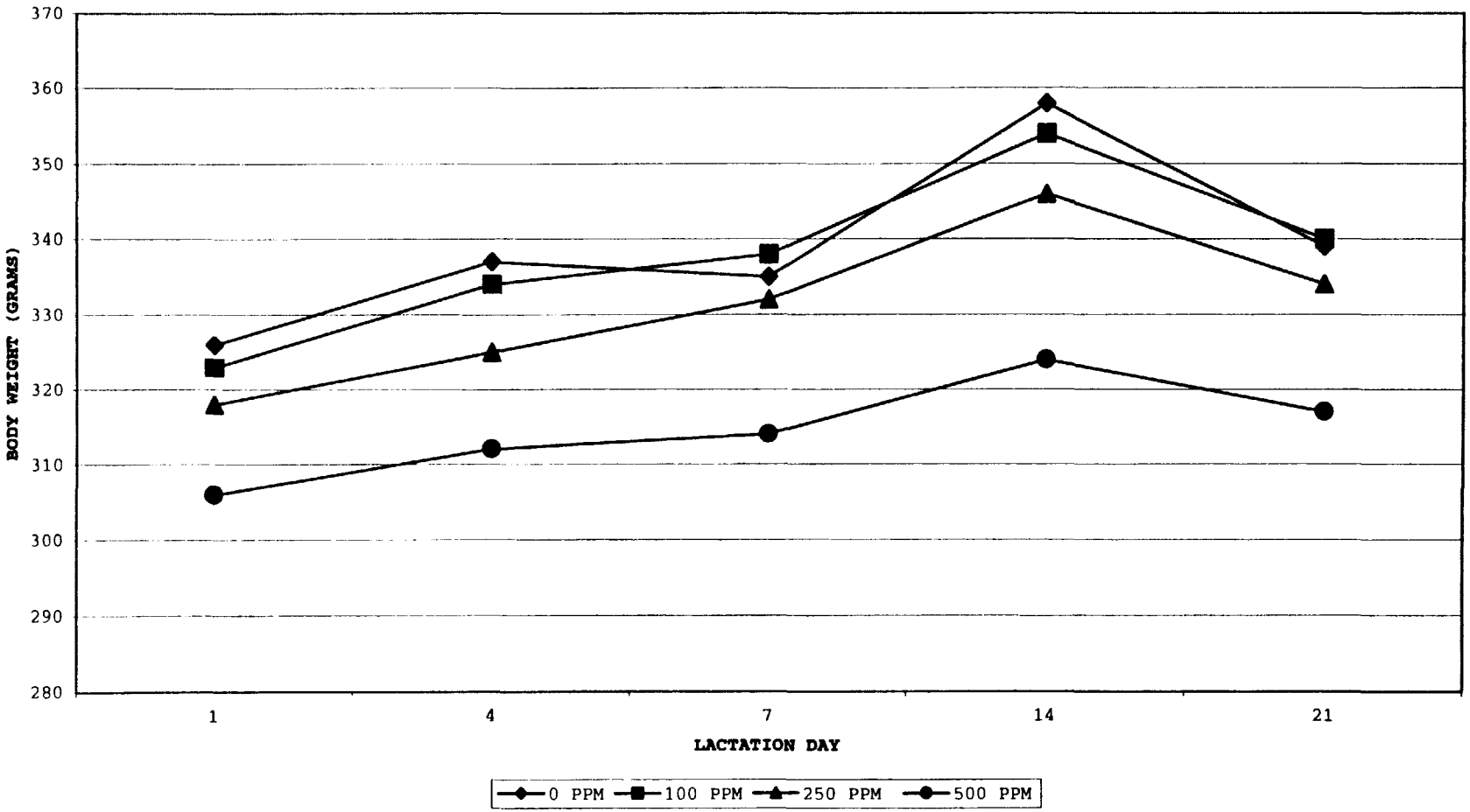
SPONSOR:BROMINATED SOLVENTS

FIGURE 4 (F0 FEMALES)
INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS
MEAN BODY WEIGHTS (GRAMS) DURING LACTATION



NOTE: There were no gravid females in the 750 ppm group, precluding evaluation of lactation body weight data.

TABLE 12 (F0)

PROJECT NO.:WIL-380001F INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS MEAN BODY WEIGHT CHANGES (GRAMS) DURING LACTATION

GROUP :	1	2	3	4	5
DAY 1- 4 MEAN	11.	11.	8.	6.	0.
S.D./N	10.7/23	7.3/24	15.4/21	8.5/11	0.0/ 0
DAY 4- 7 MEAN	-2.	4.	6.	2.	0.
S.D./N	17.1/23	13.5/24	16.6/21	7.9/11	0.0/ 0
DAY 7- 14 MEAN	24.	17.	14.	10.	0.
S.D./N	21.0/23	13.0/24	12.4/21	15.3/11	0.0/ 0
DAY 14- 21 MEAN	-20.	-14.	-12.	-7.	0.
S.D./N	11.6/23	10.5/24	13.2/21	20.2/11	0.0/ 0
DAY 1- 21 MEAN	13.	17.	16.	10.	0.
S.D./N	13.6/23	16.0/24	17.6/21	36.3/11	0.0/ 0

1- 0 PPM 2- 100 PPM 3- 250 PPM 4- 500 PPM 5- 750 PPM

None significantly different from control group

MEAN DIFFERENCES CALCULATED FROM INDIVIDUAL DIFFERENCES

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TABLE 13 (F0)

PROJECT NO.:WIL-380001M INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS WEEKLY FOOD CONSUMPTION (GRAMS/ANIMAL/DAY) - SUMMARY OF MEANS

		----- M A L E -----				
GROUP:		0 PPM	100 PPM	250 PPM	500 PPM	750 PPM
WEEK	0 TO 1					
	MEAN	24.	24.	24.	24.	23.
	S.D.	1.5	1.8	1.9	2.0	1.7
	N	25	25	25	25	25
	1 TO 2					
	MEAN	26.	25.	25.	25.	25.
	S.D.	2.1	1.7	2.3	2.5	1.9
	N	25	25	25	25	25
	2 TO 3					
	MEAN	27.	25.	26.	26.	27.
	S.D.	2.2	1.6	2.7	2.6	1.6
	N	25	25	25	25	25
	3 TO 4					
	MEAN	26.	25.	26.	26.	27.
	S.D.	2.2	1.9	2.9	2.8	1.8
	N	25	25	25	25	25
	4 TO 5					
	MEAN	26.	25.	26.	26.	26.
	S.D.	2.1	1.9	2.8	2.4	1.9
	N	25	25	25	25	25

None significantly different from control group

TABLE 13 (F0)

PROJECT NO.:WIL-380001M INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS WEEKLY FOOD CONSUMPTION (GRAMS/ANIMAL/DAY) - SUMMARY OF MEANS

		----- M A L E -----				
	GROUP:	0 PPM	100 PPM	250 PPM	500 PPM	750 PPM
WEEK	5 TO 6					
	MEAN	27.	26.	27.	27.	26.
	S.D.	2.3	2.2	2.5	2.5	1.8
	N	25	25	25	25	25
	6 TO 7					
	MEAN	27.	26.	26.	26.	25.
	S.D.	2.2	2.5	2.8	2.7	2.0
	N	25	25	25	25	25
	7 TO 8					
	MEAN	26.	26.	27.	26.	26.
	S.D.	2.1	2.0	2.7	2.6	2.2
	N	24	25	25	25	25
	8 TO 9					
	MEAN	26.	25.	25.	25.	25.
	S.D.	2.0	2.7	2.4	2.7	2.2
	N	25	25	25	25	25
	9 TO 10					
	MEAN	26.	25.	26.	26.	25.
	S.D.	2.5	2.7	2.5	2.7	1.9
	N	25	25	25	25	25

None significantly different from control group

TABLE 13 (F0)

PROJECT NO.:WIL-380001M INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS WEEKLY FOOD CONSUMPTION (GRAMS/ANIMAL/DAY) - SUMMARY OF MEANS

		----- M A L E -----				
GROUP:		0 PPM	100 PPM	250 PPM	500 PPM	750 PPM
WEEK 10 TO 13						
	MEAN	FOOD CONSUMPTION NOT RECORDED DURING THE BREEDING PERIOD				
	S.D.					
	N					
13 TO 14						
	MEAN	25.	23.	24.	25.	24.
	S.D.	2.5	2.7	2.8	3.6	2.0
	N	25	25	25	25	25
14 TO 15						
	MEAN	24.	23.	24.	24.	23.
	S.D.	2.5	2.8	2.8	2.7	1.6
	N	25	25	25	25	25

None significantly different from control group

TABLE 13 (F0)

PROJECT NO.:WIL-380001M INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS WEEKLY FOOD CONSUMPTION (GRAMS/ANIMAL/DAY) - SUMMARY OF MEANS

		----- M A L E -----				
	GROUP:	0 PPM	100 PPM	250 PPM	500 PPM	750 PPM
WEEK 15 TO 16						
	MEAN	25.	24.	23.	24.	23.
	S.D.	2.8	3.2	5.5	2.8	1.8
	N	25	25	25	25	25
16 TO 17						
	MEAN	25.	24.*	25.	24.	22.**
	S.D.	2.3	2.6	2.3	2.6	1.9
	N	25	25	25	25	25
17 TO 18						
	MEAN	24.	23.	23.	23.	22.**
	S.D.	2.5	1.9	2.6	2.6	2.0
	N	25	25	25	25	25
18 TO 19						
	MEAN	24.	23.	23.	22.**	22.*
	S.D.	2.3	2.2	2.7	2.4	2.1
	N	25	25	25	25	25

* = Significantly different from the control group at 0.05 using Dunnett's test

** = Significantly different from the control group at 0.01 using Dunnett's test

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TABLE 13 (F0)

PROJECT NO.:WIL-380001F INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS WEEKLY FOOD CONSUMPTION (GRAMS/ANIMAL/DAY) - SUMMARY OF MEANS

		----- F E M A L E -----				
	GROUP:	0 PPM	100 PPM	250 PPM	500 PPM	750 PPM
WEEK	0 TO 1					
	MEAN	18.	18.	18.	18.	18.
	S.D.	1.5	1.5	1.4	1.5	1.2
	N	25	25	25	25	25
	1 TO 2					
	MEAN	19.	19.	20.	20.	20.
	S.D.	1.5	1.6	1.8	1.6	1.3
	N	25	25	25	25	25
	2 TO 3					
	MEAN	20.	20.	19.	21.	21.
	S.D.	1.3	1.8	2.3	2.0	1.4
	N	25	25	25	25	25
	3 TO 4					
	MEAN	20.	21.	20.	21.**	21.
	S.D.	1.4	2.0	1.7	1.8	1.2
	N	25	25	25	25	25
	4 TO 5					
	MEAN	20.	20.	21.	21.	20.
	S.D.	1.6	1.5	1.8	2.0	1.1
	N	25	25	25	25	25

** = Significantly different from the control group at 0.01 using Dunnett's test

TABLE 13 (F0)

PROJECT NO.:WIL-380001F INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS WEEKLY FOOD CONSUMPTION (GRAMS/ANIMAL/DAY) - SUMMARY OF MEANS

		----- F E M A L E -----				
	GROUP:	0 PPM	100 PPM	250 PPM	500 PPM	750 PPM
WEEK	5 TO 6					
	MEAN	21.	21.	21.	21.	21.
	S.D.	1.6	1.6	2.1	2.0	1.1
	N	25	25	25	25	25
	6 TO 7					
	MEAN	21.	20.	21.	21.	20.
	S.D.	1.8	1.7	1.8	2.0	1.2
	N	25	25	25	25	25
	7 TO 8					
	MEAN	20.	20.	20.	20.	20.
	S.D.	1.9	2.0	1.9	2.0	1.3
	N	25	25	25	25	25
	8 TO 9					
	MEAN	19.	19.	19.	20.	20.
	S.D.	1.5	1.7	2.0	2.1	1.6
	N	25	25	25	25	25
	9 TO 10					
	MEAN	19.	19.	20.	20.	20.
	S.D.	1.5	1.6	1.8	1.9	1.5
	N	25	25	25	25	25

None significantly different from control group

TABLE 13 (F0)

PROJECT NO.:WIL-380001F INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS WEEKLY FOOD CONSUMPTION (GRAMS/ANIMAL/DAY) - SUMMARY OF MEANS

	----- F E M A L E -----				
GROUP:	0 PPM	100 PPM	250 PPM	500 PPM	750 PPM
WEEK 10 TO 13					
MEAN	FOOD CONSUMPTION NOT RECORDED DURING THE BREEDING PERIOD				
S.D.					
N					
13 TO 14					
MEAN	18.	A	A	18.	17.
S.D.	0.0			1.4	1.6
N	1			4	8
14 TO 15					
MEAN	17.	11.	16.	19.	16.
S.D.	0.0	0.0	3.6	2.6	1.6
N	1	1	3	5	10

None significantly different from control group

A = REFER TO F0 GESTATION/LACTATION FOOD CONSUMPTION TABLES

TABLE 13 (F0)

PROJECT NO.:WIL-380001F INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS WEEKLY FOOD CONSUMPTION (GRAMS/ANIMAL/DAY) - SUMMARY OF MEANS

		----- F E M A L E -----				
	GROUP:	0 PPM	100 PPM	250 PPM	500 PPM	750 PPM
WEEK	15 TO 16					
	MEAN	17.	19.	17.	18.	17.
	S.D.	0.0	0.0	2.0	2.3	1.9
	N	2	1	3	13	23
	16 TO 17					
	MEAN	18.	19.	19.	19.	18.
	S.D.	0.0	0.0	0.8	2.0	1.7
	N	2	1	4	13	25
	17 TO 18					
	MEAN	24.	23.	22.	21.	19.
	S.D.	4.6	2.2	5.2	2.7	1.5
	N	15	20	15	19	25
	18 TO 19					
	MEAN	23.	23.	23.	21.	19.**
	S.D.	2.4	2.6	3.1	2.5	1.6
	N	25	25	25	23	25

** = Significantly different from the control group at 0.01 using Dunnett's test

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TABLE 14 (F0)

PROJECT NO.:WIL-380001M — INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 1

SPONSOR:BROMINATED SOLVENTS — WEEKLY FOOD CONSUMPTION (GRAMS/KG/DAY) - SUMMARY OF MEANS

		----- M A L E -----				
	GROUP:	0 PPM	100 PPM	250 PPM	500 PPM	750 PPM
WEEK	0 TO 1					
	MEAN	105.	104.	105.	104.	101.
	S.D.	5.2	6.8	5.0	5.6	4.3
	N	25	25	25	25	25
	1 TO 2					
	MEAN	90.	88.	89.	91.	93.
	S.D.	5.5	4.6	4.6	5.2	4.7
	N	25	25	25	25	25
	2 TO 3					
	MEAN	80.	79.	80.	82.	85.**
	S.D.	5.0	3.9	4.6	4.8	3.3
	N	25	25	25	25	25
	3 TO 4					
	MEAN	72.	72.	73.	75.*	77.**
	S.D.	4.0	3.6	3.7	4.5	3.9
	N	25	25	25	25	25
	4 TO 5					
	MEAN	67.	68.	68.	70.**	71.**
	S.D.	3.5	3.1	2.9	3.7	4.3
	N	25	25	25	25	25

* = Significantly different from the control group at 0.05 using Dunnett's test

** = Significantly different from the control group at 0.01 using Dunnett's test

TABLE 14 (F0)

PROJECT NO.:WIL-380001M — INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 2

SPONSOR:BROMINATED SOLVENTS — WEEKLY FOOD CONSUMPTION (GRAMS/KG/DAY) - SUMMARY OF MEANS

		----- M A L E -----				
	GROUP:	0 PPM	100 PPM	250 PPM	500 PPM	750 PPM
WEEK	5 TO 6					
	MEAN	66.	66.	67.	68.	70.**
	S.D.	4.1	3.8	2.5	3.4	3.9
	N	25	25	25	25	25
	6 TO 7					
	MEAN	62.	63.	63.	63.	65.
	S.D.	3.1	3.8	2.5	3.4	3.6
	N	25	25	25	25	25
	7 TO 8					
	MEAN	59.	61.	61.	61.	64.**
	S.D.	2.6	2.4	3.7	3.3	4.4
	N	24	25	25	25	25
	8 TO 9					
	MEAN	57.	56.	57.	58.	60.**
	S.D.	2.4	3.6	2.7	3.5	3.7
	N	25	25	25	25	25
	9 TO 10					
	MEAN	54.	55.	56.	57.*	58.**
	S.D.	4.5	3.7	2.6	3.0	3.3
	N	25	25	25	25	25

* = Significantly different from the control group at 0.05 using Dunnett's test

** = Significantly different from the control group at 0.01 using Dunnett's test

TABLE 14 (F0)

PROJECT NO.:WIL-380001M — INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 3

SPONSOR:BROMINATED SOLVENTS — WEEKLY FOOD CONSUMPTION (GRAMS/KG/DAY) - SUMMARY OF MEANS

		----- M A L E -----				
GROUP:		0 PPM	100 PPM	250 PPM	500 PPM	750 PPM
WEEK 10 TO 13						
	MEAN	FOOD CONSUMPTION NOT RECORDED DURING THE BREEDING PERIOD				
	S.D.					
	N					
13 TO 14						
	MEAN	48.	47.	48.	50.*	52.**
	S.D.	2.9	3.1	2.0	4.4	2.9
	N	25	25	25	25	25
14 TO 15						
	MEAN	46.	46.	47.	48.	50.**
	S.D.	3.0	2.5	3.6	2.5	3.4
	N	25	25	25	25	25

* = Significantly different from the control group at 0.05 using Dunnett's test

** = Significantly different from the control group at 0.01 using Dunnett's test

TABLE 14 (F0)

PROJECT NO.:WIL-380001M — INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 4

SPONSOR:BROMINATED SOLVENTS — WEEKLY FOOD CONSUMPTION (GRAMS/KG/DAY) - SUMMARY OF MEANS

	----- M A L E -----				
GROUP:	0 PPM	100 PPM	250 PPM	500 PPM	750 PPM
WEEK 15 TO 16					
MEAN	48.	47.	45.	49.	49.
S.D.	4.4	4.3	9.3	2.6	2.5
N	25	25	25	25	25
16 TO 17					
MEAN	47.	46.	48.	47.	47.
S.D.	2.8	3.3	5.5	2.4	2.3
N	25	25	25	25	25
17 TO 18					
MEAN	44.	44.	44.	44.	46.
S.D.	2.9	2.9	5.0	2.7	2.9
N	25	25	25	25	25
18 TO 19					
MEAN	44.	44.	43.	43.	46.
S.D.	3.7	4.1	2.9	2.8	3.4
N	25	25	25	25	25

None significantly different from control group

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TABLE 14 (F0)

PROJECT NO.:WIL-380001F — INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 1

SPONSOR:BROMINATED SOLVENTS — WEEKLY FOOD CONSUMPTION (GRAMS/KG/DAY) - SUMMARY OF MEANS

		----- F E M A L E -----				
	GROUP:	0 PPM	100 PPM	250 PPM	500 PPM	750 PPM
WEEK	0 TO 1					
	MEAN	104.	105.	105.	106.	102.
	S.D.	6.3	6.3	5.4	7.6	6.2
	N	25	25	25	25	25
	1 TO 2					
	MEAN	96.	98.	100.	103.**	102.**
	S.D.	5.5	5.7	6.0	6.8	5.5
	N	25	25	25	25	25
	2 TO 3					
	MEAN	90.	92.	90.	96.**	97.**
	S.D.	4.3	6.5	10.4	6.8	4.5
	N	25	25	25	25	25
	3 TO 4					
	MEAN	84.	86.	87.	91.**	91.**
	S.D.	4.9	5.0	6.2	6.1	5.3
	N	25	25	25	25	25
	4 TO 5					
	MEAN	81.	80.	84.*	86.**	84.
	S.D.	4.1	4.3	5.8	5.5	4.6
	N	25	25	25	25	25

* = Significantly different from the control group at 0.05 using Dunnett's test

** = Significantly different from the control group at 0.01 using Dunnett's test

TABLE 14 (F0)

PROJECT NO.:WIL-380001F — INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 2

SPONSOR:BROMINATED SOLVENTS — WEEKLY FOOD CONSUMPTION (GRAMS/KG/DAY) - SUMMARY OF MEANS

		----- F E M A L E -----				
	GROUP:	0 PPM	100 PPM	250 PPM	500 PPM	750 PPM
WEEK	5 TO 6					
	MEAN	78.	79.	83.**	82.*	82.*
	S.D.	4.2	4.2	5.6	6.1	4.9
	N	25	25	25	25	25
	6 TO 7					
	MEAN	76.	75.	77.	78.	78.
	S.D.	4.7	3.6	4.7	5.3	6.1
	N	25	25	25	25	25
	7 TO 8					
	MEAN	73.	73.	74.	75.	75.
	S.D.	5.3	3.9	4.7	5.1	5.9
	N	25	25	25	25	25
	8 TO 9					
	MEAN	67.	68.	69.	72.**	72.**
	S.D.	4.0	4.4	5.2	5.3	6.7
	N	25	25	25	25	25
	9 TO 10					
	MEAN	66.	66.	68.	70.*	71.**
	S.D.	4.0	4.5	4.0	5.2	6.0
	N	25	25	25	25	25

* = Significantly different from the control group at 0.05 using Dunnett's test

** = Significantly different from the control group at 0.01 using Dunnett's test

TABLE 14 (F0)

PROJECT NO.:WIL-380001F — INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 3

SPONSOR:BROMINATED SOLVENTS — WEEKLY FOOD CONSUMPTION (GRAMS/KG/DAY) - SUMMARY OF MEANS

		----- F E M A L E -----				
	GROUP:	0 PPM	100 PPM	250 PPM	500 PPM	750 PPM
WEEK 10 TO 13						
	MEAN	FOOD CONSUMPTION NOT RECORDED DURING THE BREEDING PERIOD				
	S.D.					
	N					
13 TO 14						
	MEAN	50.	A	A	55.	56.
	S.D.	0.0			8.9	7.2
	N	1			4	8
14 TO 15						
	MEAN	47.	38.	51.	58.	54.
	S.D.	0.0	0.0	13.3	7.2	5.7
	N	1	1	3	5	10

None significantly different from control group

A = REFER TO F0 GESTATION/LACTATION FOOD CONSUMPTION TABLES

TABLE 14 (F0)

PROJECT NO.:WIL-380001F — INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 4

SPONSOR:BROMINATED SOLVENTS — WEEKLY FOOD CONSUMPTION (GRAMS/KG/DAY) - SUMMARY OF MEANS

	----- F E M A L E -----				
GROUP:	0 PPM	100 PPM	250 PPM	500 PPM	750 PPM
WEEK 15 TO 16					
MEAN	50.	64.	55.	54.	56.
S.D.	2.8	0.0	4.4	5.5	6.6
N	2	1	3	13	23
16 TO 17					
MEAN	53.	61.	59.	57.	59.
S.D.	3.5	0.0	5.4	4.1	5.4
N	2	1	4	13	25
17 TO 18					
MEAN	68.	71.	69.	62.	60.
S.D.	7.7	5.7	11.3	8.5	4.8
N	10	14	12	16	25
18 TO 19					
MEAN	70.	71.	71.	65.	59.**
S.D.	7.9	6.0	8.8	9.4	5.4
N	25	25	25	23	25

** = Significantly different from the control group at 0.01 using Dunnett's test

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TABLE 15 (F0)

PROJECT NO.:WIL-380001M — INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 1

SPONSOR:BROMINATED SOLVENTS

SUMMARY OF FOOD EFFICIENCY

(BODY WEIGHT GAINED AS PER CENT OF FEED CONSUMED)

		----- M A L E -----				
GROUP:		0 PPM	100 PPM	250 PPM	500 PPM	750 PPM
WEEK	0 TO 1					
	MEAN	33.1	32.1	32.6	31.3	29.5**
	S.D.	3.28	3.01	3.57	3.55	3.35
	N	25	25	25	25	25
	1 TO 2					
	MEAN	27.9	26.0	24.7*	26.6	25.1*
	S.D.	3.36	2.19	5.67	3.85	2.68
	N	25	25	25	25	25
	2 TO 3					
	MEAN	20.9	19.5	20.6	19.7	18.2
	S.D.	3.76	2.61	5.42	2.80	4.15
	N	25	25	25	25	25
	3 TO 4					
	MEAN	15.1	14.4	14.2	14.0	13.5
	S.D.	3.65	2.71	2.59	3.81	3.29
	N	25	25	25	25	25
	4 TO 5					
	MEAN	13.0	12.5	12.3	11.4	9.6**
	S.D.	3.40	2.54	2.18	2.88	3.00
	N	25	25	25	25	25

* = Significantly different from the control group at 0.05 using Dunnett's test

** = Significantly different from the control group at 0.01 using Dunnett's test

TABLE 15 (F0)

PROJECT NO.:WIL-380001M — INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 2

SPONSOR:BROMINATED SOLVENTS

SUMMARY OF FOOD EFFICIENCY

(BODY WEIGHT GAINED AS PER CENT OF FEED CONSUMED)

		----- M A L E -----				
GROUP:		0 PPM	100 PPM	250 PPM	500 PPM	750 PPM
WEEK 5 TO 6						
	MEAN	9.7	9.9	10.1	10.3	8.0
	S.D.	2.88	3.42	3.27	2.90	2.79
	N	25	25	25	25	25
6 TO 7						
	MEAN	8.8	9.5	9.6	7.9	7.8
	S.D.	2.57	3.31	3.56	3.82	2.80
	N	25	25	25	25	25
7 TO 8						
	MEAN	9.0	9.4	7.3	6.7*	6.2**
	S.D.	3.63	3.43	3.16	2.70	2.19
	N	24	25	25	25	25
8 TO 9						
	MEAN	7.9	7.5	7.7	7.9	7.1
	S.D.	3.11	4.65	2.93	2.85	1.73
	N	25	25	25	25	25
9 TO 10						
	MEAN	5.0	7.1	7.1	4.7	3.9
	S.D.	4.14	3.97	2.82	3.18	2.42
	N	25	25	25	25	25

* = Significantly different from the control group at 0.05 using Dunnett's test

** = Significantly different from the control group at 0.01 using Dunnett's test

TABLE 15 (F0)

PROJECT NO.:WIL-380001M INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS

SUMMARY OF FOOD EFFICIENCY

(BODY WEIGHT GAINED AS PER CENT OF FEED CONSUMED)

	----- M A L E -----				
GROUP:	0 PPM	100 PPM	250 PPM	500 PPM	750 PPM
WEEK 10 TO 13					
MEAN	FOOD CONSUMPTION NOT RECORDED DURING THE BREEDING PERIOD				
S.D.					
N					
13 TO 14					
MEAN	1.3	0.0	2.8	4.0	5.1*
S.D.	5.06	7.19	5.36	2.72	2.81
N	25	25	25	25	25
14 TO 15					
MEAN	2.8	0.7	0.4	-0.3	2.1
S.D.	4.76	7.11	4.42	4.68	2.56
N	25	25	25	25	25

* = Significantly different from the control group at 0.05 using Dunnett's test

TABLE 15 (F0)

PROJECT NO.:WIL-380001M — INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 4

SPONSOR:BROMINATED SOLVENTS

SUMMARY OF FOOD EFFICIENCY

(BODY WEIGHT GAINED AS PER CENT OF FEED CONSUMED)

		----- M A L E -----				
	GROUP:	0 PPM	100 PPM	250 PPM	500 PPM	750 PPM
WEEK 15 TO 16						
	MEAN	8.5	9.9	-0.4	9.5	5.2
	S.D.	11.57	7.09	41.63	3.62	3.05
	N	25	25	25	25	25
16 TO 17						
	MEAN	5.0	4.3	4.3	3.1	1.3*
	S.D.	3.61	4.08	6.68	3.04	3.43
	N	25	25	25	25	25
17 TO 18						
	MEAN	1.1	1.0	3.4	1.6	1.8
	S.D.	7.01	5.18	7.99	3.94	3.58
	N	25	25	25	25	25
18 TO 19						
	MEAN	2.0	3.1	2.1	1.0	2.6
	S.D.	4.98	4.01	5.37	3.23	3.14
	N	25	25	25	25	25

* = Significantly different from the control group at 0.05 using Dunnett's test

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TABLE 15 (F0)

PROJECT NO.:WIL-380001F — INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 1

SPONSOR:BROMINATED SOLVENTS

SUMMARY OF FOOD EFFICIENCY

(BODY WEIGHT GAINED AS PER CENT OF FEED CONSUMED)

		----- F E M A L E -----				
	GROUP:	0 PPM	100 PPM	250 PPM	500 PPM	750 PPM
WEEK	0 TO 1					
	MEAN	22.1	20.4	19.6*	19.8	19.0**
	S.D.	3.60	3.12	3.87	3.38	3.14
	N	25	25	25	25	25
	1 TO 2					
	MEAN	17.9	15.7	15.9	15.8	16.9
	S.D.	3.37	5.21	4.49	3.39	3.27
	N	25	25	25	25	25
	2 TO 3					
	MEAN	13.4	16.1	11.9	13.6	10.7
	S.D.	4.10	4.46	7.26	4.04	3.90
	N	25	25	25	25	25
	3 TO 4					
	MEAN	9.5	9.6	10.3	8.8	8.7
	S.D.	3.01	4.91	4.00	4.38	3.20
	N	25	25	25	25	25
	4 TO 5					
	MEAN	10.1	8.6	9.7	8.6	6.4**
	S.D.	2.34	4.46	4.23	4.02	4.30
	N	25	25	25	25	25

* = Significantly different from the control group at 0.05 using Dunnett's test

** = Significantly different from the control group at 0.01 using Dunnett's test

TABLE 15 (F0)

PROJECT NO.:WIL-380001F — INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 2

SPONSOR:BROMINATED SOLVENTS

SUMMARY OF FOOD EFFICIENCY

(BODY WEIGHT GAINED AS PER CENT OF FEED CONSUMED)

		----- F E M A L E -----				
	GROUP:	0 PPM	100 PPM	250 PPM	500 PPM	750 PPM
WEEK	5 TO 6					
	MEAN	6.8	7.7	5.2	4.9	6.3
	S.D.	3.39	4.24	3.88	3.61	4.22
	N	25	25	25	25	25
	6 TO 7					
	MEAN	5.5	5.4	5.8	5.2	4.7
	S.D.	3.87	3.12	4.28	3.19	3.78
	N	25	25	25	25	25
	7 TO 8					
	MEAN	5.1	5.5	6.3	4.3	4.2
	S.D.	4.26	3.83	4.51	4.55	3.58
	N	25	25	25	25	25
	8 TO 9					
	MEAN	5.1	3.5	3.2	5.3	4.8
	S.D.	3.85	3.30	5.18	4.39	3.52
	N	25	25	25	25	25
	9 TO 10					
	MEAN	2.1	2.0	4.0	3.4	3.3
	S.D.	5.97	6.26	5.05	4.47	4.41
	N	25	25	25	25	25

None significantly different from control group

TABLE 15 (F0)

PROJECT NO.:WIL-380001F — INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 3

SPONSOR:BROMINATED SOLVENTS

SUMMARY OF FOOD EFFICIENCY

(BODY WEIGHT GAINED AS PER CENT OF FEED CONSUMED)

	----- F E M A L E -----				
GROUP:	0 PPM	100 PPM	250 PPM	500 PPM	750 PPM
WEEK 10 TO 13					
MEAN	FOOD CONSUMPTION NOT RECORDED DURING THE BREEDING PERIOD				
S.D.					
N					
13 TO 14					
MEAN	7.1	A	A	0.1	4.0
S.D.	0.00			12.23	6.45
N	1			4	8
14 TO 15					
MEAN	-5.9	-24.7	0.1	7.0	-3.3
S.D.	0.00	0.00	7.71	6.54	7.10
N	1	1	3	5	10

None significantly different from control group

A = REFER TO F0 GESTATION/LACTATION FOOD CONSUMPTION TABLES

TABLE 15 (F0)

PROJECT NO.:WIL-380001F INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS

SUMMARY OF FOOD EFFICIENCY

(BODY WEIGHT GAINED AS PER CENT OF FEED CONSUMED)

		----- F E M A L E -----				
GROUP:		0 PPM	100 PPM	250 PPM	500 PPM	750 PPM
WEEK 15 TO 16						
	MEAN	5.9	18.8	4.1	2.8	6.4
	S.D.	3.54	0.00	17.07	7.96	6.39
	N	2	1	3	13	23
16 TO 17						
	MEAN	1.2	6.8	5.4	4.0	4.2
	S.D.	6.22	0.00	7.37	6.87	4.51
	N	2	1	4	13	25
17 TO 18						
	MEAN	0.7	-6.0	1.4	5.0	3.9
	S.D.	10.79	8.39	9.87	5.91	4.09
	N	10	14	12	16	25
18 TO 19						
	MEAN	6.6	6.8	6.8	4.6	2.2*
	S.D.	4.60	6.33	5.31	5.98	4.44
	N	25	25	25	23	25

* = Significantly different from the control group at 0.05 using Dunnett's test

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TABLE 16 (F0)

PROJECT NO.:WIL-380001F — INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 1

SPONSOR:BROMINATED SOLVENTS — MEAN FOOD CONSUMPTION DURING GESTATION (GRAMS/ANIMAL/DAY)

GROUP :	1	2	3	4	5
DAY 0- 4 MEAN	20.	20.	20.	18.	0.
S.D./N	1.5/23	2.4/24	1.6/21	4.7/13	0.0/ 0
DAY 4- 7 MEAN	23.	22.	22.	20.	0.
S.D./N	1.9/23	2.8/24	1.7/21	5.5/13	0.0/ 0
DAY 7- 11 MEAN	23.	22.	23.	22.	0.
S.D./N	2.1/23	2.6/24	2.1/21	2.2/13	0.0/ 0
DAY 11- 14 MEAN	23.	23.	23.	21.	0.
S.D./N	1.4/23	2.2/24	2.4/21	3.9/13	0.0/ 0
DAY 14- 20 MEAN	24.	23.	22.*	22.	0.
S.D./N	1.6/23	2.4/24	2.1/21	2.8/13	0.0/ 0
DAY 0- 20 MEAN	23.	22.	22.	21.**	0.
S.D./N	1.2/23	2.1/24	1.8/21	2.3/13	0.0/ 0

1- 0 PPM 2- 100 PPM 3- 250 PPM 4- 500 PPM 5- 750 PPM

* = Significantly different from the control group at 0.05 using Dunnett's test

** = Significantly different from the control group at 0.01 using Dunnett's test

NONGRAVID WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

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09/29/2000

TABLE 17 (F0)

PROJECT NO.:WIL-380001F — INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 1

SPONSOR:BROMINATED SOLVENTS — MEAN FOOD CONSUMPTION DURING GESTATION (GRAMS/KG/DAY)

GROUP :	1	2	3	4	5
DAY 0- 4 MEAN	66.	64.	66.	62.	0.
S.D./N	5.0/23	6.6/24	4.6/21	17.0/13	0.0/ 0
DAY 4- 7 MEAN	71.	69.	70.	65.	0.
S.D./N	6.0/23	6.1/24	4.1/21	17.4/13	0.0/ 0
DAY 7- 11 MEAN	68.	67.	69.	70.	0.
S.D./N	5.4/23	4.8/24	4.4/21	6.5/13	0.0/ 0
DAY 11- 14 MEAN	67.	65.	67.	65.	0.
S.D./N	3.6/23	4.7/24	6.4/21	12.1/13	0.0/ 0
DAY 14- 20 MEAN	61.	60.	59.	64.	0.
S.D./N	4.1/23	4.6/24	4.2/21	9.0/13	0.0/ 0
DAY 0- 20 MEAN	66.	64.	65.	65.	0.
S.D./N	3.0/23	3.6/24	4.3/21	7.5/13	0.0/ 0

1- 0 PPM 2- 100 PPM 3- 250 PPM 4- 500 PPM 5- 750 PPM

None significantly different from control group

NONGRAVID WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

PGFWSUv4.02
09/29/2000

TABLE 18 (F0)

PROJECT NO.:WIL-380001F — INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 1

SPONSOR:BROMINATED SOLVENTS

SUMMARY OF FOOD EFFICIENCY DURING GESTATION

(BODY WEIGHT GAINED AS PER CENT OF FEED CONSUMED)

GROUP :	1	2	3	4	5
DAY 0- 4 MEAN	25.7	24.6	28.9	3.9	0.0
S.D./N	4.64/23	6.11/24	6.82/21	99.18/13	0.00/ 0
DAY 4- 7 MEAN	16.8	16.0	19.0	25.5	0.0
S.D./N	6.98/23	5.14/24	5.33/21	47.49/13	0.00/ 0
DAY 7- 11 MEAN	18.2	15.6	17.6	15.9	0.0
S.D./N	5.47/23	10.86/24	5.35/21	10.63/13	0.00/ 0
DAY 11- 14 MEAN	18.5	19.3	13.8	13.7	0.0
S.D./N	8.18/23	10.34/24	6.39/21	5.44/13	0.00/ 0
DAY 14- 20 MEAN	50.6	50.4	45.7	29.2**	0.0
S.D./N	7.10/23	9.85/24	13.44/21	16.06/13	0.00/ 0
DAY 0- 20 MEAN	29.7	28.9	28.0	21.2**	0.0
S.D./N	3.48/23	3.85/24	5.16/21	5.65/13	0.00/ 0

1- 0 PPM 2- 100 PPM 3- 250 PPM 4- 500 PPM 5- 750 PPM

** = Significantly different from the control group at 0.01 using Dunnett's test

NONGRAVID WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

PGFWSUv4.02
09/29/2000

TABLE 19 (F0)

PROJECT NO.:WIL-380001F — INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 1

SPONSOR:BROMINATED SOLVENTS — MEAN FOOD CONSUMPTION DURING LACTATION (GRAMS/ANIMAL/DAY)

GROUP :	1	2	3	4	5
DAY 1- 4 MEAN	33.	30.	28.	23.**	0.
S.D./N	7.4/23	6.7/24	7.4/21	4.0/11	0.0/ 0
DAY 4- 7 MEAN	36.	36.	33.*	28.**	0.
S.D./N	4.1/23	3.9/24	4.0/21	4.9/11	0.0/ 0
DAY 7- 14 MEAN	47.	44.	42.**	36.**	0.
S.D./N	4.3/23	3.2/24	4.0/21	6.9/11	0.0/ 0
DAY 14- 21 MEAN	58.	56.	54.	46.**	0.
S.D./N	5.3/23	4.8/24	6.0/20	6.4/11	0.0/ 0
DAY 1- 21 MEAN	47.	45.	43.**	36.**	0.
S.D./N	3.7/23	3.6/24	4.4/20	5.5/11	0.0/ 0

1- 0 PPM 2- 100 PPM 3- 250 PPM 4- 500 PPM 5- 750 PPM

* = Significantly different from the control group at 0.05 using Dunnett's test

** = Significantly different from the control group at 0.01 using Dunnett's test

PLFWSUv4.02
08/16/2000

TABLE 20 (F0)

PROJECT NO.:WIL-380001F INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS MEAN FOOD CONSUMPTION DURING LACTATION (GRAMS/KG/DAY)

GROUP :	1	2	3	4	5
DAY 1- 4 MEAN	99.	92.	89.	75.**	0.
S.D./N	22.2/23	19.5/24	24.2/21	14.9/11	0.0/ 0
DAY 4- 7 MEAN	108.	108.	100.	88.**	0.
S.D./N	12.7/23	13.4/24	13.2/21	16.9/11	0.0/ 0
DAY 7- 14 MEAN	135.	127.	123.*	112.**	0.
S.D./N	12.5/23	11.0/24	13.6/21	20.1/11	0.0/ 0
DAY 14- 21 MEAN	165.	161.	159.	144.**	0.
S.D./N	14.2/23	16.5/24	14.4/20	17.7/11	0.0/ 0
DAY 1- 21 MEAN	139.	133.	129.*	115.**	0.
S.D./N	11.4/23	12.3/24	12.9/20	17.8/11	0.0/ 0

1- 0 PPM 2- 100 PPM 3- 250 PPM 4- 500 PPM 5- 750 PPM

* = Significantly different from the control group at 0.05 using Dunnett's test

** = Significantly different from the control group at 0.01 using Dunnett's test

PLFWSUv4.02
08/16/2000

TABLE 21 (F0)

PROJECT NO.:WIL-380001F INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS PAGE 1

SPONSOR:BROMINATED SOLVENTS SUMMARY OF FOOD EFFICIENCY DURING LACTATION

(BODY WEIGHT GAINED AS PER CENT OF FEED CONSUMED)

GROUP :	1	2	3	4	5
DAY 1- 4 MEAN	9.8	11.9	8.7	7.4	0.0
S.D./N	17.40/23	7.87/24	21.91/21	10.78/11	0.00/ 0
DAY 4- 7 MEAN	-2.6	3.5	6.2	1.2	0.0
S.D./N	15.96/23	12.73/24	15.78/21	8.73/11	0.00/ 0
DAY 7- 14 MEAN	7.0	5.4	4.7	3.1	0.0
S.D./N	6.48/23	4.09/24	3.95/21	7.45/11	0.00/ 0
DAY 14- 21 MEAN	-4.9	-3.6	-3.2	-2.4	0.0
S.D./N	3.13/23	2.73/24	3.57/20	7.30/11	0.00/ 0
DAY 1- 21 MEAN	1.4	2.0	1.8	1.1	0.0
S.D./N	1.47/23	1.85/24	2.04/20	5.03/11	0.00/ 0

1- 0 PPM 2- 100 PPM 3- 250 PPM 4- 500 PPM 5- 750 PPM

None significantly different from control group

PLFWSUv4.02
08/16/2000

TABLE 22 (F0)

PROJECT NO.:WIL-380001F INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS PAGE 1

SPONSOR:BROMINATED SOLVENTS GESTATION LENGTH SUMMARY

DOSE GROUP :		1	2	3	4	5
NO. OF ANIMALS		23	24	22	11	0
GESTATION LENGTH (DAYS)	MEAN	22.0	21.9	22.0	22.2	0.0
	S.D.	0.30	0.58	0.38	0.40	0.00

1- 0 PPM 2- 100 PPM 3- 250 PPM 4- 500 PPM 5- 750 PPM

None significantly different from control group

PGLv4.02
08/16/2000

TABLE 23 (F0 MALES - SCHEDULED NECROPSY)

PROJECT NO.:WIL-380001M — AN INHAL. 2-GEN. REPRO. TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 1

SPONSOR:BROMINATED SOLVENTS

TESTICULAR AND EPIDIDYMAL SPERM NUMBERS

(NO. OF SPERM IN MILLIONS/GRAM OF TISSUE) - SUMMARY OF MEANS

HTM-IVOS

	----- M A L E -----				
GROUP:	0 PPM	100 PPM	250 PPM	500 PPM	750 PPM
LEFT TESTIS					
MEAN	84.8	81.7	87.0	87.9	87.4
S.D.	14.97	25.14	19.93	20.95	23.42
N	25	25	25	25	25
LEFT EPIDIDYMIS					
MEAN	471.9	459.4	480.1	429.3	369.6**
S.D.	81.11	101.94	80.21	101.46	90.66
N	25	25	25	25	25

** = Significantly different from the control group at 0.05 using Dunnett's test

MANUALv1.0
05/01/2000

TABLE 24 (F0 MALES - SCHEDULED NECROPSY)

PROJECT NO.:WIL-380001M — AN INHAL. 2-GEN. REPRO. TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 1

SPONSOR:BROMINATED SOLVENTS

SPERM PRODUCTION RATE

(NO. OF SPERM IN MILLIONS/GRAM OF TISSUE/DAY) - SUMMARY OF MEANS

HTM-IVOS

	----- M A L E -----				
GROUP:	0 PPM	100 PPM	250 PPM	500 PPM	750 PPM
LEFT TESTIS					
MEAN	13.9	13.4	14.3	14.4	14.3
S.D.	2.45	4.12	3.27	3.42	3.84
N	25	25	25	25	25

None significantly different from the control group

$$\text{A: SPERM PRODUCTION RATE} = \frac{\text{NUMBER OF SPERM PER GRAM OF TISSUE}}{\text{6.1 DAYS}}$$

6.1 DAYS = THE RATE OF TURNOVER OF THE GERMINAL EPITHELIUM

MANUALv1.0
05/01/2000

TABLE 25 (F0 MALES - SCHEDULED NECROPSY)

PROJECT NO.:WIL-380001M — INHALATION 2G REPODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 1

SPONSOR:BROMINATED SOLVENTS

SPERM MOTILITY ASSESSMENT (PERCENTAGE)

SUMMARY OF MEANS

HTM-IVOS

	----- M A L E -----				
GROUP:	0 PPM	100 PPM	250 PPM	500 PPM	750 PPM
MOTILE SPERM					
MEAN	86.8	88.8	83.4	71.9**	53.2**
S.D.	11.90	7.22	10.41	9.27	19.59
N	25	25	25	23	15

** = Significantly from the control group at 0.01 using Kruskal-Wallis test

MANUALv1.0
03/22/2000

TABLE 26 (F0 MALES - SCHEDULED NECROPSY)

PROJECT NO.:WIL-380001M — INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 1

SPONSOR:BROMINATED SOLVENTS — SPERM MORPHOLOGY DIFFERENTIAL COUNT (PERCENTAGE)

SUMMARY OF MEANS

	----- M A L E -----				
GROUP:	0 PPM	100 PPM	250 PPM	500 PPM	750 PPM
NORMAL					
MEAN	99.7	99.7	99.3*	98.2**	90.6**
S.D.	0.60	0.52	0.83	2.59	8.74
N	25	25	25	24	24
NORMALLY SHAPED HEAD SEPARATED FROM FLAGELLUM					
MEAN	0.2	0.2	0.4	1.4	4.8
S.D.	0.46	0.36	0.54	2.15	4.24
N	25	25	25	24	24
HEAD ABSENT WITH NORMAL FLAGELLUM					
MEAN	0.1	0.1	0.3	0.5	4.6
S.D.	0.22	0.24	0.46	0.77	5.91
N	25	25	25	24	24
HEAD ABSENT WITH ABNORMAL FLAGELLUM					
MEAN	0.0	0.0	0.0	0.0	0.0
S.D.	0.00	0.00	0.00	0.00	0.00
N	25	25	25	24	24
MISSHAPEN HEAD WITH NORMAL FLAGELLUM					
MEAN	0.0	0.0	0.0	0.0	0.0
S.D.	0.00	0.00	0.00	0.00	0.00
N	25	25	25	24	24
MISSHAPEN HEAD WITH ABNORMAL FLAGELLUM					
MEAN	0.0	0.0	0.0	0.0	0.0
S.D.	0.00	0.00	0.00	0.00	0.00
N	25	25	25	24	24

* = Percent normal sperm significantly different from the control group at 0.05 using Kruskal-Wallis test

** = Percent normal sperm significantly different from the control group at 0.01 using Kruskal-Wallis test

TABLE 26 (F0 MALES - SCHEDULED NECROPSY)

PROJECT NO.:WIL-380001M — INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 2

SPONSOR:BROMINATED SOLVENTS

SPERM MORPHOLOGY DIFFERENTIAL COUNT (PERCENTAGE)

SUMMARY OF MEANS

	----- M A L E -----				
GROUP:	0 PPM	100 PPM	250 PPM	500 PPM	750 PPM
DEGENERATIVE FLAGELLAR DEFECTS WITH NORMAL HEAD					
MEAN	0.0	0.0	0.0	0.0	0.0
S.D.	0.00	0.00	0.00	0.00	0.00
N	25	25	25	24	24
OTHER FLAGELLAR DEFECTS WITH NORMAL HEAD					
MEAN	0.0	0.0	0.0	0.0	0.0
S.D.	0.00	0.00	0.00	0.00	0.00
N	25	25	25	24	24

MANUALv1.0
03/23/2000

TABLE 27 (F0 MALES - SCHEDULED NECROPSY)

PROJECT NO.:WIL-380001M — INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 1

SPONSOR:BROMINATED SOLVENTS — SPERM MORPHOLOGY COUNTS (ABSOLUTE NUMBER) - SUMMARY OF MEANS

	----- M A L E -----				
GROUP:	0 PPM	100 PPM	250 PPM	500 PPM	750 PPM
NORMAL					
MEAN	199.4	199.4	198.7	196.3	177.9
S.D.	1.19	1.04	1.65	5.17	21.78
N	25	25	25	24	24
NORMALLY SHAPED HEAD SEPARATED FROM FLAGELLUM					
MEAN	0.4	0.5	0.8	2.7	9.5
S.D.	0.92	0.71	1.08	4.31	8.53
N	25	25	25	24	24
HEAD ABSENT WITH NORMAL FLAGELLUM					
MEAN	0.1	0.2	0.5	1.0	9.1
S.D.	0.44	0.47	0.92	1.53	11.8
N	25	25	25	24	24
HEAD ABSENT WITH ABNORMAL FLAGELLUM					
MEAN	0.0	0.0	0.0	0.0	0.0
S.D.	0.00	0.00	0.00	0.00	0.00
N	25	25	25	24	24
MISSHAPEN HEAD WITH NORMAL FLAGELLUM					
MEAN	0.0	0.0	0.0	0.0	0.0
S.D.	0.00	0.00	0.00	0.00	0.00
N	25	25	25	24	24
MISSHAPEN HEAD WITH ABNORMAL FLAGELLUM					
MEAN	0.0	0.0	0.0	0.0	0.0
S.D.	0.00	0.00	0.00	0.00	0.00
N	25	25	25	24	24

TABLE 27 (F0 MALES - SCHEDULED NECROPSY)

PROJECT NO.:WIL-380001M — INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 2

SPONSOR:BROMINATED SOLVENTS — SPERM MORPHOLOGY COUNTS (ABSOLUTE NUMBER) - SUMMARY OF MEANS

	----- M A L E -----				
GROUP:	0 PPM	100 PPM	250 PPM	500 PPM	750 PPM
DEGENERATIVE FLAGELLAR DEFECTS WITH NORMAL HEAD					
MEAN	0.0	0.0	0.0	0.0	0.0
S.D.	0.00	0.00	0.00	0.00	0.00
N	25	25	25	24	24
OTHER FLAGELLAR DEFECTS WITH NORMAL HEAD					
MEAN	0.0	0.0	0.0	0.0	0.0
S.D.	0.00	0.00	0.00	0.00	0.00
N	25	25	25	24	24

MANUALv1.0
03/02/2000

TABLE 28 (F0 - UNSCHEDULED DEATH)

PROJECT NO.:WIL-380001F — INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 1

SPONSOR:BROMINATED SOLVENTS — GROSS NECROPSY OBSERVATIONS INCIDENCE SUMMARY

FOUND DEAD OR EUTHANIZED MORIBUND OR IN EXTREMIS

	----- FEMALE -----				
GROUP	1	2	3	4	5
NUMBER OF ANIMALS IN DOSE GROUP	25	25	25	25	25
NUMBER OF ANIMALS EXAMINED	0	0	0	1	0
EYES/OPTIC N.					
-EYE(S)- ENLARGED	0	0	0	1	0
-EYE(S)- REDDENED	0	0	0	1	0

1- 0 PPM 2- 100 PPM 3- 250 PPM 4- 500 PPM 5- 750 PPM

PGRSIv4.0
08/16/2000

TABLE 29 (F0 - SCHEDULED NECROPSY)

PROJECT NO.:WIL-380001M — INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 1

SPONSOR:BROMINATED SOLVENTS — GROSS NECROPSY OBSERVATIONS INCIDENCE SUMMARY

SCHEDULED NECROPSY

	------- MALE -------				
GROUP	1	2	3	4	5
NUMBER OF ANIMALS IN DOSE GROUP	25	25	25	25	25
NUMBER OF ANIMALS EXAMINED	25	25	25	25	25
ADRENAL GLANDS					
-DARK RED AREA(S)	0	0	0	1	0
ILEUM					
-DIVERTICULUM	0	0	1	0	0
KIDNEYS					
-DEPRESSED AREA(S)	0	1	0	0	1
-DILATED PELVIS	0	0	0	1	1
COAGULATING GL.					
-NOT OBSERVED GROSSLY	0	1	0	0	0
LUNGS					
-MOTTLED	1	1	1	0	1
-DARK RED	0	0	0	0	1
-DARK RED AREA(S)	1	0	0	0	0
RT EPIDIDYMIS					
-SMALL	0	0	0	1	2
LT EPIDIDYMIS					
-SMALL	0	0	0	0	1
SKIN					
-RED MATTING	0	0	1	0	0

1- 0 PPM 2- 100 PPM 3- 250 PPM 4- 500 PPM 5- 750 PPM

TABLE 29 (F0 - SCHEDULED NECROPSY)

PROJECT NO.:WIL-380001M — INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 2

SPONSOR:BROMINATED SOLVENTS — GROSS NECROPSY OBSERVATIONS INCIDENCE SUMMARY

SCHEDULED NECROPSY

	------- M A L E -------				
GROUP	1	2	3	4	5
NUMBER OF ANIMALS IN DOSE GROUP	25	25	25	25	25
NUMBER OF ANIMALS EXAMINED	25	25	25	25	25
SKIN - CONTINUED					
-HAIR LOSS	0	0	1	1	0
-MASS	0	0	0	0	1
SPLEEN					
-WHITE AREA(S)	0	1	0	1	0
-CAPSULAR SCARRING	0	1	0	0	0
TESTES					
-SMALL	0	0	0	1	1
-SOFT	0	0	0	1	0
TEETH					
-MALALIGNED	1	0	1	0	0
EAR					
-SWOLLEN	2	0	2	0	1
-REDDENED	2	0	1	0	0
NO SIGNIFICANT CHANGES OBSERVED - ALL EXAMINED TISSUES	20	22	19	20	18

1- 0 PPM 2- 100 PPM 3- 250 PPM 4- 500 PPM 5- 750 PPM

PGRSIv4.02
02/12/2001

TABLE 29 (F0 - SCHEDULED NECROPSY)

PROJECT NO.:WIL-380001F — INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 1

SPONSOR:BROMINATED SOLVENTS — GROSS NECROPSY OBSERVATIONS INCIDENCE SUMMARY

SCHEDULED NECROPSY

	----- FEMALE -----				
GROUP	1	2	3	4	5
NUMBER OF ANIMALS IN DOSE GROUP	25	25	25	25	25
NUMBER OF ANIMALS EXAMINED	25	25	25	24	25
EYES/OPTIC N.					
-EYE(S)- MISSING	0	1	0	0	0
ILEUM					
-DIVERTICULUM	1	0	0	0	0
KIDNEYS					
-WHITE AREA(S)	0	0	1	0	1
-DEPRESSED AREA(S)	0	0	0	0	1
LUNGS					
-MOTTLED	2	3	1	1	4
-DARK RED AREA(S)	0	0	1	0	1
TEETH					
-BROKEN	1	0	0	0	0
-MALALIGNED	0	0	1	0	0
OVARIES					
-WHITE AREA(S)	0	0	0	0	1
-CYST(S)	0	0	0	1	0
SKIN					
-HAIR LOSS	2	0	0	0	0
-RED MATTING	0	1	0	0	0

1- 0 PPM 2- 100 PPM 3- 250 PPM 4- 500 PPM 5- 750 PPM

TABLE 29 (F0 - SCHEDULED NECROPSY)

PROJECT NO.:WIL-380001F — INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 2

SPONSOR:BROMINATED SOLVENTS — GROSS NECROPSY OBSERVATIONS INCIDENCE SUMMARY

SCHEDULED NECROPSY

	----- FEMALE -----				
GROUP	1	2	3	4	5
NUMBER OF ANIMALS IN DOSE GROUP	25	25	25	25	25
NUMBER OF ANIMALS EXAMINED	25	25	25	24	25
SKIN - CONTINUED					
SPLEEN					
-ACCESSORY	0	0	1	1	0
UTERUS					
-FLUID-FILLED	1	0	1	0	2
LN, MANDIBULAR					
-MANDIBULAR- REDDENED	0	0	1	0	0
PALATE					
-MASS	0	1	0	0	0
EAR(S)					
-SWOLLEN	0	1	1	1	0
-REDDENED	0	1	0	1	0
NO SIGNIFICANT CHANGES OBSERVED - ALL EXAMINED TISSUES	18	19	18	20	15

1- 0 PPM 2- 100 PPM 3- 250 PPM 4- 500 PPM 5- 750 PPM

PGRSIv4.02
02/12/2001

TABLE 30 (F0)

PROJECT NO.:WIL-380001F INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS SUMMARY OF IMPLANTATION SITES

GROUP:	0 PPM	100 PPM	250 PPM	500 PPM	750 PPM
IMPLANTATION SITES					
MEAN	15.3	14.3	13.8	9.0**	NA
S.D.	2.53	3.09	4.23	4.54	
N	23	25	22	11	
NUMBER BORN					
MEAN	15.0	13.6	12.5	8.5**	NA
S.D.	2.42	3.24	4.27	4.41	
N	23	25	22	11	
UNACCOUNTED SITES					
MEAN	0.3	0.7	1.3**	0.5	NA
S.D.	0.57	0.95	1.36	0.69	
N	23	25	22	11	

** = Significantly different from the control group at 0.01 using Dunnett's test
NA = NOT APPLICABLE
NOTE: ONLY DAMS THAT HAVE DELIVERED ONE OR MORE PUPS ARE INCLUDED IN CALCULATION OF MEAN.

PISSUv4.02
08/16/2000

TABLE 31 (F0)

PROJECT NO.:WIL-380001M INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS ORGAN WEIGHTS (GRAMS) - SUMMARY OF MEANS

		----- M A L E -----				
GROUP:		0 PPM	100 PPM	250 PPM	500 PPM	750 PPM
BRAIN						
	MEAN	2.19	2.15	2.08**	2.10*	2.05**
	S.D.	0.091	0.114	0.087	0.177	0.091
	N	25	25	25	25	25
LIVER						
	MEAN	20.09	18.63	19.42	20.85	21.25
	S.D.	3.206	3.008	2.934	4.147	2.953
	N	25	25	25	25	25
KIDNEYS						
	MEAN	3.77	3.58	3.59	3.62	3.62
	S.D.	0.418	0.358	0.274	0.334	0.329
	N	25	25	25	25	25
SPLEEN						
	MEAN	0.91	0.86	0.85	0.87	0.92
	S.D.	0.167	0.144	0.120	0.110	0.157
	N	25	25	25	25	25
LUNGS						
	MEAN	2.35	2.10	2.17	2.06	2.15
	S.D.	0.689	0.430	0.478	0.349	0.519
	N	25	25	25	25	25

* = Significantly different from the control group at 0.05 using Dunnett's test

** = Significantly different from the control group at 0.01 using Dunnett's test

TABLE 31 (F0)

PROJECT NO.:WIL-380001M — INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 2

SPONSOR:BROMINATED SOLVENTS — ORGAN WEIGHTS (GRAMS) - SUMMARY OF MEANS

		----- M A L E -----				
GROUP:		0 PPM	100 PPM	250 PPM	500 PPM	750 PPM
SEM VES/COAG GL						
	MEAN	2.15	2.12	2.05	1.88	1.86*
	S.D.	0.458	0.401	0.349	0.356	0.380
	N	25	25	25	25	25
PROSTATE						
	MEAN	1.33	1.27	1.14**	1.14*	1.14**
	S.D.	0.247	0.241	0.169	0.232	0.178
	N	25	25	25	25	25
RT TESTIS						
	MEAN	1.79	1.77	1.67	1.72	1.72
	S.D.	0.179	0.201	0.148	0.147	0.200
	N	25	25	25	25	25
LT TESTIS						
	MEAN	1.79	1.79	1.69	1.77	1.75
	S.D.	0.186	0.217	0.146	0.227	0.188
	N	25	25	25	25	25
RT EPIDIDYMIS						
	MEAN	0.72	0.73	0.68	0.66*	0.61**
	S.D.	0.047	0.066	0.069	0.082	0.062
	N	25	25	25	25	25

* = Significantly different from the control group at 0.05 using Dunnett's test

** = Significantly different from the control group at 0.01 using Dunnett's test

TABLE 31 (F0)

PROJECT NO.:WIL-380001M — INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 3

SPONSOR:BROMINATED SOLVENTS — ORGAN WEIGHTS (GRAMS) - SUMMARY OF MEANS

		----- M A L E -----			
GROUP:	0 PPM	100 PPM	250 PPM	500 PPM	750 PPM
LT EPIDIDYMIS					
MEAN	0.74	0.75	0.69	0.68	0.62**
S.D.	0.092	0.086	0.078	0.072	0.077
N	25	25	25	25	25
RT CAUDA EPID					
MEAN	0.3327	0.3311	0.3053	0.2912**	0.2405**
S.D.	0.03631	0.04453	0.04188	0.05206	0.04804
N	25	25	25	25	25
LT CAUDA EPID					
MEAN	0.3252	0.3242	0.3050	0.2877**	0.2401**
S.D.	0.03673	0.03149	0.03556	0.03170	0.03529
N	25	25	25	25	25
THYMUS GLAND					
MEAN	0.2456	0.2070	0.2157	0.2266	0.2345
S.D.	0.05530	0.05551	0.05784	0.05970	0.08695
N	25	25	25	25	25
ADRENAL GLANDS					
MEAN	0.0621	0.0614	0.0579	0.0557	0.0497**
S.D.	0.00860	0.00770	0.00904	0.00883	0.01131
N	25	25	25	25	25

** = Significantly different from the control group at 0.01 using Dunnett's test

TABLE 31 (F0)

PROJECT NO.:WIL-380001M INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS PAGE 4

SPONSOR:BROMINATED SOLVENTS ORGAN WEIGHTS (GRAMS) - SUMMARY OF MEANS

		----- M A L E -----			
GROUP:	0 PPM	100 PPM	250 PPM	500 PPM	750 PPM
PITUITARY					
MEAN	0.0178	0.0165	0.0152	0.0155	0.0142**
S.D.	0.00475	0.00351	0.00383	0.00397	0.00348
N	25	25	25	25	25

** = Significantly different from the control group at 0.01 using Dunnett's test

POFBSTv4.03
08/16/2000

TABLE 31 (F0)

PROJECT NO.:WIL-380001F INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS ORGAN WEIGHTS (GRAMS) - SUMMARY OF MEANS

		----- F E M A L E -----				
GROUP:		0 PPM	100 PPM	250 PPM	500 PPM	750 PPM
BRAIN						
	MEAN	1.96	1.92	1.94	1.89*	1.86**
	S.D.	0.078	0.094	0.084	0.105	0.072
	N	25	25	25	24	25
LIVER						
	MEAN	12.55	13.08	12.91	12.86	13.70
	S.D.	1.292	1.443	1.199	1.595	1.735
	N	25	25	25	24	25
KIDNEYS						
	MEAN	2.22	2.27	2.25	2.27	2.37
	S.D.	0.211	0.244	0.177	0.217	0.253
	N	25	25	25	24	25
SPLEEN						
	MEAN	0.65	0.65	0.67	0.67	0.67
	S.D.	0.115	0.121	0.084	0.090	0.095
	N	25	25	25	24	25
LUNGS						
	MEAN	1.82	1.99	1.81	1.69	1.97
	S.D.	0.374	0.548	0.453	0.323	0.471
	N	25	25	25	24	25

* = Significantly different from the control group at 0.05 using Dunnett's test

** = Significantly different from the control group at 0.01 using Dunnett's test

TABLE 31 (F0)

PROJECT NO.:WIL-380001F INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS ORGAN WEIGHTS (GRAMS) - SUMMARY OF MEANS

	----- F E M A L E -----				
GROUP:	0 PPM	100 PPM	250 PPM	500 PPM	750 PPM
UTERUS/CX/OD					
MEAN	0.80	0.76	0.72	0.67	0.74
S.D.	0.314	0.176	0.150	0.174	0.345
N	25	25	25	24	25
OVARIES					
MEAN	0.1227	0.1265	0.1152	0.1119	0.0975**
S.D.	0.02592	0.02404	0.02360	0.01514	0.02798
N	25	25	25	24	25
THYMUS GLAND					
MEAN	0.2433	0.2535	0.2638	0.2253	0.2266
S.D.	0.07111	0.06558	0.05793	0.05849	0.05210
N	25	25	25	24	25
ADRENAL GLANDS					
MEAN	0.0751	0.0736	0.0825	0.0691	0.0740
S.D.	0.00800	0.01015	0.04268	0.01114	0.01003
N	25	25	25	24	25
PITUITARY					
MEAN	0.0176	0.0175	0.0171	0.0187	0.0193
S.D.	0.00298	0.00277	0.00353	0.00578	0.00535
N	25	25	25	24	25

** = Significantly different from the control group at 0.01 using Dunnett's test

POFBSTv4.03
08/16/2000

TABLE 32 (F0)

PROJECT NO.:WIL-380001M INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS ORGAN WEIGHTS RELATIVE TO FINAL BODY WEIGHTS (GRAMS/100 GRAMS)

		----- M A L E -----				
GROUP:		0 PPM	100 PPM	250 PPM	500 PPM	750 PPM
FINAL BODY WT(G)						
	MEAN	548.	526.	530.	515.	483.**
	S.D.	56.0	52.3	63.3	61.3	44.6
	N	25	25	25	25	25
BRAIN						
	MEAN	0.403	0.411	0.398	0.410	0.428
	S.D.	0.0401	0.0384	0.0554	0.0446	0.0453
	N	25	25	25	25	25
LIVER						
	MEAN	3.662	3.538	3.675	4.034*	4.401**
	S.D.	0.4292	0.4239	0.4573	0.4949	0.4206
	N	25	25	25	25	25
KIDNEYS						
	MEAN	0.690	0.684	0.684	0.708	0.754**
	S.D.	0.0649	0.0654	0.0629	0.0862	0.0706
	N	25	25	25	25	25
SPLEEN						
	MEAN	0.167	0.164	0.162	0.170	0.192**
	S.D.	0.0291	0.0231	0.0212	0.0231	0.0353
	N	25	25	25	25	25

* = Significantly different from the control group at 0.05 using Dunnett's test

** = Significantly different from the control group at 0.01 using Dunnett's test

TABLE 32 (F0)

PROJECT NO.:WIL-380001M INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS ORGAN WEIGHTS RELATIVE TO FINAL BODY WEIGHTS (GRAMS/100 GRAMS)

		----- M A L E -----				
GROUP:		0 PPM	100 PPM	250 PPM	500 PPM	750 PPM
LUNGS						
	MEAN	0.432	0.403	0.415	0.402	0.450
	S.D.	0.1280	0.1001	0.1075	0.0712	0.1217
	N	25	25	25	25	25
SEM VES/COAG GL						
	MEAN	0.396	0.408	0.392	0.368	0.386
	S.D.	0.0939	0.0883	0.0867	0.0761	0.0759
	N	25	25	25	25	25
PROSTATE						
	MEAN	0.244	0.245	0.218	0.224	0.237
	S.D.	0.0525	0.0597	0.0442	0.0503	0.0405
	N	25	25	25	25	25
RT TESTIS						
	MEAN	0.329	0.340	0.320	0.338	0.358
	S.D.	0.0400	0.0514	0.0449	0.0459	0.0470
	N	25	25	25	25	25
LT TESTIS						
	MEAN	0.329	0.343	0.323	0.348	0.364*
	S.D.	0.0413	0.0474	0.0422	0.0666	0.0426
	N	25	25	25	25	25

* = Significantly different from the control group at 0.05 using Dunnett's test

TABLE 32 (F0)

PROJECT NO.:WIL-380001M INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS ORGAN WEIGHTS RELATIVE TO FINAL BODY WEIGHTS (GRAMS/100 GRAMS)

	----- M A L E -----				
GROUP:	0 PPM	100 PPM	250 PPM	500 PPM	750 PPM
RT EPIDIDYMIS					
MEAN	0.132	0.141	0.130	0.129	0.127
S.D.	0.0153	0.0198	0.0189	0.0201	0.0156
N	25	25	25	25	25
LT EPIDIDYMIS					
MEAN	0.135	0.144	0.132	0.134	0.129
S.D.	0.0207	0.0204	0.0207	0.0201	0.0162
N	25	25	25	25	25
RT CAUDA EPID					
MEAN	0.061	0.064	0.059	0.057	0.050**
S.D.	0.0096	0.0121	0.0098	0.0120	0.0097
N	25	25	25	25	25
LT CAUDA EPID					
MEAN	0.060	0.062	0.058	0.056	0.050**
S.D.	0.0100	0.0087	0.0096	0.0084	0.0068
N	25	25	25	25	25
THYMUS GLAND					
MEAN	0.045	0.040	0.041	0.044	0.049
S.D.	0.0096	0.0107	0.0108	0.0102	0.0171
N	25	25	25	25	25

** = Significantly different from the control group at 0.01 using Dunnett's test

TABLE 32 (F0)

PROJECT NO.:WIL-380001M INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS ORGAN WEIGHTS RELATIVE TO FINAL BODY WEIGHTS (GRAMS/100 GRAMS)

	----- M A L E -----				
GROUP:	0 PPM	100 PPM	250 PPM	500 PPM	750 PPM
ADRENAL GLANDS					
MEAN	0.011	0.012	0.011	0.011	0.010
S.D.	0.0017	0.0015	0.0021	0.0015	0.0024
N	25	25	25	25	25
PITUITARY					
MEAN	0.003	0.003	0.003	0.003	0.003
S.D.	0.0010	0.0006	0.0009	0.0009	0.0008
N	25	25	25	25	25

None significantly different from control group

POFBSTv4.04
02/12/2001

TABLE 32 (F0)

PROJECT NO.:WIL-380001F INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS ORGAN WEIGHTS RELATIVE TO FINAL BODY WEIGHTS (GRAMS/100 GRAMS)

		----- F E M A L E -----				
GROUP:		0 PPM	100 PPM	250 PPM	500 PPM	750 PPM
FINAL BODY WT(G)						
	MEAN	331.	330.	327.	332.	319.
	S.D.	20.7	22.3	24.8	38.3	25.5
	N	25	25	25	24	25
BRAIN						
	MEAN	0.595	0.585	0.595	0.577	0.586
	S.D.	0.0446	0.0458	0.0454	0.0674	0.0431
	N	25	25	25	24	25
LIVER						
	MEAN	3.800	3.958	3.948	3.888	4.302**
	S.D.	0.3414	0.3716	0.2402	0.3862	0.4402
	N	25	25	25	24	25
KIDNEYS						
	MEAN	0.672	0.686	0.692	0.688	0.746**
	S.D.	0.0548	0.0660	0.0734	0.0646	0.0861
	N	25	25	25	24	25
SPLEEN						
	MEAN	0.196	0.196	0.206	0.202	0.213
	S.D.	0.0317	0.0332	0.0317	0.0268	0.0347
	N	25	25	25	24	25

** = Significantly different from the control group at 0.01 using Dunnett's test

TABLE 32 (F0)

PROJECT NO.:WIL-380001F INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS ORGAN WEIGHTS RELATIVE TO FINAL BODY WEIGHTS (GRAMS/100 GRAMS)

	----- F E M A L E -----				
GROUP:	0 PPM	100 PPM	250 PPM	500 PPM	750 PPM
LUNGS					
MEAN	0.553	0.603	0.557	0.513	0.619
S.D.	0.1269	0.1657	0.1523	0.1034	0.1423
N	25	25	25	24	25
UTERUS/CX/OD					
MEAN	0.240	0.231	0.221	0.204	0.235
S.D.	0.0834	0.0593	0.0492	0.0628	0.1104
N	25	25	25	24	25
OVARIES					
MEAN	0.037	0.038	0.035	0.034	0.031**
S.D.	0.0078	0.0068	0.0072	0.0056	0.0079
N	25	25	25	24	25
THYMUS GLAND					
MEAN	0.074	0.077	0.081	0.068	0.071
S.D.	0.0219	0.0193	0.0195	0.0163	0.0155
N	25	25	25	24	25
ADRENAL GLANDS					
MEAN	0.023	0.022	0.023	0.021	0.023
S.D.	0.0026	0.0034	0.0041	0.0047	0.0040
N	25	25	24	24	25

** = Significantly different from the control group at 0.01 using Dunnett's test

TABLE 32 (F0)

PROJECT NO.:WIL-380001F INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS ORGAN WEIGHTS RELATIVE TO FINAL BODY WEIGHTS (GRAMS/100 GRAMS)

	----- F E M A L E -----				
GROUP:	0 PPM	100 PPM	250 PPM	500 PPM	750 PPM
PITUITARY					
MEAN	0.005	0.005	0.005	0.006	0.006
S.D.	0.0009	0.0009	0.0010	0.0021	0.0019
N	25	25	25	24	25

None significantly different from control group

POFBSTv4.04
02/22/2001

TABLE 33 (F0 - UNSCHEDULED DEATH)

PROJECT NO.:WIL-380001F — INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 1

SPONSOR:BROMINATED SOLVENTS — HISTOMORPHOLOGICAL DIAGNOSIS -- SUMMARY INCIDENCE

----- FEMALE -----

GROUP:	1	2	3	4	5
NUMBER OF ANIMALS IN DOSE GROUP	25	25	25	25	25
NUMBER OF ANIMALS EXAMINED	0	0	0	1	0
OVIDUCTS					
TOTAL NUMBER EXAMINED	0	0	0	1	0
EXAMINED, UNREMARKABLE	0	0	0	1	0
BRAIN					
TOTAL NUMBER EXAMINED	NA	0	0	1	NA
EXAMINED, UNREMARKABLE	NA	0	0	1	NA
KIDNEYS					
TOTAL NUMBER EXAMINED	0	0	0	1	0
EXAMINED, UNREMARKABLE	0	0	0	0	0
-BASOPHILIC TUBULES	0	0	0	1	0
-MINERALIZATION, PAPILLARY TUBULAR	0	0	0	1	0
-HEMATOCYST	0	0	0	1	0
LIVER					
TOTAL NUMBER EXAMINED	0	0	0	1	0
EXAMINED, UNREMARKABLE	0	0	0	0	0
-INFILTRATE, MONONUCLEAR	0	0	0	1	0
-NECROSIS, HEPATOCELLULAR, CENTRILOBULAR	0	0	0	1	0
LUNGS					
TOTAL NUMBER EXAMINED	0	0	0	1	0
EXAMINED, UNREMARKABLE	0	0	0	0	0

1- 0 PPM 2- 100 PPM 3- 250 PPM 4- 500 PPM 5- 750 PPM

NA = NOT APPLICABLE

TABLE 33 (F0 - UNSCHEDULED DEATH)

PROJECT NO.:WIL-380001F INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS HISTOMORPHOLOGICAL DIAGNOSIS -- SUMMARY INCIDENCE

----- FEMALE -----

GROUP:	1	2	3	4	5
NUMBER OF ANIMALS IN DOSE GROUP	25	25	25	25	25
NUMBER OF ANIMALS EXAMINED	0	0	0	1	0
LUNGS - CONTINUED					
-INFILTRATE, LYMPHOCYTE, PERIBRONCHIAL	0	0	0	1	0
-MINERALIZATION, VASCULAR	0	0	0	1	0
-INFILTRATE, MONONUCLEAR, PERIVASCULAR	0	0	0	1	0
ADRENAL CORTEX					
TOTAL NUMBER EXAMINED	0	0	0	1	0
EXAMINED, UNREMARKABLE	0	0	0	1	0
ADRENAL MEDULLA					
TOTAL NUMBER EXAMINED	0	0	0	1	0
EXAMINED, UNREMARKABLE	0	0	0	1	0
CEREBRAL CORTEX					
TOTAL NUMBER EXAMINED	0	NA	NA	NA	0
EXAMINED, UNREMARKABLE	0	NA	NA	NA	0
OVARIES					
TOTAL NUMBER EXAMINED	0	0	0	1	0
EXAMINED, UNREMARKABLE	0	0	0	0	0
-DECREASED CORPORA LUTEA	0	0	0	1	0
-HYPERPLASIA, INTERSTITIAL CELL	0	0	0	1	0

1- 0 PPM 2- 100 PPM 3- 250 PPM 4- 500 PPM 5- 750 PPM

NA = NOT APPLICABLE

TABLE 33 (F0 - UNSCHEDULED DEATH)

PROJECT NO.:WIL-380001F INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS HISTOMORPHOLOGICAL DIAGNOSIS -- SUMMARY INCIDENCE

----- FEMALE -----

GROUP:	1	2	3	4	5
NUMBER OF ANIMALS IN DOSE GROUP	25	25	25	25	25
NUMBER OF ANIMALS EXAMINED	0	0	0	1	0
HIPPOCAMPUS					
TOTAL NUMBER EXAMINED	0	NA	NA	NA	0
EXAMINED, UNREMARKABLE	0	NA	NA	NA	0
THALAMUS					
TOTAL NUMBER EXAMINED	0	NA	NA	NA	0
EXAMINED, UNREMARKABLE	0	NA	NA	NA	0
HYPOTHALAMUS					
TOTAL NUMBER EXAMINED	0	NA	NA	NA	0
EXAMINED, UNREMARKABLE	0	NA	NA	NA	0
PITUITARY					
TOTAL NUMBER EXAMINED	0	0	0	1	0
EXAMINED, UNREMARKABLE	0	0	0	1	0
BASAL GANGLIA					
TOTAL NUMBER EXAMINED	0	NA	NA	NA	0
EXAMINED, UNREMARKABLE	0	NA	NA	NA	0
SPLEEN					
TOTAL NUMBER EXAMINED	0	0	0	1	0
EXAMINED, UNREMARKABLE	0	0	0	0	0
-HEMATOPOIESIS, EXTRAMEDULLARY	0	0	0	1	0

1- 0 PPM 2- 100 PPM 3- 250 PPM 4- 500 PPM 5- 750 PPM

NA = NOT APPLICABLE

TABLE 33 (F0 - UNSCHEDULED DEATH)

PROJECT NO.:WIL-380001F INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS HISTOMORPHOLOGICAL DIAGNOSIS -- SUMMARY INCIDENCE

----- FEMALE -----

GROUP:	1	2	3	4	5
NUMBER OF ANIMALS IN DOSE GROUP	25	25	25	25	25
NUMBER OF ANIMALS EXAMINED	0	0	0	1	0
SPLEEN - CONTINUED					
-PIGMENT, BROWN	0	0	0	1	0
CEREBELLUM					
TOTAL NUMBER EXAMINED	0	NA	NA	NA	0
EXAMINED, UNREMARKABLE	0	NA	NA	NA	0
THYMUS GLAND					
TOTAL NUMBER EXAMINED	0	0	0	1	0
EXAMINED, UNREMARKABLE	0	0	0	1	0
PONS					
TOTAL NUMBER EXAMINED	0	NA	NA	NA	0
EXAMINED, UNREMARKABLE	0	NA	NA	NA	0
CEREBRAL PEDUN					
TOTAL NUMBER EXAMINED	0	NA	NA	NA	0
EXAMINED, UNREMARKABLE	0	NA	NA	NA	0
CENTRAL GREY MAT					
TOTAL NUMBER EXAMINED	0	NA	NA	NA	0
EXAMINED, UNREMARKABLE	0	NA	NA	NA	0

1- 0 PPM 2- 100 PPM 3- 250 PPM 4- 500 PPM 5- 750 PPM

NA = NOT APPLICABLE

TABLE 33 (F0 - UNSCHEDULED DEATH)

PROJECT NO.:WIL-380001F — INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 5

SPONSOR:BROMINATED SOLVENTS — HISTOMORPHOLOGICAL DIAGNOSIS -- SUMMARY INCIDENCE

----- FEMALE -----

GROUP:	1	2	3	4	5
NUMBER OF ANIMALS IN DOSE GROUP	25	25	25	25	25
NUMBER OF ANIMALS EXAMINED	0	0	0	1	0
TECTUM					
TOTAL NUMBER EXAMINED	0	NA	NA	NA	0
EXAMINED, UNREMARKABLE	0	NA	NA	NA	0
UTERUS					
TOTAL NUMBER EXAMINED	0	0	0	1	0
EXAMINED, UNREMARKABLE	0	0	0	1	0
NUCLEUS, GRACILE					
TOTAL NUMBER EXAMINED	0	NA	NA	NA	0
EXAMINED, UNREMARKABLE	0	NA	NA	NA	0
CAUSE DEATH/MORB					
TOTAL NUMBER EXAMINED	NA	NA	NA	1	NA
EXAMINED, UNREMARKABLE	NA	NA	NA	0	NA
-EYE ABNORMALITY	NA	NA	NA	1	NA

1- 0 PPM 2- 100 PPM 3- 250 PPM 4- 500 PPM 5- 750 PPM

NA = NOT APPLICABLE

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TABLE 34 (F0 - SCHEDULED NECROPSY)

PROJECT NO.:WIL-380001M — INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 1

SPONSOR:BROMINATED SOLVENTS — HISTOMORPHOLOGICAL DIAGNOSIS -- SUMMARY INCIDENCE

----- MALE -----

GROUP:	1	2	3	4	5
NUMBER OF ANIMALS IN DOSE GROUP	25	25	25	25	25
NUMBER OF ANIMALS EXAMINED	25	25	25	25	25
EPIDIDYMIDES					
TOTAL NUMBER EXAMINED	25	25	25	25	25
EXAMINED, UNREMARKABLE	25	22	24	23	20
-INFILTRATE, MONONUCLEAR	0	3	1	1	4
MINIMAL	NONE	3	1	1	4
-LUMINAL DEBRIS, CELLULAR	0	0	0	1	1
MINIMAL	NONE	NONE	NONE	NONE	1
MILD	NONE	NONE	NONE	1	NONE
-HYPOSPERMIA	0	0	0	1	0
SEVERE	NONE	NONE	NONE	1	NONE
KIDNEYS					
TOTAL NUMBER EXAMINED	25	25	25	25	25
EXAMINED, UNREMARKABLE	2	6	5	3	1
-BASOPHILIC TUBULES	19	13	15	20	21
MINIMAL	17	13	15	19	19
MILD	2	NONE	NONE	1	1
MODERATE	NONE	NONE	NONE	NONE	1
-INFILTRATE, MONONUCLEAR	12	11	8	12	10
MINIMAL	12	11	8	12	9
MILD	NONE	NONE	NONE	NONE	1
-HYPERTROPHY, RENAL TUBULE CELL	1	0	0	0	1
MINIMAL	1	NONE	NONE	NONE	1
-PYELITIS, ACUTE	1	0	0	0	0
MINIMAL	1	NONE	NONE	NONE	NONE

1- 0 PPM 2- 100 PPM 3- 250 PPM 4- 500 PPM 5- 750 PPM

NONE SIGNIFICANTLY DIFFERENT FROM THE CONTROL GROUP USING 2-TAILED FISHER'S EXACT TEST.

TABLE 34 (F0 - SCHEDULED NECROPSY)

PROJECT NO.:WIL-380001M INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS HISTOMORPHOLOGICAL DIAGNOSIS -- SUMMARY INCIDENCE

----- MALE -----

GROUP:	1	2	3	4	5
NUMBER OF ANIMALS IN DOSE GROUP	25	25	25	25	25
NUMBER OF ANIMALS EXAMINED	25	25	25	25	25
KIDNEYS - CONTINUED					
-CYST, MEDULLARY	1	1	0	1	2
MINIMAL	1	1	NONE	NONE	2
MILD	NONE	NONE	NONE	1	NONE
-MINERALIZATION, PELVIC	1	0	1	2	6
MINIMAL	1	NONE	1	2	6
-CAST, HYALINE	1	1	2	2	3
MINIMAL	1	1	2	2	3
-HYPERPLASIA, TRANSITIONAL CELL	0	0	1	3	4
MINIMAL	NONE	NONE	1	3	4
-HYDRONEPHROSIS	0	0	0	0	1
MILD	NONE	NONE	NONE	NONE	1
-MINERALIZATION, PAPILLARY TUBULAR	4	1	0	0	5
MINIMAL	4	1	NONE	NONE	5
-FIBROSIS	0	0	1	0	0
MINIMAL	NONE	NONE	1	NONE	NONE
LIVER					
TOTAL NUMBER EXAMINED	25	25	25	25	25
EXAMINED, UNREMARKABLE	1	0	0	0	0
-INFILTRATE, MONONUCLEAR CELL	23	22	23	23	25
MINIMAL	22	22	23	22	25
MILD	1	NONE	NONE	1	NONE
-HEMATOPOIESIS, EXTRAMEDULLARY	2	0	0	0	1
MINIMAL	2	NONE	NONE	NONE	1

1- 0 PPM 2- 100 PPM 3- 250 PPM 4- 500 PPM 5- 750 PPM

NONE SIGNIFICANTLY DIFFERENT FROM THE CONTROL GROUP USING 2-TAILED FISHER'S EXACT TEST.

TABLE 34 (F0 - SCHEDULED NECROPSY)

PROJECT NO.:WIL-380001M — INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 3

SPONSOR:BROMINATED SOLVENTS — HISTOMORPHOLOGICAL DIAGNOSIS -- SUMMARY INCIDENCE

----- MALE -----

GROUP:	1	2	3	4	5
NUMBER OF ANIMALS IN DOSE GROUP	25	25	25	25	25
NUMBER OF ANIMALS EXAMINED	25	25	25	25	25
LIVER - CONTINUED					
-HYPERPLASIA, BILE DUCT	1	0	0	0	0
MINIMAL	1	NONE	NONE	NONE	NONE
-FOCUS, BASOPHILIC CELL	1	0	0	0	0
MINIMAL	1	NONE	NONE	NONE	NONE
-VACUOLATION, HEPATOCELLULAR, CENTRILOBULAR	0	0	7*	22*	24*
MINIMAL	NONE	NONE	7	9	12
MILD	NONE	NONE	NONE	13	12
-DEGENERATION, CYSTIC	1	0	0	0	0
MINIMAL	1	NONE	NONE	NONE	NONE
-INCREASED GLYCOGEN	14	14	20	21	24*
MINIMAL	7	12	9	5	4
MILD	7	2	11	10	10
MODERATE	NONE	NONE	NONE	6	10
COAGULATING GL.					
TOTAL NUMBER EXAMINED	25	NA	NA	NA	25
EXAMINED, UNREMARKABLE	25	NA	NA	NA	25
LUNGS					
TOTAL NUMBER EXAMINED	25	NA	NA	NA	25
EXAMINED, UNREMARKABLE	0	NA	NA	NA	0
-INFILTRATE, NEUTROPHIL, PERIVASCULAR	7	NA	NA	NA	4
MINIMAL	7	NA	NA	NA	4

1- 0 PPM 2- 100 PPM 3- 250 PPM 4- 500 PPM 5- 750 PPM

* = SIGNIFICANTLY DIFFERENT FROM THE CONTROL GROUP AT THE 0.05 LEVEL USING 2-TAILED FISHER'S EXACT TEST.

NA = NOT APPLICABLE

TABLE 34 (F0 - SCHEDULED NECROPSY)

PROJECT NO.:WIL-380001M INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS HISTOMORPHOLOGICAL DIAGNOSIS -- SUMMARY INCIDENCE

----- MALE -----

GROUP:	1	2	3	4	5
NUMBER OF ANIMALS IN DOSE GROUP	25	25	25	25	25
NUMBER OF ANIMALS EXAMINED	25	25	25	25	25
LUNGS - CONTINUED					
-INFILTRATE, LYMPHOCYTE, PERIBRONCHIAL	24	NA	NA	NA	25
MINIMAL	23	NA	NA	NA	23
MILD	1	NA	NA	NA	2
-MACROPHAGES, ALVEOLAR	13	NA	NA	NA	19
MINIMAL	12	NA	NA	NA	19
MILD	1	NA	NA	NA	NONE
-MINERALIZATION, VASCULAR	23	NA	NA	NA	20
MINIMAL	21	NA	NA	NA	18
MILD	2	NA	NA	NA	2
-HEMORRHAGE	2	NA	NA	NA	2
MINIMAL	2	NA	NA	NA	2
-INFLAMMATION, ACUTE	6	NA	NA	NA	4
MINIMAL	6	NA	NA	NA	3
MILD	NONE	NA	NA	NA	1
-INFLAMMATION, SUBACUTE	4	NA	NA	NA	3
MINIMAL	3	NA	NA	NA	3
MILD	1	NA	NA	NA	NONE
-INFILTRATE, MONONUCLEAR, PERIVASCULAR	11	NA	NA	NA	15
MINIMAL	10	NA	NA	NA	15
MILD	1	NA	NA	NA	NONE
-HYPERPLASIA, BRONCHIOLO-ALVEOLAR	3	NA	NA	NA	0
MINIMAL	2	NA	NA	NA	NONE
MILD	1	NA	NA	NA	NONE

1- 0 PPM 2- 100 PPM 3- 250 PPM 4- 500 PPM 5- 750 PPM

NONE SIGNIFICANTLY DIFFERENT FROM THE CONTROL GROUP USING 2-TAILED FISHER'S EXACT TEST.

NA = NOT APPLICABLE

TABLE 34 (F0 - SCHEDULED NECROPSY)

PROJECT NO.:WIL-380001M INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS PAGE 5

SPONSOR:BROMINATED SOLVENTS HISTOMORPHOLOGICAL DIAGNOSIS -- SUMMARY INCIDENCE

----- MALE -----

GROUP:	1	2	3	4	5
NUMBER OF ANIMALS IN DOSE GROUP	25	25	25	25	25
NUMBER OF ANIMALS EXAMINED	25	25	25	25	25
LUNGS - CONTINUED					
-CONGESTION	0	NA	NA	NA	1
MILD	NONE	NA	NA	NA	1
PITUITARY					
TOTAL NUMBER EXAMINED	25	NA	NA	NA	25
EXAMINED, UNREMARKABLE	24	NA	NA	NA	21
-CYST, PARS INTERMEDIA	0	NA	NA	NA	3
MINIMAL	NONE	NA	NA	NA	2
MILD	NONE	NA	NA	NA	1
-CYST, PARS DISTALIS	1	NA	NA	NA	1
MINIMAL	1	NA	NA	NA	1
PROSTATE					
TOTAL NUMBER EXAMINED	25	NA	NA	NA	25
EXAMINED, UNREMARKABLE	6	NA	NA	NA	9
-INFILTRATE, MONONUCLEAR	16	NA	NA	NA	10
MINIMAL	14	NA	NA	NA	10
MILD	2	NA	NA	NA	NONE
-INFLAMMATION, ACUTE	5	NA	NA	NA	7
MINIMAL	5	NA	NA	NA	3
MILD	NONE	NA	NA	NA	4
-INFLAMMATION, CHRONIC ACTIVE	1	NA	NA	NA	0
MINIMAL	1	NA	NA	NA	NONE

1- 0 PPM 2- 100 PPM 3- 250 PPM 4- 500 PPM 5- 750 PPM

NONE SIGNIFICANTLY DIFFERENT FROM THE CONTROL GROUP USING 2-TAILED FISHER'S EXACT TEST.

NA = NOT APPLICABLE

TABLE 34 (F0 - SCHEDULED NECROPSY)

PROJECT NO.:WIL-380001M INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS HISTOMORPHOLOGICAL DIAGNOSIS -- SUMMARY INCIDENCE

----- MALE -----

GROUP:	1	2	3	4	5
NUMBER OF ANIMALS IN DOSE GROUP	25	25	25	25	25
NUMBER OF ANIMALS EXAMINED	25	25	25	25	25
PROSTATE - CONTINUED					
-INFLAMMATION, CHRONIC	1	NA	NA	NA	1
MINIMAL	NONE	NA	NA	NA	1
MILD	1	NA	NA	NA	NONE
-HYPERPLASIA, ACINAR CELL	4	NA	NA	NA	1
MINIMAL	4	NA	NA	NA	NONE
MILD	NONE	NA	NA	NA	1
SEMINAL VESICLES					
TOTAL NUMBER EXAMINED	25	NA	NA	NA	25
EXAMINED, UNREMARKABLE	25	NA	NA	NA	25
SPLEEN					
TOTAL NUMBER EXAMINED	25	25	25	25	25
EXAMINED, UNREMARKABLE	0	0	0	0	0
-HEMATOPOIESIS, EXTRAMEDULLARY	25	25	25	25	25
MINIMAL	21	23	23	24	20
MILD	4	2	2	1	5
-PIGMENT, BROWN	25	25	25	25	25
MINIMAL	9	7	4	1	4
MILD	13	14	11	13	13
MODERATE	3	4	10	11	8
-IRON STAIN, POSITIVE	2	0	0	0	2
MINIMAL	1	NONE	NONE	NONE	NONE
MILD	1	NONE	NONE	NONE	1
MODERATE	NONE	NONE	NONE	NONE	1

1- 0 PPM 2- 100 PPM 3- 250 PPM 4- 500 PPM 5- 750 PPM

NONE SIGNIFICANTLY DIFFERENT FROM THE CONTROL GROUP USING 2-TAILED FISHER'S EXACT TEST.

NA = NOT APPLICABLE

TABLE 34 (F0 - SCHEDULED NECROPSY)

PROJECT NO.:WIL-380001M — INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 7

SPONSOR:BROMINATED SOLVENTS — HISTOMORPHOLOGICAL DIAGNOSIS -- SUMMARY INCIDENCE

----- MALE -----

GROUP:	1	2	3	4	5
NUMBER OF ANIMALS IN DOSE GROUP	25	25	25	25	25
NUMBER OF ANIMALS EXAMINED	25	25	25	25	25
ADRENAL CORTEX					
TOTAL NUMBER EXAMINED	25	NA	NA	NA	25
EXAMINED, UNREMARKABLE	22	NA	NA	NA	21
-VACUOLATION	3	NA	NA	NA	4
MINIMAL	1	NA	NA	NA	3
MILD	2	NA	NA	NA	1
TESTES					
TOTAL NUMBER EXAMINED	25	25	25	25	25
EXAMINED, UNREMARKABLE	24	23	25	22	18
-DEGENERATION, SEMINIFEROUS TUBULES	1	2	0	3	6
MINIMAL	1	2	NONE	2	4
MILD	NONE	NONE	NONE	NONE	1
MODERATE	NONE	NONE	NONE	NONE	1
SEVERE	NONE	NONE	NONE	1	NONE
-GIANT CELL, MULTINUCLEATED	0	0	0	0	1
MINIMAL	NONE	NONE	NONE	NONE	1
THYMUS GLAND					
TOTAL NUMBER EXAMINED	25	NA	NA	NA	25
EXAMINED, UNREMARKABLE	13	NA	NA	NA	18
-HEMORRHAGE	12	NA	NA	NA	7
MINIMAL	11	NA	NA	NA	7
MILD	1	NA	NA	NA	NONE

1- 0 PPM 2- 100 PPM 3- 250 PPM 4- 500 PPM 5- 750 PPM

NONE SIGNIFICANTLY DIFFERENT FROM THE CONTROL GROUP USING 2-TAILED FISHER'S EXACT TEST.

NA = NOT APPLICABLE

TABLE 34 (F0 - SCHEDULED NECROPSY)

PROJECT NO.:WIL-380001M — INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 8

SPONSOR:BROMINATED SOLVENTS — HISTOMORPHOLOGICAL DIAGNOSIS -- SUMMARY INCIDENCE

----- MALE -----

GROUP:	1	2	3	4	5
NUMBER OF ANIMALS IN DOSE GROUP	25	25	25	25	25
NUMBER OF ANIMALS EXAMINED	25	25	25	25	25
ADRENAL MEDULLA					
TOTAL NUMBER EXAMINED	25	NA	NA	NA	25
EXAMINED, UNREMARKABLE	25	NA	NA	NA	25
CEREBRAL CORTEX					
TOTAL NUMBER EXAMINED	25	NA	NA	NA	25
EXAMINED, UNREMARKABLE	25	NA	NA	NA	25
HIPPOCAMPUS					
TOTAL NUMBER EXAMINED	25	NA	NA	NA	25
EXAMINED, UNREMARKABLE	25	NA	NA	NA	25
THALAMUS					
TOTAL NUMBER EXAMINED	25	NA	NA	NA	23
EXAMINED, UNREMARKABLE	25	NA	NA	NA	23
NOT EXAMINED	0	NA	NA	NA	2
HYPOTHALAMUS					
TOTAL NUMBER EXAMINED	25	NA	NA	NA	23
EXAMINED, UNREMARKABLE	25	NA	NA	NA	23
NOT EXAMINED	0	NA	NA	NA	2

1- 0 PPM 2- 100 PPM 3- 250 PPM 4- 500 PPM 5- 750 PPM

NONE SIGNIFICANTLY DIFFERENT FROM THE CONTROL GROUP USING 2-TAILED FISHER'S EXACT TEST.

NA = NOT APPLICABLE

TABLE 34 (F0 - SCHEDULED NECROPSY)

PROJECT NO.:WIL-380001M — INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 9

SPONSOR:BROMINATED SOLVENTS — HISTOMORPHOLOGICAL DIAGNOSIS -- SUMMARY INCIDENCE

----- MALE -----

GROUP:	1	2	3	4	5
NUMBER OF ANIMALS IN DOSE GROUP	25	25	25	25	25
NUMBER OF ANIMALS EXAMINED	25	25	25	25	25
BASAL GANGLIA					
TOTAL NUMBER EXAMINED	25	NA	NA	NA	25
EXAMINED, UNREMARKABLE	25	NA	NA	NA	25
CEREBELLUM					
TOTAL NUMBER EXAMINED	25	NA	NA	NA	25
EXAMINED, UNREMARKABLE	25	NA	NA	NA	25
PONS					
TOTAL NUMBER EXAMINED	23	NA	NA	NA	24
EXAMINED, UNREMARKABLE	23	NA	NA	NA	24
NOT EXAMINED	2	NA	NA	NA	1
CEREBRAL PEDUN					
TOTAL NUMBER EXAMINED	24	NA	NA	NA	22
EXAMINED, UNREMARKABLE	24	NA	NA	NA	22
NOT EXAMINED	1	NA	NA	NA	3
CENTRAL GREY MAT					
TOTAL NUMBER EXAMINED	24	NA	NA	NA	25
EXAMINED, UNREMARKABLE	24	NA	NA	NA	25
NOT EXAMINED	1	NA	NA	NA	0

1- 0 PPM 2- 100 PPM 3- 250 PPM 4- 500 PPM 5- 750 PPM

NONE SIGNIFICANTLY DIFFERENT FROM THE CONTROL GROUP USING 2-TAILED FISHER'S EXACT TEST.

NA = NOT APPLICABLE

TABLE 34 (F0 - SCHEDULED NECROPSY)

PROJECT NO.:WIL-380001M INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS HISTOMORPHOLOGICAL DIAGNOSIS -- SUMMARY INCIDENCE

----- MALE -----

GROUP:	1	2	3	4	5
NUMBER OF ANIMALS IN DOSE GROUP	25	25	25	25	25
NUMBER OF ANIMALS EXAMINED	25	25	25	25	25
TECTUM					
TOTAL NUMBER EXAMINED	25	NA	NA	NA	25
EXAMINED, UNREMARKABLE	25	NA	NA	NA	25
NUCLEUS, GRACILE					
TOTAL NUMBER EXAMINED	7	NA	NA	NA	11
EXAMINED, UNREMARKABLE	7	NA	NA	NA	11
NOT EXAMINED	18	NA	NA	NA	14

1- 0 PPM 2- 100 PPM 3- 250 PPM 4- 500 PPM 5- 750 PPM

NONE SIGNIFICANTLY DIFFERENT FROM THE CONTROL GROUP USING 2-TAILED FISHER'S EXACT TEST.

NA = NOT APPLICABLE

TABLE 34 (F0 - SCHEDULED NECROPSY)

PROJECT NO.:WIL-380001F — INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 1

SPONSOR:BROMINATED SOLVENTS — HISTOMORPHOLOGICAL DIAGNOSIS -- SUMMARY INCIDENCE

----- FEMALE -----

GROUP:	1	2	3	4	5
NUMBER OF ANIMALS IN DOSE GROUP	25	25	25	25	25
NUMBER OF ANIMALS EXAMINED	25	25	25	24	25
OVIDUCTS					
TOTAL NUMBER EXAMINED	24	25	25	24	25
EXAMINED, UNREMARKABLE	24	25	25	24	25
NOT EXAMINED	1	0	0	0	0
KIDNEYS					
TOTAL NUMBER EXAMINED	25	25	25	24	25
EXAMINED, UNREMARKABLE	6	11	8	8	3
-BASOPHILIC TUBULES	10	6	6	3	5
MINIMAL	10	6	6	3	5
-INFILTRATE, MONONUCLEAR	4	3	4	4	8
MINIMAL	4	3	4	4	8
-PYELITIS, CHRONIC ACTIVE	1	0	0	0	0
MILD	1	NONE	NONE	NONE	NONE
-CAST, HYALINE	2	3	0	1	2
MINIMAL	2	3	NONE	1	2
-MINERALIZATION, TUBULAR	3	2	3	0	7
MINIMAL	3	2	3	NONE	7
-MINERALIZATION, PAPILLARY TUBULAR	8	3	2	1*	12
MINIMAL	8	3	2	1	12
-MINERALIZATION, PELVIC	2	3	5	12*	14*
MINIMAL	2	3	5	12	12
MILD	NONE	NONE	NONE	NONE	2
-HYPERPLASIA, TRANSITIONAL CELL	1	0	2	6*	5
MINIMAL	1	NONE	2	6	4
MILD	NONE	NONE	NONE	NONE	1

1- 0 PPM 2- 100 PPM 3- 250 PPM 4- 500 PPM 5- 750 PPM

* = SIGNIFICANTLY DIFFERENT FROM THE CONTROL GROUP AT THE 0.05 LEVEL USING 2-TAILED FISHER'S EXACT TEST.

TABLE 34 (F0 - SCHEDULED NECROPSY)

PROJECT NO.:WIL-380001F INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS HISTOMORPHOLOGICAL DIAGNOSIS -- SUMMARY INCIDENCE

----- FEMALE -----

GROUP:	1	2	3	4	5
NUMBER OF ANIMALS IN DOSE GROUP	25	25	25	25	25
NUMBER OF ANIMALS EXAMINED	25	25	25	24	25
KIDNEYS - CONTINUED					
-FIBROSIS	0	0	0	0	1
MINIMAL	NONE	NONE	NONE	NONE	1
-PYELONEPHRITIS, CHRONIC ACTIVE	0	0	0	0	1
MODERATE	NONE	NONE	NONE	NONE	1
-PYELITIS, CHRONIC	0	0	0	0	1
MINIMAL	NONE	NONE	NONE	NONE	1
-CYST, MEDULLARY	0	0	1	2	0
MINIMAL	NONE	NONE	1	2	NONE
-CYST, CORTICAL	0	1	0	0	0
MINIMAL	NONE	1	NONE	NONE	NONE
LIVER					
TOTAL NUMBER EXAMINED	25	25	25	24	25
EXAMINED, UNREMARKABLE	0	1	0	0	0
-INFILTRATE, MONONUCLEAR	25	23	25	22	25
MINIMAL	25	23	25	22	24
MILD	NONE	NONE	NONE	NONE	1
-HEMATOPOIESIS, EXTRAMEDULLARY	2	0	0	0	2
MINIMAL	2	NONE	NONE	NONE	2
-INCREASED GLYCOGEN	15	18	22	23*	23*
MINIMAL	10	10	10	11	4
MILD	5	8	11	8	8
MODERATE	NONE	NONE	1	4	11

1- 0 PPM 2- 100 PPM 3- 250 PPM 4- 500 PPM 5- 750 PPM

* = SIGNIFICANTLY DIFFERENT FROM THE CONTROL GROUP AT THE 0.05 LEVEL USING 2-TAILED FISHER'S EXACT TEST.

TABLE 34 (F0 - SCHEDULED NECROPSY)

PROJECT NO.:WIL-380001F INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS HISTOMORPHOLOGICAL DIAGNOSIS -- SUMMARY INCIDENCE

----- FEMALE -----

GROUP:	1	2	3	4	5
NUMBER OF ANIMALS IN DOSE GROUP	25	25	25	25	25
NUMBER OF ANIMALS EXAMINED	25	25	25	24	25
LIVER - CONTINUED					
-VACUOLATION, HEPATOCELLULAR, CENTRILOBULAR	0	0	0	6*	16*
MINIMAL	NONE	NONE	NONE	6	5
MILD	NONE	NONE	NONE	NONE	11
-FOCUS, BASOPHILIC CELL	4	0	1	0	0
MINIMAL	4	NONE	1	NONE	NONE
-HYPERPLASIA, BILE DUCT	1	0	1	0	0
MINIMAL	1	NONE	1	NONE	NONE
-FOCUS, EOSINOPHILIC CELL	0	0	0	1	0
MILD	NONE	NONE	NONE	1	NONE
LUNGS					
TOTAL NUMBER EXAMINED	25	NA	NA	NA	25
EXAMINED, UNREMARKABLE	0	NA	NA	NA	0
-INFILTRATE, NEUTROPHIL, PERIVASCULAR	9	NA	NA	NA	3
MINIMAL	9	NA	NA	NA	3
-INFILTRATE, LYMPHOCYTE, PERIBRONCHIAL	22	NA	NA	NA	24
MINIMAL	22	NA	NA	NA	23
MILD	NONE	NA	NA	NA	1
-MACROPHAGES, ALVEOLAR	8	NA	NA	NA	7
MINIMAL	8	NA	NA	NA	7
-MINERALIZATION, VASCULAR	13	NA	NA	NA	16
MINIMAL	13	NA	NA	NA	16
-CONGESTION	1	NA	NA	NA	0
MILD	1	NA	NA	NA	NONE

1- 0 PPM 2- 100 PPM 3- 250 PPM 4- 500 PPM 5- 750 PPM

* = SIGNIFICANTLY DIFFERENT FROM THE CONTROL GROUP AT THE 0.05 LEVEL USING 2-TAILED FISHER'S EXACT TEST.

NA = NOT APPLICABLE

TABLE 34 (F0 - SCHEDULED NECROPSY)

PROJECT NO.:WIL-380001F INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS PAGE 4

SPONSOR:BROMINATED SOLVENTS HISTOMORPHOLOGICAL DIAGNOSIS -- SUMMARY INCIDENCE

----- FEMALE -----

GROUP:	1	2	3	4	5
NUMBER OF ANIMALS IN DOSE GROUP	25	25	25	25	25
NUMBER OF ANIMALS EXAMINED	25	25	25	24	25
LUNGS - CONTINUED					
-INFILTRATE, MONONUCLEAR, PERIVASCULAR	9	NA	NA	NA	12
MINIMAL	7	NA	NA	NA	12
MILD	2	NA	NA	NA	NONE
-INFLAMMATION, ACUTE	5	NA	NA	NA	1
MINIMAL	5	NA	NA	NA	1
-HYPERPLASIA, BRONCHIOLO-ALVEOLAR	3	NA	NA	NA	2
MINIMAL	3	NA	NA	NA	2
-PIGMENT, BROWN	1	NA	NA	NA	0
MINIMAL	1	NA	NA	NA	NONE
-INFLAMMATION, SUBACUTE	3	NA	NA	NA	2
MINIMAL	3	NA	NA	NA	2
-HEMORRHAGE	0	NA	NA	NA	1
MINIMAL	NONE	NA	NA	NA	1
ADRENAL CORTEX					
TOTAL NUMBER EXAMINED	25	NA	NA	NA	25
EXAMINED, UNREMARKABLE	25	NA	NA	NA	23
-DEGENERATION, CYSTIC	0	NA	NA	NA	1
MILD	NONE	NA	NA	NA	1
-NECROSIS	0	NA	NA	NA	1
MODERATE	NONE	NA	NA	NA	1

1- 0 PPM 2- 100 PPM 3- 250 PPM 4- 500 PPM 5- 750 PPM

NONE SIGNIFICANTLY DIFFERENT FROM THE CONTROL GROUP USING 2-TAILED FISHER'S EXACT TEST.

NA = NOT APPLICABLE

TABLE 34 (F0 - SCHEDULED NECROPSY)

PROJECT NO.:WIL-380001F INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS HISTOMORPHOLOGICAL DIAGNOSIS -- SUMMARY INCIDENCE

----- FEMALE -----

GROUP:	1	2	3	4	5
NUMBER OF ANIMALS IN DOSE GROUP	25	25	25	25	25
NUMBER OF ANIMALS EXAMINED	25	25	25	24	25
ADRENAL MEDULLA					
TOTAL NUMBER EXAMINED	25	NA	NA	NA	25
EXAMINED, UNREMARKABLE	25	NA	NA	NA	25
CEREBRAL CORTEX					
TOTAL NUMBER EXAMINED	25	NA	NA	NA	25
EXAMINED, UNREMARKABLE	25	NA	NA	NA	25
OVARIES					
TOTAL NUMBER EXAMINED	25	25	25	24	25
EXAMINED, UNREMARKABLE	15	21	20	12	7
-DECREASED CORPORA LUTEA	3	0	3	6	11*
MINIMAL	1	NONE	NONE	NONE	1
MILD	1	NONE	1	4	3
MODERATE	NONE	NONE	1	1	2
SEVERE	1	NONE	1	1	5
-CYST, FOLLICULAR, LUTEINIZED	2	4	3	5	9*
MINIMAL	NONE	4	3	4	6
MILD	2	NONE	NONE	NONE	2
MODERATE	NONE	NONE	NONE	1	1
-CYST, FOLLICULAR	7	1*	3	8	12
MINIMAL	4	1	NONE	5	4
MILD	3	NONE	3	3	6
MODERATE	NONE	NONE	NONE	NONE	2

1- 0 PPM 2- 100 PPM 3- 250 PPM 4- 500 PPM 5- 750 PPM

* = SIGNIFICANTLY DIFFERENT FROM THE CONTROL GROUP AT THE 0.05 LEVEL USING 2-TAILED FISHER'S EXACT TEST.

NA = NOT APPLICABLE

TABLE 34 (F0 - SCHEDULED NECROPSY)

PROJECT NO.:WIL-380001F INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS HISTOMORPHOLOGICAL DIAGNOSIS -- SUMMARY INCIDENCE

----- FEMALE -----

GROUP:	1	2	3	4	5
NUMBER OF ANIMALS IN DOSE GROUP	25	25	25	25	25
NUMBER OF ANIMALS EXAMINED	25	25	25	24	25
OVARIES - CONTINUED					
-HYPERPLASIA, INTERSTITIAL CELL	3	0	0	3	7
MILD	3	NONE	NONE	3	7
HIPPOCAMPUS					
TOTAL NUMBER EXAMINED	25	NA	NA	NA	25
EXAMINED, UNREMARKABLE	25	NA	NA	NA	25
THALAMUS					
TOTAL NUMBER EXAMINED	25	NA	NA	NA	23
EXAMINED, UNREMARKABLE	25	NA	NA	NA	23
NOT EXAMINED	0	NA	NA	NA	2
HYPOTHALAMUS					
TOTAL NUMBER EXAMINED	25	NA	NA	NA	23
EXAMINED, UNREMARKABLE	25	NA	NA	NA	23
NOT EXAMINED	0	NA	NA	NA	2
PITUITARY					
TOTAL NUMBER EXAMINED	25	NA	NA	NA	25
EXAMINED, UNREMARKABLE	25	NA	NA	NA	24
-HYPERPLASIA, EPITHELIAL, CRANIOPHARYNGEAL DUCT	0	NA	NA	NA	1
MILD	NONE	NA	NA	NA	1

1- 0 PPM 2- 100 PPM 3- 250 PPM 4- 500 PPM 5- 750 PPM

NONE SIGNIFICANTLY DIFFERENT FROM THE CONTROL GROUP USING 2-TAILED FISHER'S EXACT TEST.

NA = NOT APPLICABLE

TABLE 34 (F0 - SCHEDULED NECROPSY)

PROJECT NO.:WIL-380001F INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS HISTOMORPHOLOGICAL DIAGNOSIS -- SUMMARY INCIDENCE

----- FEMALE -----

GROUP:	1	2	3	4	5
NUMBER OF ANIMALS IN DOSE GROUP	25	25	25	25	25
NUMBER OF ANIMALS EXAMINED	25	25	25	24	25
BASAL GANGLIA					
TOTAL NUMBER EXAMINED	25	NA	NA	NA	25
EXAMINED, UNREMARKABLE	25	NA	NA	NA	25
SPLEEN					
TOTAL NUMBER EXAMINED	25	25	25	24	25
EXAMINED, UNREMARKABLE	0	0	0	0	0
-HEMATOPOIESIS, EXTRAMEDULLARY	25	25	25	24	25
MINIMAL	25	25	25	22	22
MILD	NONE	NONE	NONE	2	3
-PIGMENT, BROWN	25	25	25	24	25
MINIMAL	5	1	1	2	NONE
MILD	16	17	14	13	12
MODERATE	4	7	10	9	13
-ACCESSORY SPLEEN	0	0	1	0	0
PRESENT	NONE	NONE	1	NONE	NONE
-IRON STAIN, POSITIVE	3	0	0	0	3
MILD	2	NONE	NONE	NONE	NONE
MODERATE	1	NONE	NONE	NONE	3
CEREBELLUM					
TOTAL NUMBER EXAMINED	25	NA	NA	NA	25
EXAMINED, UNREMARKABLE	25	NA	NA	NA	25

1- 0 PPM 2- 100 PPM 3- 250 PPM 4- 500 PPM 5- 750 PPM

NONE SIGNIFICANTLY DIFFERENT FROM THE CONTROL GROUP USING 2-TAILED FISHER'S EXACT TEST.

NA = NOT APPLICABLE

TABLE 34 (F0 - SCHEDULED NECROPSY)

PROJECT NO.:WIL-380001F — INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 8

SPONSOR:BROMINATED SOLVENTS — HISTOMORPHOLOGICAL DIAGNOSIS -- SUMMARY INCIDENCE

----- FEMALE -----

GROUP:	1	2	3	4	5
NUMBER OF ANIMALS IN DOSE GROUP	25	25	25	25	25
NUMBER OF ANIMALS EXAMINED	25	25	25	24	25
THYMUS GLAND					
TOTAL NUMBER EXAMINED	25	NA	NA	NA	25
EXAMINED, UNREMARKABLE	19	NA	NA	NA	22
-HEMORRHAGE	5	NA	NA	NA	2
MINIMAL	4	NA	NA	NA	2
MILD	1	NA	NA	NA	NONE
-CYST	1	NA	NA	NA	0
MINIMAL	1	NA	NA	NA	NONE
-HYPERPLASIA, EPITHELIAL	1	NA	NA	NA	1
MILD	1	NA	NA	NA	1
PONS					
TOTAL NUMBER EXAMINED	25	NA	NA	NA	24
EXAMINED, UNREMARKABLE	25	NA	NA	NA	24
NOT EXAMINED	0	NA	NA	NA	1
CEREBRAL PEDUN					
TOTAL NUMBER EXAMINED	25	NA	NA	NA	24
EXAMINED, UNREMARKABLE	25	NA	NA	NA	24
NOT EXAMINED	0	NA	NA	NA	1
CENTRAL GREY MAT					
TOTAL NUMBER EXAMINED	25	NA	NA	NA	25
EXAMINED, UNREMARKABLE	25	NA	NA	NA	25

1- 0 PPM 2- 100 PPM 3- 250 PPM 4- 500 PPM 5- 750 PPM

NONE SIGNIFICANTLY DIFFERENT FROM THE CONTROL GROUP USING 2-TAILED FISHER'S EXACT TEST.

NA = NOT APPLICABLE

TABLE 34 (F0 - SCHEDULED NECROPSY)

PROJECT NO.:WIL-380001F — INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 9

SPONSOR:BROMINATED SOLVENTS — HISTOMORPHOLOGICAL DIAGNOSIS -- SUMMARY INCIDENCE

----- FEMALE -----

GROUP:	1	2	3	4	5
NUMBER OF ANIMALS IN DOSE GROUP	25	25	25	25	25
NUMBER OF ANIMALS EXAMINED	25	25	25	24	25
TECTUM					
TOTAL NUMBER EXAMINED	25	NA	NA	NA	25
EXAMINED, UNREMARKABLE	25	NA	NA	NA	25
UTERUS					
TOTAL NUMBER EXAMINED	25	NA	NA	NA	25
EXAMINED, UNREMARKABLE	12	NA	NA	NA	22
-IMPLANTATION SITE	8	NA	NA	NA	0*
PRESENT	8	NA	NA	NA	NONE
-DILATATION, LUMEN	6	NA	NA	NA	3
MINIMAL	1	NA	NA	NA	1
MILD	4	NA	NA	NA	2
MODERATE	1	NA	NA	NA	NONE
NUCLEUS, GRACILE					
TOTAL NUMBER EXAMINED	13	NA	NA	NA	14
EXAMINED, UNREMARKABLE	13	NA	NA	NA	14
NOT EXAMINED	12	NA	NA	NA	11

1- 0 PPM 2- 100 PPM 3- 250 PPM 4- 500 PPM 5- 750 PPM

* = SIGNIFICANTLY DIFFERENT FROM THE CONTROL GROUP AT THE 0.05 LEVEL USING 2-TAILED FISHER'S EXACT TEST.

NA = NOT APPLICABLE

PHSI2v4.17
02/12/2001

TABLE 34A (F0 FEMALES - SCHEDULED NECROPSY)

PROJECT NO.:WIL-380001F
SPONSOR:BROMINATED SOLVENTS

INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS
INDIVIDUAL OVARIAN PRIMORDIAL FOLLICLE AND CORPORA LUTEA COUNTS
COMBINED VALUES FROM 10 SECTIONS PER ANIMAL

	0 PPM	100 PPM	250 PPM	500 PPM	750 PPM
PRIMORDIAL FOLLICLES					
MEAN	107.8	NA	NA	NA	134.2
S.D.	55.80				58.29
N	25				25
CORPORA LUTEA					
MEAN	178.6	NA	NA	156.8	126.9**
S.D.	51.61			56.03	67.49
N	25			25	25

NA = NOT APPLICABLE
** = Significantly different from the control group at 0.01 using Dunnett's test

MANUALv1.0
12/04/2000

TABLE 35 (F1)

PROJECT NO.:WIL-380001F INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS SUMMARY OF PND 0 LITTER DATA

GROUP :	1	2	3	4	5
NUMBER BORN					
MEAN	15.0	13.6	12.5	8.5**	0.0
S.D.	2.42	3.24	4.27	4.41	0.00
N	23	25	22	11	0
SEX AT BIRTH (% MALES PER LITTER)					
MEAN	53.7	47.5	57.3	50.7	0.0
S.D.	13.53	16.57	19.81	28.14	0.00
N	23	25	22	11	0
LIVE LITTER SIZE (PND 0)					
MEAN	14.4	13.3	12.3	8.3**	0.0
S.D.	2.21	3.72	4.47	4.10	0.00
N	23	25	22	11	0

1- 0 PPM 2- 100 PPM 3- 250 PPM 4- 500 PPM 5- 750 PPM

SEX COMPARED USING KRUSKAL-WALLIS, NUMBER BORN, AND LIVE LITTER SIZE COMPARED USING DUNNETT'S

** = Significantly different from the control group at 0.01

PPVIASv4.02
02/12/2001

TABLE 36 (F1)

PROJECT NO.:WIL-380001F — INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 1

SPONSOR:BROMINATED SOLVENTS — SUMMARY OF POSTNATAL SURVIVAL - % PER LITTER

GROUP :	1	2	3	4	5
PND 0 (RELATIVE TO NUMBER BORN)					
MEAN	96.6	93.7	94.8	98.9	0.0
S.D.	6.24	21.95	21.28	3.77	0.00
N	23	25	22	11	0
PND 0 TO PND 1					
MEAN	100.0	97.8	98.9	98.9	0.0
S.D.	0.00	5.11	2.83	3.77	0.00
N	23	24	21	11	0
PND 1 TO PND 4 (PRE-SELECTION)					
MEAN	99.5	99.4	99.4	100.0	0.0
S.D.	1.65	2.02	2.06	0.00	0.00
N	23	24	21	11	0
PND 4 (POST-SELECTION) TO PND 7					
MEAN	100.0	99.5	100.0	100.0	0.0
S.D.	0.00	2.55	0.00	0.00	0.00
N	23	24	21	11	0
PND 7 TO PND 14					
MEAN	99.5	99.4	100.0	100.0	0.0
S.D.	2.61	2.92	0.00	0.00	0.00
N	23	24	21	11	0

1- 0 PPM 2- 100 PPM 3- 250 PPM 4- 500 PPM 5- 750 PPM

None significantly different from control group

TABLE 36 (F1)

PROJECT NO.:WIL-380001F INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS SUMMARY OF POSTNATAL SURVIVAL - % PER LITTER

GROUP :	1	2	3	4	5
PND 14 TO PND 21					
MEAN	100.0	99.5	100.0	97.7*	0.0
S.D.	0.00	2.55	0.00	5.06	0.00
N	23	24	21	11	0
BIRTH TO PND 4 (PRE-SELECTION)					
MEAN	96.1	91.1	93.2	97.7	0.0
S.D.	6.37	21.77	21.09	5.06	0.00
N	23	25	22	11	0
PND 4 (POST-SELECTION) TO PND 21					
MEAN	99.5	98.4	100.0	97.7	0.0
S.D.	2.61	5.61	0.00	5.06	0.00
N	23	24	21	11	0

1- 0 PPM 2- 100 PPM 3- 250 PPM 4- 500 PPM 5- 750 PPM

STATISTICS PERFORMED USING KRUSKAL-WALLIS

* = Significantly different from the control group at 0.05

PPVIASv4.02
02/12/2001

TABLE 37 (F1)

PROJECT NO.:WIL-380001F INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS PAGE 1

SPONSOR:BROMINATED SOLVENTS SUMMARY OF PUP CLINICAL OBSERVATIONS

ALL OBSERVATION PERIODS

TOTAL NUMBER OF FINDINGS/NUMBER OF PUPS WITH FINDING

FINDING	GROUP : 1	2	3	4	5
NORMAL					
NO REMARKABLE OBSERVATIONS	1300/330	1279/325	1105/267	448/ 89	0/ 0
DISPOSITION					
FOUND DEAD	16/ 16	20/ 20	8/ 8	4/ 4	0/ 0
EUTHANIZED IN EXTREMIS	0/ 0	0/ 0	0/ 0	1/ 1	0/ 0
SCHEDULED EUTHANASIA (PND 21)	83/ 83	87/ 87	62/ 62	0/ 0	0/ 0
SCHEDULED EUTHANASIA (PND 28)	50/ 50	50/ 50	50/ 50	17/ 17	0/ 0
CULLED ON SCHEDULED DAY (PND 4)	145/145	133/133	103/103	21/ 21	0/ 0
MISSING	0/ 0	1/ 1	1/ 1	1/ 1	0/ 0
BODY/INTEGUMENT					
SUBCUTANEOUS HEMORRHAGE(S)	2/ 1	0/ 0	0/ 0	0/ 0	0/ 0
LACERATION(S)	1/ 1	1/ 1	1/ 1	0/ 0	0/ 0
SCABBING	2/ 1	2/ 1	0/ 0	0/ 0	0/ 0
SMALL IN SIZE	1/ 1	23/ 7	9/ 4	4/ 2	0/ 0
EDEMA	1/ 1	3/ 2	3/ 3	0/ 0	0/ 0
HAIR LOSS	2/ 1	1/ 1	0/ 0	0/ 0	0/ 0
MALROTATION OF LEFT FORELIMB AT CARPUS	2/ 1	3/ 1	3/ 1	0/ 0	0/ 0

1- 0 PPM 2- 100 PPM 3- 250 PPM 4- 500 PPM 5- 750 PPM

PPOBSIv4.03
02/12/2001

TABLE 38 (F1)

PROJECT NO.:WIL-380001F INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS SUMMARY OF MEAN OFFSPRING WEIGHTS (GRAMS)

(LITTER AS EXPERIMENTAL UNIT)

DOSE GROUP:		0 PPM	100 PPM	250 PPM	500 PPM	750 PPM
PND 1						
MALES	MEAN	7.3	7.1	7.1	8.0*	0.0
	S.D.	0.57	0.63	0.54	0.91	0.00
	N	23	24	21	10	0
FEMALES	MEAN	6.9	6.7	6.9	7.5*	0.0
	S.D.	0.59	0.64	0.61	0.95	0.00
	N	23	24	21	10	0
PND 4 (BEFORE SELECTION)						
MALES	MEAN	10.7	10.4	10.4	11.6	0.0
	S.D.	0.98	0.98	1.27	1.82	0.00
	N	23	24	21	10	0
FEMALES	MEAN	10.1	9.9	10.1	11.3*	0.0
	S.D.	0.98	1.00	1.41	1.92	0.00
	N	23	24	21	10	0
PND 7						
MALES	MEAN	15.4	15.0	14.8	15.5	0.0
	S.D.	1.22	1.45	1.76	2.34	0.00
	N	23	24	21	10	0
FEMALES	MEAN	14.5	14.2	14.2	15.1	0.0
	S.D.	1.42	1.75	1.82	2.17	0.00
	N	23	24	21	10	0

PND = POSTNATAL DAY

* = Significantly different from the control group at 0.05 using Dunnett's test

TABLE 38 (F1)

PROJECT NO.:WIL-380001F INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS SUMMARY OF MEAN OFFSPRING WEIGHTS (GRAMS)

(LITTER AS EXPERIMENTAL UNIT)

DOSE GROUP:		0 PPM	100 PPM	250 PPM	500 PPM	750 PPM
PND 14						
MALES	MEAN	28.8	27.9	27.1	26.5	0.0
	S.D.	2.58	2.66	2.69	3.79	0.00
	N	23	24	21	10	0
FEMALES	MEAN	27.4	26.6	26.1	26.7	0.0
	S.D.	2.71	3.30	2.59	3.43	0.00
	N	23	24	21	10	0
PND 21						
MALES	MEAN	48.4	45.8	44.1	44.6	0.0
	S.D.	4.75	5.83	5.63	6.01	0.00
	N	23	24	21	10	0
FEMALES	MEAN	45.9	43.8	43.1	43.4	0.0
	S.D.	4.84	6.53	5.54	6.11	0.00
	N	23	24	21	10	0
PND 28						
MALES	MEAN	88.1	82.8	80.3**	76.0**	0.0
	S.D.	7.60	7.74	9.04	9.45	0.00
	N	23	24	21	10	0
FEMALES	MEAN	79.5	76.3	75.0	71.8	0.0
	S.D.	7.13	9.17	7.08	8.62	0.00
	N	23	24	21	10	0

PND = POSTNATAL DAY

** = Significantly different from the control group at 0.01 using Dunnett's test

PPWSUSNv4.02
02/12/2001

TABLE 39 (F1)

PROJECT NO.:WIL-380001F — INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 1

SPONSOR:BROMINATED SOLVENTS — SUMMARY OF MEAN OFFSPRING WEIGHT CHANGES (GRAMS)

(LITTER AS EXPERIMENTAL UNIT)

DOSE GROUP:		0 PPM	100 PPM	250 PPM	500 PPM	750 PPM
PND 1 TO 4 (BEFORE SELECTION)						
MALES	MEAN	3.3	3.2	3.3	3.7	0.0
	S.D.	0.53	0.55	0.88	1.01	0.00
	N	23	24	21	10	0
FEMALES	MEAN	3.2	3.2	3.2	3.7	0.0
	S.D.	0.57	0.50	0.93	1.10	0.00
	N	23	24	21	10	0
PND 4 TO 7						
MALES	MEAN	4.8	4.7	4.3	3.9**	0.0
	S.D.	0.76	0.80	0.77	1.02	0.00
	N	23	24	21	10	0
FEMALES	MEAN	4.5	4.3	4.1	3.8	0.0
	S.D.	0.85	0.90	0.73	0.84	0.00
	N	23	24	21	10	0
PND 7 TO 14						
MALES	MEAN	13.4	12.9	12.4	11.1**	0.0
	S.D.	1.68	1.80	1.44	1.70	0.00
	N	23	24	21	10	0
FEMALES	MEAN	13.0	12.4	12.0	11.6	0.0
	S.D.	1.68	1.95	1.53	1.46	0.00
	N	23	24	21	10	0

PND = POSTNATAL DAY

** = Significantly different from the control group at 0.01 using Dunnett's test

TABLE 39 (F1)

PROJECT NO.:WIL-380001F INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS SUMMARY OF MEAN OFFSPRING WEIGHT CHANGES (GRAMS)

(LITTER AS EXPERIMENTAL UNIT)

DOSE GROUP:		0 PPM	100 PPM	250 PPM	500 PPM	750 PPM
PND 14 TO 21						
MALES	MEAN	19.6	17.9	17.0	17.8	0.0
	S.D.	2.66	3.56	3.55	3.51	0.00
	N	23	24	21	10	0
FEMALES	MEAN	18.5	17.2	17.0	16.8	0.0
	S.D.	2.72	3.54	3.43	3.20	0.00
	N	23	24	21	10	0
PND 21 TO 28						
MALES	MEAN	39.8	37.0*	35.9**	31.5**	0.0
	S.D.	3.97	2.95	4.31	3.84	0.00
	N	23	24	21	10	0
FEMALES	MEAN	33.7	32.8	32.5	28.4**	0.0
	S.D.	3.12	3.49	2.60	3.26	0.00
	N	23	24	21	10	0

PND = POSTNATAL DAY

* = Significantly different from the control group at 0.05 using Dunnett's test

** = Significantly different from the control group at 0.01 using Dunnett's test

PPWSUSNv4.02
02/12/2001

TABLE 40 (F1)

PROJECT NO.:WIL-380001F INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS

SUMMARY OF PUP NECROPSY FINDINGS

FOUND DEAD PUPS

	PUPS					LITTERS				
DOSE GROUP:	1	2	3	4	5	1	2	3	4	5
NUMBER EXAMINED VISCERALLY	16	20	8	4	0	10	10	7	3	0
STOMACH										
MILK NOT PRESENT	10	10	3	2	0	5	5	2	1	0
MILK PRESENT	3	1	2	0	0	3	1	2	0	0

1- 0 PPM 2- 100 PPM 3- 250 PPM 4- 500 PPM 5- 750 PPM

PPNSIv4.0
08/16/2000

TABLE 41 (F1 PUPS NOT SELECTED FOR ORGAN WEIGHTS - PND 21)

PROJECT NO.:WIL-380001F — INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 1

SPONSOR:BROMINATED SOLVENTS

SUMMARY OF PUP NECROPSY FINDINGS

EUTHANIZED PUPS

DOSE GROUP:	PUPS 1	PUPS 2	PUPS 3	PUPS 4	PUPS 5	LITTERS 1	LITTERS 2	LITTERS 3	LITTERS 4	LITTERS 5
NUMBER EXAMINED VISCERALLY	37	41	21	0	0	23	23	14	0	0
NUMBER WITH FINDINGS	0	0	0	0	0	0	0	0	0	0

1- 0 PPM 2- 100 PPM 3- 250 PPM 4- 500 PPM 5- 750 PPM

PPNSIv4.0
08/16/2000

TABLE 42 (F1 UNSELECTED WEANLINGS - PND 28)

PROJECT NO.:WIL-380001S — INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 1

SPONSOR:BROMINATED SOLVENTS — GROSS NECROPSY OBSERVATIONS INCIDENCE SUMMARY

SCHEDULED NECROPSY

	MALE				FEMALE			
GROUP:	1	2	3	4	1	2	3	4
NUMBER OF ANIMALS IN DOSE GROUP	25	25	25	10	25	25	25	7
NUMBER OF ANIMALS EXAMINED	25	25	25	10	25	25	25	7
LIVER								
-WHITE AREA(S)	0	0	0	1	0	0	0	0
NO SIGNIFICANT CHANGES OBSERVED - ALL EXAMINED TISSUES	25	25	25	9	25	25	25	7

1- 0 PPM 2- 100 PPM 3- 250 PPM 4- 500 PPM

PGRSIv4.0
08/16/2000

TABLE 43 (F1 PUPS SELECTED FOR ORGAN WEIGHTS - PND 21)

PROJECT NO.:WIL-380001T — INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 1

SPONSOR:BROMINATED SOLVENTS — GROSS NECROPSY OBSERVATIONS INCIDENCE SUMMARY

SCHEDULED NECROPSY

	MALE			FEMALE		
GROUP:	1	2	3	1	2	3
NUMBER OF ANIMALS IN DOSE GROUP	25	24	22	25	26	23
NUMBER OF ANIMALS EXAMINED	23	22	20	23	24	21
KIDNEYS						
-DILATED PELVIS	1	0	0	0	1	0
SPLEEN						
-SMALL	0	0	0	0	1	0
NO SIGNIFICANT CHANGES OBSERVED - ALL EXAMINED TISSUES	22	22	20	23	22	21

1- 0 PPM 2- 100 PPM 3- 250 PPM

PGRSIv4.0
08/16/2000

TABLE 44 (F1 PUPS SELECTED FOR ORGAN WEIGHTS - PND 21)

PROJECT NO.:WIL-380001T — INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 1

SPONSOR:BROMINATED SOLVENTS — ORGAN WEIGHTS (GRAMS) - SUMMARY OF MEANS

		----- M A L E -----		
GROUP:		0 PPM	100 PPM	250 PPM
BRAIN				
	MEAN	1.4897	1.4337*	1.4145**
	S.D.	0.05106	0.07919	0.07929
	N	23	22	20
SPLEEN				
	MEAN	0.2063	0.1751	0.1802
	S.D.	0.04247	0.05038	0.04566
	N	23	22	20
THYMUS GLAND				
	MEAN	0.1951	0.1844	0.1803
	S.D.	0.03801	0.05179	0.03434
	N	23	22	20

* = Significantly different from the control group at 0.05 using Dunnett's test

** = Significantly different from the control group at 0.01 using Dunnett's test

TABLE 44 (F1 PUPS SELECTED FOR ORGAN WEIGHTS - PND 21)

PROJECT NO.:WIL-380001T — INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 2

SPONSOR:BROMINATED SOLVENTS — ORGAN WEIGHTS (GRAMS) - SUMMARY OF MEANS

		----- F E M A L E -----		
GROUP:		0 PPM	100 PPM	250 PPM
BRAIN				
	MEAN	1.4332	1.3758*	1.4025
	S.D.	0.04661	0.10783	0.06148
	N	23	24	21
SPLEEN				
	MEAN	0.1977	0.1809	0.1758
	S.D.	0.04058	0.06631	0.04620
	N	23	24	21
THYMUS GLAND				
	MEAN	0.2001	0.1819	0.1927
	S.D.	0.04166	0.05464	0.05517
	N	23	24	21

* = Significantly different from the control group at 0.05 using Dunnett's test

POFBSTv4.03
08/16/2000

TABLE 45 (F1 PUPS SELECTED FOR ORGAN WEIGHTS - PND 21)

PROJECT NO.:WIL-380001T — INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 1

SPONSOR:BROMINATED SOLVENTS — ORGAN WEIGHTS RELATIVE TO FINAL BODY WEIGHTS (GRAMS/100 GRAMS)

	----- M A L E -----		
GROUP:	0 PPM	100 PPM	250 PPM
FINAL BODY WT(G)			
MEAN	49.	45.	45.*
S.D.	5.3	6.4	6.0
N	23	22	20
BRAIN			
MEAN	3.071	3.234	3.219
S.D.	0.2558	0.4263	0.3732
N	23	22	20
SPLEEN			
MEAN	0.419	0.382	0.399
S.D.	0.0562	0.0741	0.0622
N	23	22	20
THYMUS GLAND			
MEAN	0.398	0.404	0.405
S.D.	0.0585	0.0797	0.0536
N	23	22	20

* = Significantly different from the control group at 0.05 using Dunnett's test

TABLE 45 (F1 PUPS SELECTED FOR ORGAN WEIGHTS - PND 21)

PROJECT NO.:WIL-380001T INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS ORGAN WEIGHTS RELATIVE TO FINAL BODY WEIGHTS (GRAMS/100 GRAMS)

	----- F E M A L E -----		
GROUP:	0 PPM	100 PPM	250 PPM
FINAL BODY WT(G)			
MEAN	46.	44.	44.
S.D.	4.7	8.5	6.0
N	23	24	21
BRAIN			
MEAN	3.122	3.220	3.214
S.D.	0.2928	0.5237	0.3878
N	23	24	21
SPLEEN			
MEAN	0.425	0.400	0.392
S.D.	0.0631	0.0967	0.0720
N	23	24	21
THYMUS GLAND			
MEAN	0.430	0.410	0.430
S.D.	0.0622	0.0836	0.0866
N	23	24	21

None significantly different from control group

POFBSTv4.04
09/29/2000

TABLE 46 (F1)

PROJECT NO.:WIL-380001F INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS DEVELOPMENTAL PARAMETERS - GROUP SUMMARY

BALANOPREPUTIAL SEPARATION

DOSE GROUP	TOTAL PUPS	DAY: 35		36		37		38		39		40		41		42		43	
	MALES																		
1	25	0	0.%	0	0.%	0	0.%	0	0.%	0	0.%	0	0.%	2	8.%	6	24.%	10	40.%
2	25	0	0.%	0	0.%	0	0.%	0	0.%	0	0.%	0	0.%	1	4.%	2	8.%	4	16.%
3	25	0	0.%	0	0.%	0	0.%	0	0.%	0	0.%	1	4.%	1	4.%	5	20.%	8	32.%
4	24	0	0.%	0	0.%	0	0.%	0	0.%	0	0.%	0	0.%	0	0.%	1	4.%	1	4.%

1- 0 PPM 2- 100 PPM 3- 250 PPM 4- 500 PPM 5- 750 PPM

TABLE 46 (F1)

PROJECT NO.:WIL-380001F INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS DEVELOPMENTAL PARAMETERS - GROUP SUMMARY

BALANOPREPUTIAL SEPARATION

DOSE GROUP	TOTAL PUPS	DAY: 44	45	46	47	48	49	50	51	52
	MALES									
1	25	15 60.%	19 76.%	22 88.%	24 96.%	24 96.%	24 96.%	24 96.%	25 100.%	
2	25	9 36.%	10 40.%	13 52.%	18 72.%	21 84.%	24 96.%	25 100.%		
3	25	12 48.%	13 52.%	17 68.%	18 72.%	20 80.%	20 80.%	21 84.%	22 88.%	25 100.%
4	24	3 13.%	7 29.%	8 33.%	11 46.%	15 63.%	16 67.%	20 83.%	21 88.%	21 88.%

1- 0 PPM 2- 100 PPM 3- 250 PPM 4- 500 PPM 5- 750 PPM

TABLE 46 (F1)

PROJECT NO.:WIL-380001F INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS PAGE 3

SPONSOR:BROMINATED SOLVENTS DEVELOPMENTAL PARAMETERS - GROUP SUMMARY

BALANOPREPUTIAL SEPARATION

DOSE GROUP	TOTAL PUPS	DAY: 53	54	55	56	57	58
	MALES						
4	24	22 92.%	22 92.%	22 92.%	22 92.%	22 92.%	24 100.%

1- 0 PPM 2- 100 PPM 3- 250 PPM 4- 500 PPM 5- 750 PPM

PBBSUv3.03
02/12/2001

TABLE 47 (F1 - AT BALANOPREPUTIAL SEPARATION)

PROJECT NO.:WIL-380001F — INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 1

SPONSOR:BROMINATED SOLVENTS — DAY OF ACQUISITION AND BODY WEIGHT (GRAMS) - SUMMARY

	----- M A L E -----			
GROUP :	0 PPM	100 PPM	250 PPM	500 PPM
DAY				
MEAN (PND)	44.2	45.9	45.7	48.3**
S.D.	2.23	2.41	3.53	3.96
N	25	25	25	24
BODY WEIGHT (g)	228.9	229.6	225.5	228.7
S.D.	19.50	22.20	24.26	22.11
N	25	25	25	24

** = Significantly different from control group at 0.01 using Dunnett's test

MANUALv1.0
8/28/2000

TABLE 48 (F1)

PROJECT NO.:WIL-380001F INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS DEVELOPMENTAL PARAMETERS - GROUP SUMMARY

VAGINAL PATENCY

DOSE GROUP	TOTAL PUPS	DAY: 25		26		27		28		29		30		31		32		33	
	FEMALES																		
1	25	0	0.%	0	0.%	0	0.%	0	0.%	0	0.%	0	0.%	0	0.%	0	0.%	2	8.%
2	25	0	0.%	0	0.%	0	0.%	0	0.%	0	0.%	1	4.%	1	4.%	1	4.%	6	24.%
3	25	0	0.%	0	0.%	0	0.%	0	0.%	0	0.%	0	0.%	0	0.%	0	0.%	3	12.%
4	25	0	0.%	0	0.%	0	0.%	0	0.%	0	0.%	0	0.%	0	0.%	0	0.%	1	4.%

1- 0 PPM 2- 100 PPM 3- 250 PPM 4- 500 PPM 5- 750 PPM

TABLE 48 (F1)

PROJECT NO.:WIL-380001F INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS DEVELOPMENTAL PARAMETERS - GROUP SUMMARY

VAGINAL PATENCY

DOSE GROUP	TOTAL PUPS	DAY: 34	35	36	37	38	39	40	41	42
	FEMALES									
1	25	6 24.%	12 48.%	15 60.%	19 76.%	23 92.%	23 92.%	24 96.%	25 100.%	
2	25	8 32.%	11 44.%	16 64.%	17 68.%	20 80.%	21 84.%	21 84.%	23 92.%	24 96.%
3	25	5 20.%	12 48.%	16 64.%	19 76.%	23 92.%	24 96.%	24 96.%	24 96.%	24 96.%
4	25	3 12.%	4 16.%	10 40.%	14 56.%	15 60.%	19 76.%	20 80.%	22 88.%	22 88.%

1- 0 PPM 2- 100 PPM 3- 250 PPM 4- 500 PPM 5- 750 PPM

TABLE 48 (F1)

PROJECT NO.:WIL-380001F INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS DEVELOPMENTAL PARAMETERS - GROUP SUMMARY

VAGINAL PATENCY

DOSE GROUP	TOTAL PUPS	DAY: 43	44	45
	FEMALES			
2	25	24 96.%	24 96.%	25 100.%
3	25	24 96.%	25 100.%	
4	25	25 100.%		

1- 0 PPM 2- 100 PPM 3- 250 PPM 4- 500 PPM 5- 750 PPM

PBBSUv3.03
08/16/2000

TABLE 49 (F1 - AT VAGINAL PATENCY)

PROJECT NO.:WIL-380001F — INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 1

SPONSOR:BROMINATED SOLVENTS — DAY OF ACQUISITION AND BODY WEIGHT (GRAMS) - SUMMARY

	----- F E M A L E -----			
GROUP :	0 PPM	100 PPM	250 PPM	500 PPM
DAY				
MEAN (PND)	36.0	34.1	36.1	37.8
S.D.	2.05	6.29	2.36	2.84
N	25	25	25	25
BODY WEIGHT (g)	130.3	131.7	126.6	127.6
S.D.	13.49	19.71	10.81	17.40
N	25	25	25	25

None significantly different from control group

MANUALv1.0
8/28/2000

TABLE 50 (F1)

PROJECT NO.:WIL-380001A INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS SUMMARY OF SURVIVAL AND DISPOSITION

MALES

GROUP :	1				2				3				4			
WEEK	LIVE	FD	EE	SE	LIVE	FD	EE	SE	LIVE	FD	EE	SE	LIVE	FD	EE	SE
18	25	0	0	0	25	0	0	0	25	0	0	0	24	0	1	0
19	25	0	0	0	25	0	0	0	25	0	0	0	24	0	0	0
20	25	0	0	0	25	0	0	0	25	0	0	0	24	0	0	0
21	25	0	0	0	25	0	0	0	25	0	0	0	24	0	0	0
22	24	0	1	0	25	0	0	0	25	0	0	0	24	0	0	0
23	24	0	0	0	25	0	0	0	25	0	0	0	24	0	0	0
24	24	0	0	0	25	0	0	0	25	0	0	0	24	0	0	0
25	24	0	0	0	25	0	0	0	25	0	0	0	24	0	0	0
26	24	0	0	0	25	0	0	0	25	0	0	0	24	0	0	0
27	24	0	0	0	25	0	0	0	25	0	0	0	24	0	0	0
28	24	0	0	0	25	0	0	0	25	0	0	0	24	0	0	0
29	24	0	0	0	25	0	0	0	25	0	0	0	24	0	0	0
30	24	0	0	0	25	0	0	0	25	0	0	0	24	0	0	0
31	24	0	0	0	25	0	0	0	25	0	0	0	24	0	0	0
32	24	0	0	0	25	0	0	0	25	0	0	0	24	0	0	0
33	24	0	0	0	25	0	0	0	25	0	0	0	24	0	0	0
34	24	0	0	0	25	0	0	0	25	0	0	0	24	0	0	0
35	24	0	0	0	25	0	0	0	25	0	0	0	24	0	0	0
36	24	0	0	0	25	0	0	0	25	0	0	0	24	0	0	0
37	0	0	0	24	0	0	0	25	0	0	0	25	0	0	0	24

WEEK = WEEK OF STUDY FD = FOUND DEAD EE = EUTHANIZED IN EXTREMIS SE = SCHEDULED EUTHANASIA

1- 0 PPM 2- 100 PPM 3- 250 PPM 4- 500 PPM

PSURVv4.01
08/16/2000

TABLE 50 (F1)

PROJECT NO.:WIL-380001D INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS SUMMARY OF SURVIVAL AND DISPOSITION

FEMALES

GROUP :	1				2				3				4			
WEEK	LIVE	FD	EE	SE	LIVE	FD	EE	SE	LIVE	FD	EE	SE	LIVE	FD	EE	SE
18	25	0	0	0	25	0	0	0	25	0	0	0	25	0	0	0
19	25	0	0	0	25	0	0	0	25	0	0	0	25	0	0	0
20	25	0	0	0	25	0	0	0	25	0	0	0	25	0	0	0
21	25	0	0	0	25	0	0	0	25	0	0	0	25	0	0	0
22	25	0	0	0	25	0	0	0	25	0	0	0	25	0	0	0
23	25	0	0	0	25	0	0	0	25	0	0	0	25	0	0	0
24	25	0	0	0	25	0	0	0	25	0	0	0	25	0	0	0
25	25	0	0	0	25	0	0	0	25	0	0	0	25	0	0	0
26	25	0	0	0	25	0	0	0	25	0	0	0	25	0	0	0
27	25	0	0	0	25	0	0	0	25	0	0	0	25	0	0	0
28	25	0	0	0	25	0	0	0	25	0	0	0	25	0	0	0
29	25	0	0	0	25	0	0	0	25	0	0	0	25	0	0	0
30	25	0	0	0	25	0	0	0	25	0	0	0	25	0	0	0
31	25	0	0	0	25	0	0	0	25	0	0	0	25	0	0	0
32	25	0	0	0	25	0	0	0	25	0	0	0	25	0	0	0
33	25	0	0	0	25	0	0	0	25	0	0	0	25	0	0	0
34	25	0	0	0	25	0	0	0	25	0	0	0	25	0	0	0
35	25	0	0	0	25	0	0	0	25	0	0	0	25	0	0	0
36	25	0	0	0	25	0	0	0	25	0	0	0	25	0	0	0
37	0	0	0	25	0	0	0	25	0	0	0	25	0	0	0	25

WEEK = WEEK OF STUDY FD = FOUND DEAD EE = EUTHANIZED IN EXTREMIS SE = SCHEDULED EUTHANASIA

1- 0 PPM 2- 100 PPM 3- 250 PPM 4- 500 PPM

PSURVv4.01
08/16/2000

TABLE 51 (F1)

PROJECT NO.:WIL-380001D INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS SUMMARY OF REPRODUCTIVE PERFORMANCE

DOSE GROUP :	1		2		3		4	
	NO.	%	NO.	%	NO.	%	NO.	%
FEMALES ON STUDY	25		25		25		25	
FEMALES THAT DIED DURING STUDY	0		0		0		0	
FEMALES ALLOWED TO DELIVER	25		25		25		25	
NONGRAVID	3	12.0	8	32.0	9	36.0	7	28.0
GRAVID	22	88.0	17	68.0	16	64.0	18A	72.0
DELIVERED	22	100.0	17	100.0	16	100.0	17	94.4
FEMALES WITH TOTAL LITTER LOSS	0	0.0	0	0.0	1	6.3	1	5.9
FEMALES WITH VIABLE PUPS	22	100.0	17	100.0	15	93.8	16	94.1
FEMALES WITH EVIDENCE OF MATING	24	96.0	21	84.0	20	80.0	25	100.0
NUMBER THAT DELIVERED	21	87.5	17	81.0	16	80.0	17	68.0
NUMBER THAT DID NOT DELIVER	3	12.5	4	19.0	4	20.0	8	32.0
FEMALES WITH NO EVIDENCE OF MATING	1	4.0	4	16.0	5	20.0	0	0.0
NUMBER THAT DELIVERED	1	100.0	0	0.0	0	0.0	0	0.0
NUMBER THAT DID NOT DELIVER	0	0.0	4	100.0	5	100.0	0	0.0
TOTAL FEMALES GRAVID	22	88.0	17	68.0	16	64.0	18	72.0

1- 0 PPM 2- 100 PPM 3- 250 PPM 4- 500 PPM

NOTE: POSITIVE EVIDENCE OF MATING DURING THE BREEDING PERIOD WAS CONFIRMED BY THE PRESENCE OF SPERM IN A VAGINAL SMEAR OR A COPULATORY PLUG.

A = INCLUDES FEMALE NO. 32825-02 THAT DID NOT DELIVER

TABLE 51 (F1)

PROJECT NO.:WIL-380001D INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS SUMMARY OF REPRODUCTIVE PERFORMANCE

DOSE GROUP :	1		2		3		4	
	NO.	%	NO.	%	NO.	%	NO.	%
MALES ON STUDY	25		25		25		25	
MALES THAT DIED DURING STUDY	1-B		0		0		1-C	
MALES WITH EVIDENCE OF MATING	23	95.8	21	84.0	20	80.0	24	100.0
NO. THAT SIRED A LITTER	20	87.0	17	81.0	16	80.0	17	70.8
NO. THAT DID NOT SIRE A LITTER	3	13.0	4	19.0	4	20.0	7	29.2
MALES WITH NO EVIDENCE OF MATING	1	4.2	4	16.0	5	20.0	0	0.0
NO. THAT SIRED A LITTER	1	100.0	0	0.0	0	0.0	0	0.0
NO. THAT DID NOT SIRE A LITTER	0	0.0	4	100.0	5	100.0	0	0.0
MALE SIRING MORE THAN ONE LITTER	1	4.2	0	0.0	0	0.0	1	4.2

1- 0 PPM 2- 100 PPM 3- 250 PPM 4- 500 PPM

NOTE: MALES WERE CONSIDERED TO HAVE SIRED A LITTER IF THE PAIRED FEMALE WAS GRAVID, REGARDLESS OF DELIVERY STATUS

NOTE: POSITIVE EVIDENCE OF MATING DURING THE BREEDING PERIOD WAS CONFIRMED BY THE PRESENCE OF SPERM IN A VAGINAL SMEAR OR A COPULATORY PLUG.

B = MALE NO. 32923-04 WAS EUTHANIZED IN EXTREMIS PRIOR TO PAIRING - NOT INCLUDED IN CALCULATIONS

C = MALE NO. 32800-04 WAS EUTHANIZED IN EXTREMIS PRIOR TO PAIRING - NOT INCLUDED IN CALCULATIONS

TABLE 51 (F1)

PROJECT NO.:WIL-380001D — INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 3

SPONSOR:BROMINATED SOLVENTS — SUMMARY OF REPRODUCTIVE PERFORMANCE

DOSE GROUP :	1		2		3		4	
	NO.	%	NO.	%	NO.	%	NO.	%
MALE MATING INDEX	24/24	100.0	21/25	84.0	20/25	80.0	24/24	100.0
FEMALE MATING INDEX	25/25	100.0	21/25	84.0	20/25	80.0	25/25	100.0
MALE FERTILITY INDEX	21/24	87.5	17/25	68.0	16/25	64.0	17/24	70.8
FEMALE FERTILITY INDEX	22/25	88.0	17/25	68.0	16/25	64.0	18/25	72.0
MEAN PRE-COITAL INTERVALS (DAYS)	3.8	NA	2.5	NA	3.7	NA	4.2	NA
S.D.	2.57	NA	1.57	NA	2.64	NA	2.71	NA
N	24		21		20		25	

$$\text{MALE (FEMALE) MATING INDEX (\%)} = \frac{\text{NO. OF MALES (FEMALES) WITH EVIDENCE OF MATING (OR CONFIRMED PREGNANCY)}}{\text{TOTAL NO. OF MALES (FEMALES) USED FOR MATING}} \times 100$$

$$\text{MALE FERTILITY INDEX (\%)} = \frac{\text{NO. OF MALES SIRING A LITTER}}{\text{TOTAL NO. OF MALES USED FOR MATING}} \times 100$$

$$\text{FEMALE FERTILITY INDEX (\%)} = \frac{\text{NO. OF FEMALES WITH CONFIRMED PREGNANCY}}{\text{TOTAL NO. OF FEMALES USED FOR MATING}} \times 100$$

1- 0 PPM 2- 100 PPM 3- 250 PPM 4- 500 PPM

NOTE: MALES WERE CONSIDERED TO HAVE SIRED A LITTER IF THE PAIRED FEMALE WAS GRAVID, REGARDLESS OF DELIVERY STATUS

PRE-COITAL INTERVALS NOT SIGNIFICANTLY DIFFERENT FROM CONTROL GROUP USING DUNNETT'S TEST

MATING AND FERTILITY NOT SIGNIFICANTLY DIFFERENT FROM CONTROL GROUP USING CHI-SQUARE TEST

NA = NOT APPLICABLE

MANUALv1.0
09/06/2000

TABLE 52 (F1)

PROJECT NO.:WIL-380001D INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS PAGE 1

SPONSOR:BROMINATED SOLVENTS ESTROUS CYCLE LENGTH - SUMMARY OF MEANS

	----- F E M A L E -----			
GROUP:	0 PPM	100 PPM	250 PPM	500 PPM
ESTROUS CYCLE LENGTH (IN DAYS)				
MEAN	4.5	4.5	4.9	5.1
S.D.	1.25	0.91	1.43	1.68
N	24	24	22	21

NO STATISTICAL ANALYSES PERFORMED

MANUALv1.0
08/24/2000
R:04/28/2001

TABLE 53 (F1 - DETAILED PHYSICAL EXAMINATIONS)

PROJECT NO.:WIL-380001A INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS SUMMARY OF CLINICAL FINDINGS: TOTAL OCCURRENCE/NO. OF ANIMALS

----- M A L E -----

TABLE RANGE:	02-29-00 TO 07-25-00			
GROUP:	1	2	3	4
NORMAL				
-NO SIGNIFICANT CLINICAL OBSERVATIONS	401/25	452/25	460/25	419/24
DISPOSITION				
-EUTHANIZED MORIBUND	1/ 1	0/ 0	0/ 0	1/ 1
-SCHEDULED EUTHANASIA	24/24	25/25	25/25	24/24
BODY/INTEGUMENT				
-HAIR LOSS LEFT FORELIMB	37/ 5	31/ 4	12/ 2	23/ 4
-HAIR LOSS RIGHT FORELIMB	71/ 8	33/ 4	9/ 1	36/ 4
-UNKEMPT IN APPEARANCE	1/ 1	0/ 0	0/ 0	0/ 0
-SCABBING DORSAL THORACIC AREA	0/ 0	0/ 0	0/ 0	3/ 1
-FIRST DIGIT LEFT FORELIMB MISSING	0/ 0	0/ 0	3/ 1	0/ 0
-APPARENT SWELLING LEFT FORELIMB	0/ 0	0/ 0	7/ 1	0/ 0
-FIRM MOVABLE MASS RIGHT THORACIC AREA (10MM X 10MM X 10MM)	0/ 0	0/ 0	5/ 1	0/ 0
-WET RED MATERIAL RIGHT LATERAL THORACIC AREA	0/ 0	0/ 0	1/ 1	0/ 0
-SCABBING RIGHT LATERAL THORACIC AREA	0/ 0	0/ 0	3/ 1	0/ 0
EYES/EARS/NOSE				
-DRIED RED MATERIAL AROUND NOSE	7/ 6	12/ 9	5/ 4	14/ 9

1- 0 PPM 2- 100 PPM 3- 250 PPM 4- 500 PPM

TABLE 53 (F1 - DETAILED PHYSICAL EXAMINATIONS)

PROJECT NO.:WIL-380001A INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS SUMMARY OF CLINICAL FINDINGS: TOTAL OCCURRENCE/NO. OF ANIMALS

----- M A L E -----

TABLE RANGE:	02-29-00 TO 07-25-00			
GROUP:	1	2	3	4
EYES/EARS/NOSE				
-DRIED RED MATERIAL AROUND RIGHT EYE	1/ 1	0/ 0	0/ 0	2/ 2
-DRIED RED MATERIAL AROUND LEFT EYE	1/ 1	0/ 0	0/ 0	1/ 1
EXCRETA				
-SOFT STOOL	0/ 0	1/ 1	0/ 0	1/ 1
ORAL/DENTAL				
-SALIVATION	1/ 1	0/ 0	0/ 0	0/ 0
-TEETH LONG, TRIMMED	0/ 0	0/ 0	4/ 1	0/ 0
-UPPER INCISORS MALALIGNED	0/ 0	0/ 0	2/ 1	0/ 0
-UPPER INCISORS BROKEN	0/ 0	0/ 0	1/ 1	0/ 0

1- 0 PPM 2- 100 PPM 3- 250 PPM 4- 500 PPM

PCSUv4.0
08/16/2000

TABLE 53 (F1 - DETAILED PHYSICAL EXAMINATIONS)

PROJECT NO.:WIL-380001D INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS SUMMARY OF CLINICAL FINDINGS: TOTAL OCCURRENCE/NO. OF ANIMALS

----- F E M A L E -----

TABLE RANGE:	02-29-00 TO 07-25-00			
GROUP:	1	2	3	4
NORMAL				
-NO SIGNIFICANT CLINICAL OBSERVATIONS	382/25	385/25	453/25	428/25
DISPOSITION				
-SCHEDULED EUTHANASIA	25/25	25/25	25/25	25/25
BODY/INTEGUMENT				
-SCABBING DORSAL NECK	0/ 0	0/ 0	0/ 0	2/ 1
-HAIR LOSS RIGHT FORELIMB	103/11	77/11	16/ 5	47/ 6
-HAIR LOSS LEFT FORELIMB	104/11	74/11	22/ 5	40/ 7
-DRIED YELLOW MATTING UROGENITAL AREA	1/ 1	2/ 2	0/ 0	1/ 1
-DISTAL END OF TAIL MISSING	0/ 0	0/ 0	11/ 1	0/ 0
-HAIR LOSS VENTRAL ABDOMINAL AREA	7/ 1	1/ 1	0/ 0	0/ 0
-HAIR LOSS LEFT HINDLIMB	1/ 1	0/ 0	0/ 0	0/ 0
-HAIR LOSS RIGHT HINDLIMB	1/ 1	0/ 0	0/ 0	0/ 0
-FIRM MOVEABLE MASS LEFT LATERAL THORACIC AREA 5MM X 5MM X 5MM	0/ 0	6/ 1	0/ 0	0/ 0
-DRIED CLEAR MATTING VENTRAL ABDMIMAL AREA	0/ 0	0/ 0	1/ 1	0/ 0
-DRIED RED MATERIAL AROUND FACE	0/ 0	0/ 0	1/ 1	0/ 0
EYES/EARS/NOSE				
-DRIED RED MATERIAL AROUND NOSE	4/ 4	16/11	7/ 7	11/10

1- 0 PPM 2- 100 PPM 3- 250 PPM 4- 500 PPM

TABLE 53 (F1 - DETAILED PHYSICAL EXAMINATIONS)

PROJECT NO.:WIL-380001D — INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 2

SPONSOR:BROMINATED SOLVENTS — SUMMARY OF CLINICAL FINDINGS: TOTAL OCCURRENCE/NO. OF ANIMALS

----- F E M A L E -----

TABLE RANGE:	02-29-00 TO 07-25-00			
GROUP:	1	2	3	4
EYES/EARS/NOSE				
-WET RED MATERIAL AROUND NOSE	0/ 0	1/ 1	0/ 0	0/ 0
-DRIED RED MATERIAL AROUND RIGHT EYE	0/ 0	17/ 2	1/ 1	0/ 0
-DRIED RED MATERIAL AROUND LEFT EYE	0/ 0	7/ 1	1/ 1	0/ 0
ORAL/DENTAL				
-UPPER INCISORS MALALIGNED	0/ 0	16/ 1	0/ 0	0/ 0
-TEETH LONG, TRIMMED	0/ 0	13/ 1	0/ 0	0/ 0
-SALIVATION	0/ 0	0/ 0	1/ 1	0/ 0
SPECIAL II				
-ESTROUS SMEAR DETERMINED TO BE ESTRUS PRIOR TO NECROPSY	4/ 4	5/ 5	3/ 3	9/ 9
-ESTROUS SMEAR DETERMINED TO BE DIESTRUS PRIOR TO NECROPSY	20/20	14/14	15/15	12/12
-ESTROUS SMEAR DETERMINED TO BE PROESTRUS PRIOR TO NECROPSY	1/ 1	2/ 2	1/ 1	0/ 0
-ESTROUS SMEAR DETERMINED TO BE METESTRUS PRIOR TO NECROPSY	0/ 0	4/ 4	6/ 6	4/ 4

1- 0 PPM 2- 100 PPM 3- 250 PPM 4- 500 PPM

PCSUv4.0
08/16/2000

TABLE 54 (F1 - 1-HOUR POST-EXPOSURE)

PROJECT NO.:WIL-380001A — INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 1

SPONSOR:BROMINATED SOLVENTS — SUMMARY OF CLINICAL FINDINGS: TOTAL OCCURRENCE/NO. OF ANIMALS

----- M A L E -----

TABLE RANGE: 02-29-00 TO 07-24-00

GROUP:	1	2	3	4
BEHAVIOR/CNS				
-LETHARGIC	0/ 0	0/ 0	0/ 0	1/ 1
CARDIO-PULMONARY				
-SHALLOW RESPIRATION	0/ 0	0/ 0	0/ 0	1/ 1
EYES/EARS/NOSE				
-EYES APPEAR PALE IN COLOR	0/ 0	0/ 0	0/ 0	1/ 1
ORAL/DENTAL				
-SALIVATION	0/ 0	0/ 0	0/ 0	1/ 1

1- 0 PPM 2- 100 PPM 3- 250 PPM 4- 500 PPM

PCSUv4.0
08/16/2000

TABLE 54 (F1 - 1-HOUR POST-EXPOSURE)

PROJECT NO.:WIL-380001D INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS PAGE 1

SPONSOR:BROMINATED SOLVENTS SUMMARY OF CLINICAL FINDINGS: TOTAL OCCURRENCE/NO. OF ANIMALS

----- F E M A L E -----

TABLE RANGE:	02-29-00 TO 07-24-00			
GROUP:	1	2	3	4

THERE WERE NO SIGNIFICANT CLINICAL FINDINGS ONE HOUR FOLLOWING EXPOSURE.

1- 0 PPM 2- 100 PPM 3- 250 PPM 4- 500 PPM

PCSUv4.0
08/16/2000

TABLE 55 (F1)

PROJECT NO.:WIL-380001A INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS BODY WEIGHTS (GRAMS) - SUMMARY OF MEANS

		----- M A L E -----			
	GROUP:	0 PPM	100 PPM	250 PPM	500 PPM
WEEK 19					
	MEAN	154.	145.	142.	133.**
	S.D.	24.9	17.8	19.3	22.2
	N	25	25	25	21
20					
	MEAN	216.	203.	201.	176.**
	S.D.	26.6	18.9	22.0	39.5
	N	25	25	25	24
21					
	MEAN	277.	263.	261.	231.**
	S.D.	27.9	22.0	26.7	42.0
	N	25	25	25	24
22					
	MEAN	331.	315.	316.	285.**
	S.D.	29.1	24.2	28.0	42.7
	N	24	25	25	24
23					
	MEAN	375.	356.	358.	329.**
	S.D.	33.0	25.1	29.9	40.4
	N	24	25	25	24

** = Significantly different from the control group at 0.01 using Dunnett's test

TABLE 55 (F1)

PROJECT NO.:WIL-380001A INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS BODY WEIGHTS (GRAMS) - SUMMARY OF MEANS

		----- M A L E -----			
	GROUP:	0 PPM	100 PPM	250 PPM	500 PPM
WEEK 24					
	MEAN	409.	388.	393.	366.**
	S.D.	36.1	29.3	31.8	38.2
	N	24	25	25	24
25					
	MEAN	438.	413.	420.	396.**
	S.D.	39.0	35.6	33.0	38.8
	N	24	25	25	24
26					
	MEAN	462.	434.*	444.	419.**
	S.D.	41.7	39.8	35.9	37.2
	N	24	25	25	24
27					
	MEAN	484.	453.*	464.	436.**
	S.D.	42.8	45.5	39.3	36.8
	N	24	25	25	24
28					
	MEAN	499.	462.*	477.	450.**
	S.D.	50.6	51.4	40.0	39.0
	N	24	25	25	24

* = Significantly different from the control group at 0.05 using Dunnett's test
** = Significantly different from the control group at 0.01 using Dunnett's test

TABLE 55 (F1)

PROJECT NO.:WIL-380001A INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS BODY WEIGHTS (GRAMS) - SUMMARY OF MEANS

		----- M A L E -----			
	GROUP:	0 PPM	100 PPM	250 PPM	500 PPM
WEEK 29					
	MEAN	516.	476.*	493.	462.**
	S.D.	52.2	52.9	44.7	39.5
	N	24	25	25	24
30					
	MEAN	527.	486.*	503.	471.**
	S.D.	53.7	55.9	44.4	39.5
	N	24	25	25	24
31					
	MEAN	541.	498.*	516.	486.**
	S.D.	57.5	58.8	45.8	38.9
	N	24	25	25	24
32					
	MEAN	547.	503.*	522.	495.**
	S.D.	61.8	60.8	47.4	39.7
	N	24	25	25	24
33					
	MEAN	556.	515.*	527.	503.**
	S.D.	60.7	63.4	50.3	41.3
	N	24	25	25	24

* = Significantly different from the control group at 0.05 using Dunnett's test

** = Significantly different from the control group at 0.01 using Dunnett's test

TABLE 55 (F1)

PROJECT NO.:WIL-380001A INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS BODY WEIGHTS (GRAMS) - SUMMARY OF MEANS

		----- M A L E -----			
	GROUP:	0 PPM	100 PPM	250 PPM	500 PPM
WEEK 34					
	MEAN	567.	527.*	541.	513.**
	S.D.	61.7	64.1	53.5	43.0
	N	24	25	25	24
35					
	MEAN	576.	536.*	550.	520.**
	S.D.	63.7	64.8	53.1	44.3
	N	24	25	25	24
36					
	MEAN	582.	544.	560.	526.**
	S.D.	64.6	67.7	53.9	43.4
	N	24	25	25	24
37					
	MEAN	589.	549.	567.	530.**
	S.D.	63.9	70.2	55.5	44.3
	N	24	25	25	24

* = Significantly different from the control group at 0.05 using Dunnett's test
** = Significantly different from the control group at 0.01 using Dunnett's test

PBFSTv4.16
09/28/2000

TABLE 55 (F1)

PROJECT NO.:WIL-380001D — INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 1

SPONSOR:BROMINATED SOLVENTS — BODY WEIGHTS (GRAMS) - SUMMARY OF MEANS

		----- F E M A L E -----			
	GROUP:	0 PPM	100 PPM	250 PPM	500 PPM
WEEK 19					
	MEAN	128.	129.	125.	115.*
	S.D.	17.6	18.1	12.8	13.8
	N	25	25	25	22
20					
	MEAN	161.	163.	158.	142.**
	S.D.	15.9	15.8	12.4	25.5
	N	25	25	25	25
21					
	MEAN	186.	186.	182.	168.**
	S.D.	18.7	16.3	15.7	22.8
	N	25	25	25	25
22					
	MEAN	210.	211.	207.	191.**
	S.D.	19.8	18.1	19.3	22.6
	N	25	25	25	25
23					
	MEAN	230.	232.	223.	211.**
	S.D.	19.9	19.2	17.4	23.7
	N	25	25	25	25

* = Significantly different from the control group at 0.05 using Dunnett's test

** = Significantly different from the control group at 0.01 using Dunnett's test

TABLE 55 (F1)

PROJECT NO.:WIL-380001D — INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 2

SPONSOR:BROMINATED SOLVENTS — BODY WEIGHTS (GRAMS) - SUMMARY OF MEANS

		----- F E M A L E -----			
	GROUP:	0 PPM	100 PPM	250 PPM	500 PPM
WEEK 24					
	MEAN	247.	248.	241.	226.**
	S.D.	22.9	21.8	21.2	24.9
	N	25	25	25	25
25					
	MEAN	261.	261.	251.	240.**
	S.D.	24.2	24.1	22.4	25.4
	N	25	25	25	25
26					
	MEAN	269.	271.	263.	250.*
	S.D.	25.8	24.7	24.3	25.0
	N	25	25	25	25
27					
	MEAN	280.	281.	269.	257.**
	S.D.	24.9	28.8	23.3	25.4
	N	25	25	25	25
28					
	MEAN	285.	289.	278.	266.*
	S.D.	25.4	27.0	24.1	24.6
	N	25	25	25	25

* = Significantly different from the control group at 0.05 using Dunnett's test

** = Significantly different from the control group at 0.01 using Dunnett's test

TABLE 55 (F1)

PROJECT NO.:WIL-380001D — INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 3

SPONSOR:BROMINATED SOLVENTS — BODY WEIGHTS (GRAMS) - SUMMARY OF MEANS

		----- F E M A L E -----			
	GROUP:	0 PPM	100 PPM	250 PPM	500 PPM
WEEK 29					
	MEAN	290.	291.	276.	266.
	S.D.	33.5	24.2	29.3	29.3
	N	11	8	15	14
30					
	MEAN	299.	295.	293.	292.
	S.D.	96.9	39.1	35.3	0.0
	N	2	4	6	1
31					
	MEAN	403.	297.	283.	A
	S.D.	0.0	37.1	30.1	
	N	1	4	5	
32					
	MEAN	492.	299.	289.	A
	S.D.	0.0	40.1	31.1	
	N	1	4	5	
33					
	MEAN	327.	309.	294.	298.
	S.D.	0.7	26.5	29.8	24.0
	N	2	8	10	8

None significantly different from control group

A = REFER TO F1 GESTATION/LACTATION BODY WEIGHT TABLES

TABLE 55 (F1)

PROJECT NO.:WIL-380001D — INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 4

SPONSOR:BROMINATED SOLVENTS — BODY WEIGHTS (GRAMS) - SUMMARY OF MEANS

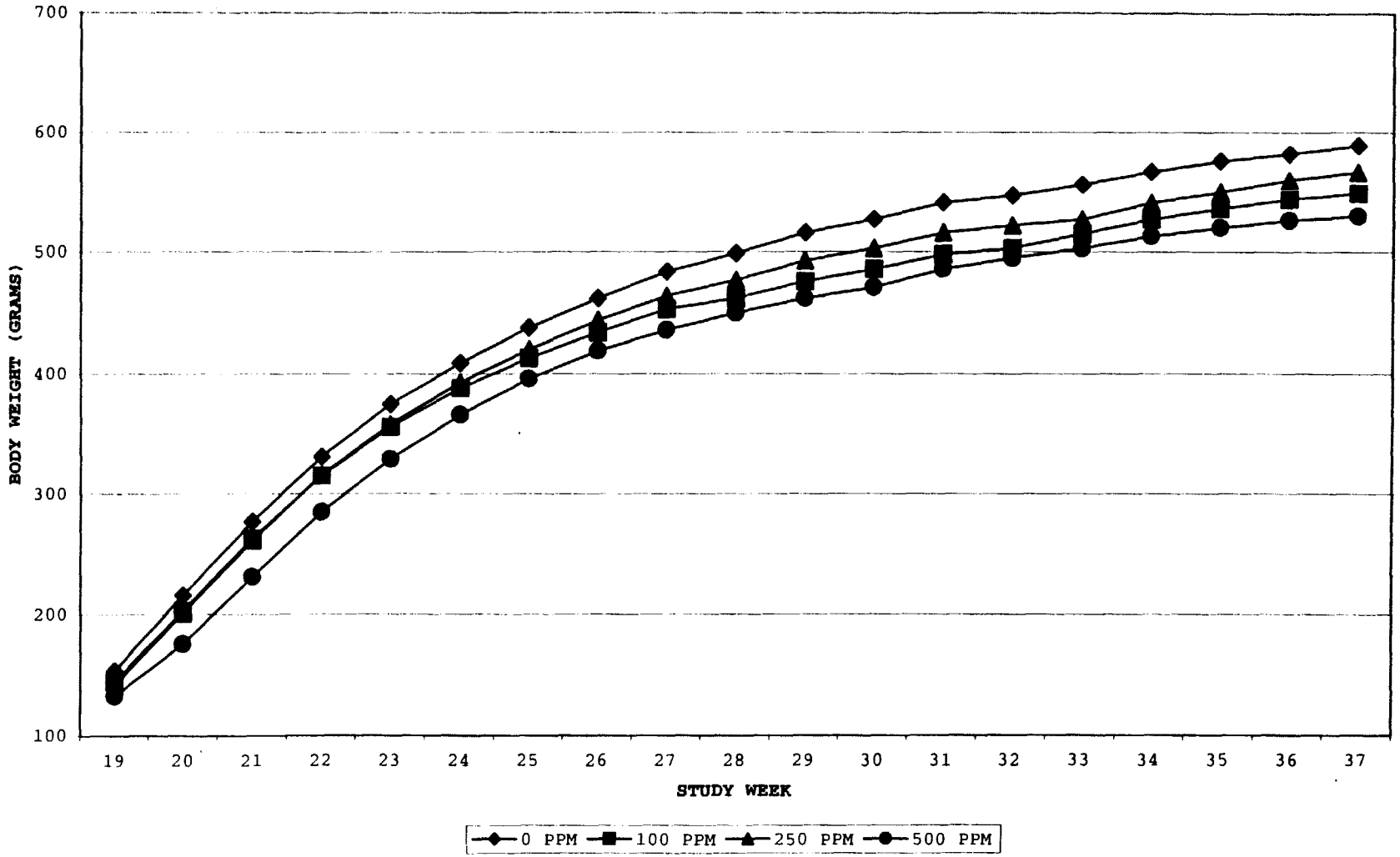
		----- F E M A L E -----			
	GROUP:	0 PPM	100 PPM	250 PPM	500 PPM
WEEK 34					
	MEAN	341.	318.	302.	306.
	S.D.	8.9	25.5	33.8	25.8
	N	3	8	10	9
35					
	MEAN	328.	321.	308.	306.
	S.D.	29.7	24.9	25.7	26.9
	N	4	13	14	11
36					
	MEAN	311.	315.	306.	302.
	S.D.	22.7	25.4	26.9	30.0
	N	23	25	24	23
37					
	MEAN	319.	322.	316.	307.
	S.D.	27.6	28.3	25.9	27.2
	N	25	25	25	25

None significantly different from control group

PBFSTv4.15
08/21/2000

PROJECT NO.:WIL-380001A
SPONSOR:BROMINATED SOLVENTS

FIGURE 5 (F1 MALES)
INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS
BODY WEIGHTS (GRAMS) - SUMMARY OF MEANS



PROJECT NO.:WIL-380001D
SPONSOR:BROMINATED SOLVENTS

FIGURE 6 (F1 FEMALES)
INHLALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS
BODY WEIGHTS (GRAMS) - SUMMARY OF MEANS

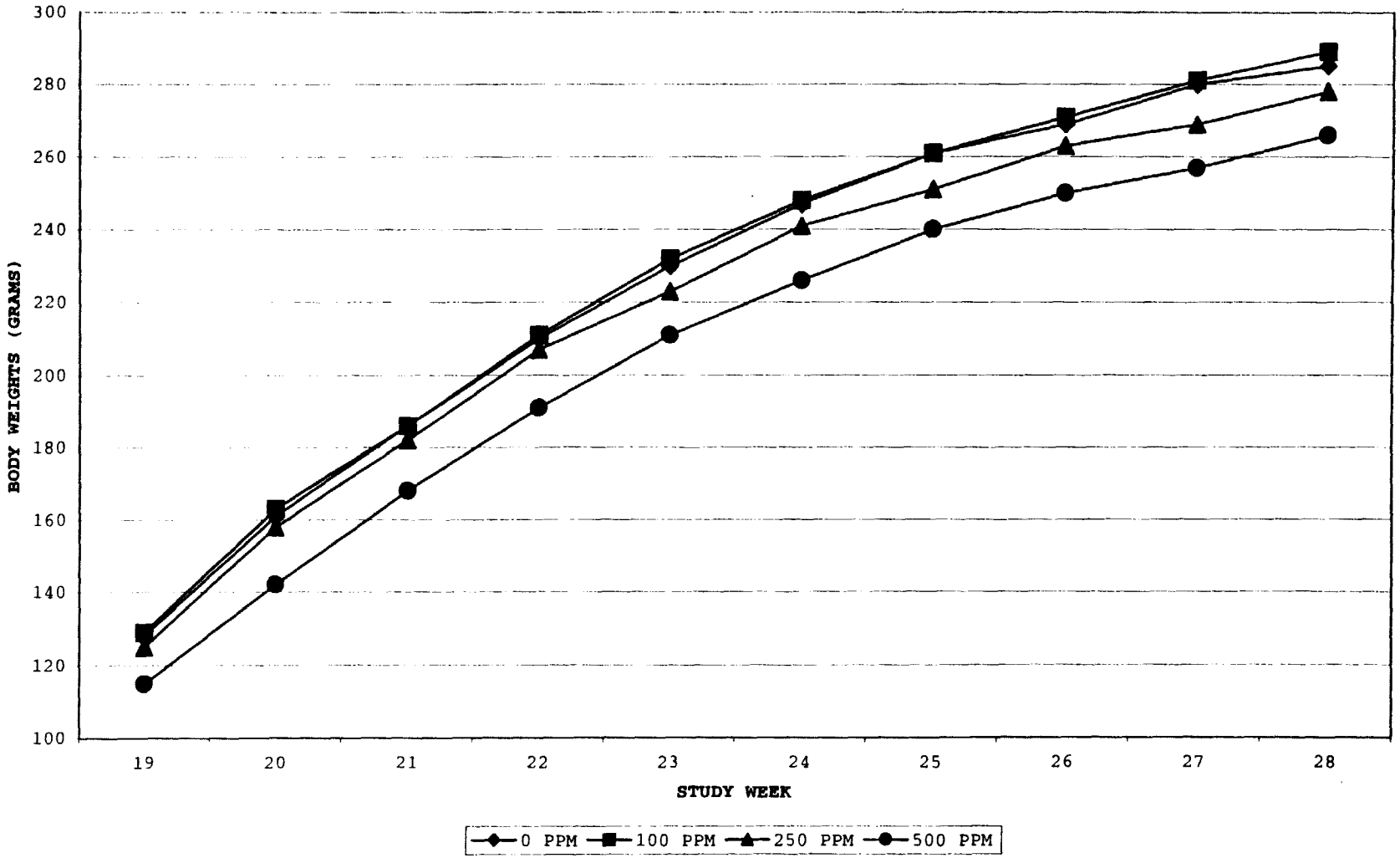


TABLE 56 (F1)

PROJECT NO.:WIL-380001A — INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 1

SPONSOR:BROMINATED SOLVENTS — BODY WEIGHT GAINS (GRAMS) - SUMMARY OF MEANS

		----- M A L E -----			
GROUP:		0 PPM	100 PPM	250 PPM	500 PPM
WEEK 19 TO 20					
	MEAN	61.	58.	59.	54.**
	S.D.	7.0	8.3	7.9	7.6
	N	25	25	25	21
20 TO 21					
	MEAN	62.	60.	60.	56.**
	S.D.	6.6	8.0	7.0	5.1
	N	25	25	25	24
21 TO 22					
	MEAN	55.	52.	55.	53.
	S.D.	8.2	8.6	6.3	7.3
	N	24	25	25	24
22 TO 23					
	MEAN	44.	41.	42.	44.
	S.D.	10.6	9.8	6.7	7.2
	N	24	25	25	24
23 TO 24					
	MEAN	34.	32.	35.	37.
	S.D.	6.5	8.3	5.2	8.9
	N	24	25	25	24

** = Significantly different from the control group at 0.01 using Dunnett's test

TABLE 56 (F1)

PROJECT NO.:WIL-380001A — INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 2

SPONSOR:BROMINATED SOLVENTS — BODY WEIGHT GAINS (GRAMS) - SUMMARY OF MEANS

		----- M A L E -----			
	GROUP:	0 PPM	100 PPM	250 PPM	500 PPM
WEEK 24 TO 25					
	MEAN	28.	25.	27.	29.
	S.D.	5.4	10.9	5.2	5.8
	N	24	25	25	24
25 TO 26					
	MEAN	24.	21.	23.	23.
	S.D.	6.8	6.5	6.3	7.0
	N	24	25	25	24
26 TO 27					
	MEAN	22.	19.	20.	17.
	S.D.	7.2	7.4	7.0	5.8
	N	24	25	25	24
27 TO 28					
	MEAN	15.	9.	13.	14.
	S.D.	10.4	20.7	5.5	6.4
	N	24	25	25	24
28 TO 29					
	MEAN	17.	14.	15.	12.
	S.D.	10.5	13.6	8.0	5.2
	N	24	25	25	24

None significantly different from control group

TABLE 56 (F1)

PROJECT NO.:WIL-380001A INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS BODY WEIGHT GAINS (GRAMS) - SUMMARY OF MEANS

		----- M A L E -----			
GROUP:		0 PPM	100 PPM	250 PPM	500 PPM
WEEK 29 TO 30					
	MEAN	11.	10.	10.	9.
	S.D.	7.9	6.7	6.6	5.2
	N	24	25	25	24
30 TO 31					
	MEAN	14.	12.	14.	15.
	S.D.	8.9	5.4	5.3	6.6
	N	24	25	25	24
31 TO 32					
	MEAN	6.	5.	6.	9.
	S.D.	10.8	7.7	6.9	6.5
	N	24	25	25	24
32 TO 33					
	MEAN	9.	12.	6.	8.
	S.D.	8.0	5.0	9.4	6.5
	N	24	25	25	24
33 TO 34					
	MEAN	11.	11.	13.	10.
	S.D.	5.9	5.0	7.6	7.4
	N	24	25	25	24

None significantly different from control group

TABLE 56 (F1)

PROJECT NO.:WIL-380001A INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS BODY WEIGHT GAINS (GRAMS) - SUMMARY OF MEANS

		----- M A L E -----			
GROUP:		0 PPM	100 PPM	250 PPM	500 PPM
WEEK 34 TO 35					
	MEAN	9.	9.	10.	7.
	S.D.	7.5	6.3	8.0	5.3
	N	24	25	25	24
35 TO 36					
	MEAN	6.	8.	10.	6.
	S.D.	12.4	5.2	5.9	5.3
	N	24	25	25	24
36 TO 37					
	MEAN	7.	5.	7.	4.
	S.D.	5.6	4.6	6.6	3.7
	N	24	25	25	24

None significantly different from control group

PBFSTv4.15
08/21/2000

TABLE 56 (F1)

PROJECT NO.:WIL-380001D — INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 1

SPONSOR:BROMINATED SOLVENTS — BODY WEIGHT GAINS (GRAMS) - SUMMARY OF MEANS

	----- F E M A L E -----			
GROUP:	0 PPM	100 PPM	250 PPM	500 PPM
WEEK 19 TO 20				
MEAN	33.	34.	33.	35.
S.D.	8.7	8.3	5.9	5.4
N	25	25	25	22
20 TO 21				
MEAN	25.	23.	24.	25.
S.D.	6.0	9.1	5.6	7.3
N	25	25	25	25
21 TO 22				
MEAN	24.	25.	25.	23.
S.D.	5.2	8.0	8.6	3.6
N	25	25	25	25
22 TO 23				
MEAN	19.	20.	16.	20.
S.D.	6.3	5.6	9.0	7.8
N	25	25	25	25
23 TO 24				
MEAN	17.	17.	17.	15.
S.D.	8.4	6.5	6.5	6.3
N	25	25	25	25

None significantly different from control group

TABLE 56 (F1)

PROJECT NO.:WIL-380001D INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS BODY WEIGHT GAINS (GRAMS) - SUMMARY OF MEANS

	----- F E M A L E -----			
GROUP:	0 PPM	100 PPM	250 PPM	500 PPM
WEEK 24 TO 25				
MEAN	15.	13.	10.	14.
S.D.	6.5	6.4	6.2	8.6
N	25	25	25	25
25 TO 26				
MEAN	8.	11.	11.	10.
S.D.	5.9	6.7	8.0	3.9
N	25	25	25	25
26 TO 27				
MEAN	11.	10.	6.	8.
S.D.	6.2	8.2	5.5	6.4
N	25	25	25	25
27 TO 28				
MEAN	5.	8.	9.	8.
S.D.	5.2	7.5	4.3	4.8
N	25	25	25	25
28 TO 29				
MEAN	2.	-2.	2.	3.
S.D.	10.6	8.9	6.8	7.6
N	11	8	15	14

None significantly different from control group

TABLE 56 (F1)

PROJECT NO.:WIL-380001D — INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 3

SPONSOR:BROMINATED SOLVENTS — BODY WEIGHT GAINS (GRAMS) - SUMMARY OF MEANS

	----- F E M A L E -----			
GROUP:	0 PPM	100 PPM	250 PPM	500 PPM
WEEK 29 TO 30				
MEAN	14.	5.	17.	-1.
S.D.	9.9	5.4	10.0	0.0
N	2	4	6	1
30 TO 31				
MEAN	36.	2.	-4.	A
S.D.	0.0	6.8	9.0	
N	1	4	5	
31 TO 32				
MEAN	89.	3.	6.	A
S.D.	0.0	3.5	8.1	
N	1	4	5	
32 TO 33				
MEAN	A	7.	3.	A
S.D.		9.0	8.2	
N		4	5	
33 TO 34				
MEAN	10.	9.	9.	6.
S.D.	3.5	5.0	10.0	11.0
N	2	8	10	8

None significantly different from control group

A = REFER TO F1 GESTATION/LACTATION BODY WEIGHT GAIN TABLES

TABLE 56 (F1)

PROJECT NO.:WIL-380001D INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS BODY WEIGHT GAINS (GRAMS) - SUMMARY OF MEANS

	----- F E M A L E -----			
GROUP:	0 PPM	100 PPM	250 PPM	500 PPM
WEEK 34 TO 35				
MEAN	2.	4.	2.	3.
S.D.	2.9	3.4	8.0	6.4
N	3	8	10	9
35 TO 36				
MEAN	3.	1.	4.	5.
S.D.	9.7	10.7	12.7	7.7
N	4	13	14	11
36 TO 37				
MEAN	12.	7.	10.	5.
S.D.	11.7	9.2	9.1	11.9
N	23	25	24	23

None significantly different from control group

PBFSTv4.15
08/21/2000

TABLE 57 (F1)

PROJECT NO.:WIL-380001A — INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 1

SPONSOR:BROMINATED SOLVENTS — SUMMARY OF BODY WEIGHT CHANGES FROM INTERVAL 20 (GRAMS)

		----- M A L E -----			
	GROUP:	0 PPM	100 PPM	250 PPM	500 PPM
WEEK	20 TO 21				
	MEAN	62.	60.	60.	56.**
	S.D.	6.6	8.0	7.0	5.1
	N	25	25	25	24
	20 TO 22				
	MEAN	117.	112.	115.	109.
	S.D.	13.6	15.4	10.6	10.7
	N	24	25	25	24
	20 TO 23				
	MEAN	161.	153.	157.	153.
	S.D.	22.7	21.6	14.5	15.2
	N	24	25	25	24
	20 TO 24				
	MEAN	195.	185.	192.	191.
	S.D.	27.2	28.1	17.2	21.6
	N	24	25	25	24
	20 TO 25				
	MEAN	223.	210.	219.	220.
	S.D.	30.8	36.3	19.2	24.1
	N	24	25	25	24

** = Significantly different from the control group at 0.01 using Dunnett's test

TABLE 57 (F1)

PROJECT NO.:WIL-380001A — INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 2

SPONSOR:BROMINATED SOLVENTS — SUMMARY OF BODY WEIGHT CHANGES FROM INTERVAL 20 (GRAMS)

		----- M A L E -----			
GROUP:		0 PPM	100 PPM	250 PPM	500 PPM
WEEK 20 TO 26					
	MEAN	247.	231.	242.	243.
	S.D.	35.8	40.9	22.5	27.8
	N	24	25	25	24
20 TO 27					
	MEAN	269.	250.	263.	260.
	S.D.	39.1	46.8	27.0	30.3
	N	24	25	25	24
20 TO 28					
	MEAN	285.	259.	276.	274.
	S.D.	47.1	54.3	28.1	33.9
	N	24	25	25	24
20 TO 29					
	MEAN	302.	273.	291.	286.
	S.D.	48.8	55.6	31.8	33.4
	N	24	25	25	24
20 TO 30					
	MEAN	312.	283.	301.	295.
	S.D.	49.7	58.4	32.8	35.0
	N	24	25	25	24

None significantly different from control group

TABLE 57 (F1)

PROJECT NO.:WIL-380001A — INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 3

SPONSOR:BROMINATED SOLVENTS — SUMMARY OF BODY WEIGHT CHANGES FROM INTERVAL 20 (GRAMS)

		----- M A L E -----			
GROUP:		0 PPM	100 PPM	250 PPM	500 PPM
WEEK	20 TO 31				
	MEAN	326.	295.	315.	310.
	S.D.	52.7	61.1	34.4	36.1
	N	24	25	25	24
	20 TO 32				
	MEAN	333.	300.	321.	319.
	S.D.	57.4	64.0	36.2	37.7
	N	24	25	25	24
	20 TO 33				
	MEAN	342.	312.	326.	328.
	S.D.	55.8	66.2	38.9	36.2
	N	24	25	25	24
	20 TO 34				
	MEAN	353.	323.	339.	337.
	S.D.	57.4	67.2	41.5	39.9
	N	24	25	25	24
	20 TO 35				
	MEAN	362.	333.	349.	344.
	S.D.	60.5	68.3	41.1	42.4
	N	24	25	25	24

None significantly different from control group

TABLE 57 (F1)

PROJECT NO.:WIL-380001A INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS SUMMARY OF BODY WEIGHT CHANGES FROM INTERVAL 20 (GRAMS)

	----- M A L E -----			
GROUP:	0 PPM	100 PPM	250 PPM	500 PPM
WEEK 20 TO 36				
MEAN	368.	341.	359.	351.
S.D.	60.5	70.8	42.0	41.8
N	24	25	25	24
20 TO 37				
MEAN	374.	346.	366.	354.
S.D.	59.5	73.3	43.9	42.2
N	24	25	25	24

None significantly different from control group

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08/22/2000

TABLE 57 (F1)

PROJECT NO.:WIL-380001D — INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 1

SPONSOR:BROMINATED SOLVENTS — SUMMARY OF BODY WEIGHT CHANGES FROM INTERVAL 20 (GRAMS)

	----- F E M A L E -----			
GROUP:	0 PPM	100 PPM	250 PPM	500 PPM
WEEK 20 TO 21				
MEAN	25.	23.	24.	25.
S.D.	6.0	9.1	5.6	7.3
N	25	25	25	25
20 TO 22				
MEAN	49.	48.	49.	48.
S.D.	9.1	10.8	11.2	9.1
N	25	25	25	25
20 TO 23				
MEAN	69.	68.	65.	69.
S.D.	10.8	12.7	9.0	10.5
N	25	25	25	25
20 TO 24				
MEAN	86.	85.	83.	84.
S.D.	14.2	17.1	13.1	13.4
N	25	25	25	25
20 TO 25				
MEAN	100.	97.	93.	98.
S.D.	16.6	18.5	15.4	17.0
N	25	25	25	25

None significantly different from control group

TABLE 57 (F1)

PROJECT NO.:WIL-380001D — INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 2

SPONSOR:BROMINATED SOLVENTS — SUMMARY OF BODY WEIGHT CHANGES FROM INTERVAL 20 (GRAMS)

		----- F E M A L E -----			
GROUP:		0 PPM	100 PPM	250 PPM	500 PPM
WEEK	20 TO 26				
	MEAN	108.	108.	104.	107.
	S.D.	18.2	19.5	16.9	15.9
	N	25	25	25	25
	20 TO 27				
	MEAN	119.	118.	111.	115.
	S.D.	17.2	22.9	16.0	17.3
	N	25	25	25	25
	20 TO 28				
	MEAN	124.	126.	119.	123.
	S.D.	17.3	21.4	16.6	17.6
	N	25	25	25	25
	20 TO 29				
	MEAN	129.	125.	119.	123.
	S.D.	23.5	26.0	20.0	18.8
	N	11	8	15	14
	20 TO 30				
	MEAN	159.	141.	137.	138.
	S.D.	72.8	36.2	26.8	0.0
	N	2	4	6	1

None significantly different from control group

TABLE 57 (F1)

PROJECT NO.:WIL-380001D — INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 3

SPONSOR:BROMINATED SOLVENTS — SUMMARY OF BODY WEIGHT CHANGES FROM INTERVAL 20 (GRAMS)

	----- F E M A L E -----			
GROUP:	0 PPM	100 PPM	250 PPM	500 PPM
WEEK 20 TO 31				
MEAN	246.	143.	129.	NA
S.D.	0.0	35.5	21.8	
N	1	4	5	
20 TO 32				
MEAN	335.	145.	135.	NA
S.D.	0.0	38.8	21.5	
N	1	4	5	
20 TO 33				
MEAN	143.	153.	136.	147.
S.D.	14.1	30.9	22.1	15.8
N	2	8	10	8
20 TO 34				
MEAN	158.	162.	144.	154.
S.D.	16.1	29.0	26.4	18.0
N	3	8	10	9
20 TO 35				
MEAN	151.	161.	150.	160.
S.D.	22.5	25.6	19.1	18.5
N	4	13	14	11

None significantly different from control group

NA = NOT APPLICABLE

TABLE 57 (F1)

PROJECT NO.:WIL-380001D — INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 4

SPONSOR:BROMINATED SOLVENTS — SUMMARY OF BODY WEIGHT CHANGES FROM INTERVAL 20 (GRAMS)

	----- F E M A L E -----			
GROUP:	0 PPM	100 PPM	250 PPM	500 PPM
WEEK 20 TO 36				
MEAN	147.	151.	149.	160.
S.D.	17.4	25.0	22.8	20.7
N	23	25	24	23
20 TO 37				
MEAN	158.	158.	158.	164.
S.D.	20.3	26.6	19.9	20.7
N	25	25	25	25

None significantly different from control group

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08/22/2000

TABLE 58 (F1)

PROJECT NO.:WIL-380001D INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS MEAN BODY WEIGHTS (GRAMS) DURING GESTATION

GROUP :		1	2	3	4
DAY 0	MEAN	279.	287.	281.	267.
	S.D./N	22.2/21	27.5/17	25.2/16	27.3/18
DAY 4	MEAN	297.	306.	298.	283.
	S.D./N	21.3/21	28.6/17	25.3/16	27.7/18
DAY 7	MEAN	307.	312.	310.	292.
	S.D./N	22.2/21	28.2/17	26.9/16	28.0/18
DAY 11	MEAN	323.	330.	324.	305.
	S.D./N	23.6/21	30.1/17	28.2/16	28.8/18
DAY 14	MEAN	336.	340.	334.	314.*
	S.D./N	23.0/21	30.6/17	29.0/16	27.8/18
DAY 20	MEAN	406.	408.	396.	356.**
	S.D./N	25.8/21	37.1/17	36.7/16	37.3/18

1- 0 PPM 2- 100 PPM 3- 250 PPM 4- 500 PPM

* = Significantly different from the control group at 0.05 using Dunnett's test
** = Significantly different from the control group at 0.01 using Dunnett's test
NONGRAVID WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

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PROJECT NO.:WIL-380001D
SPONSOR:BROMINATED SOLVENTS

FIGURE 7 (F1 FEMALES)
INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS
MEAN BODY WEIGHTS (GRAMS) DURING GESTATION

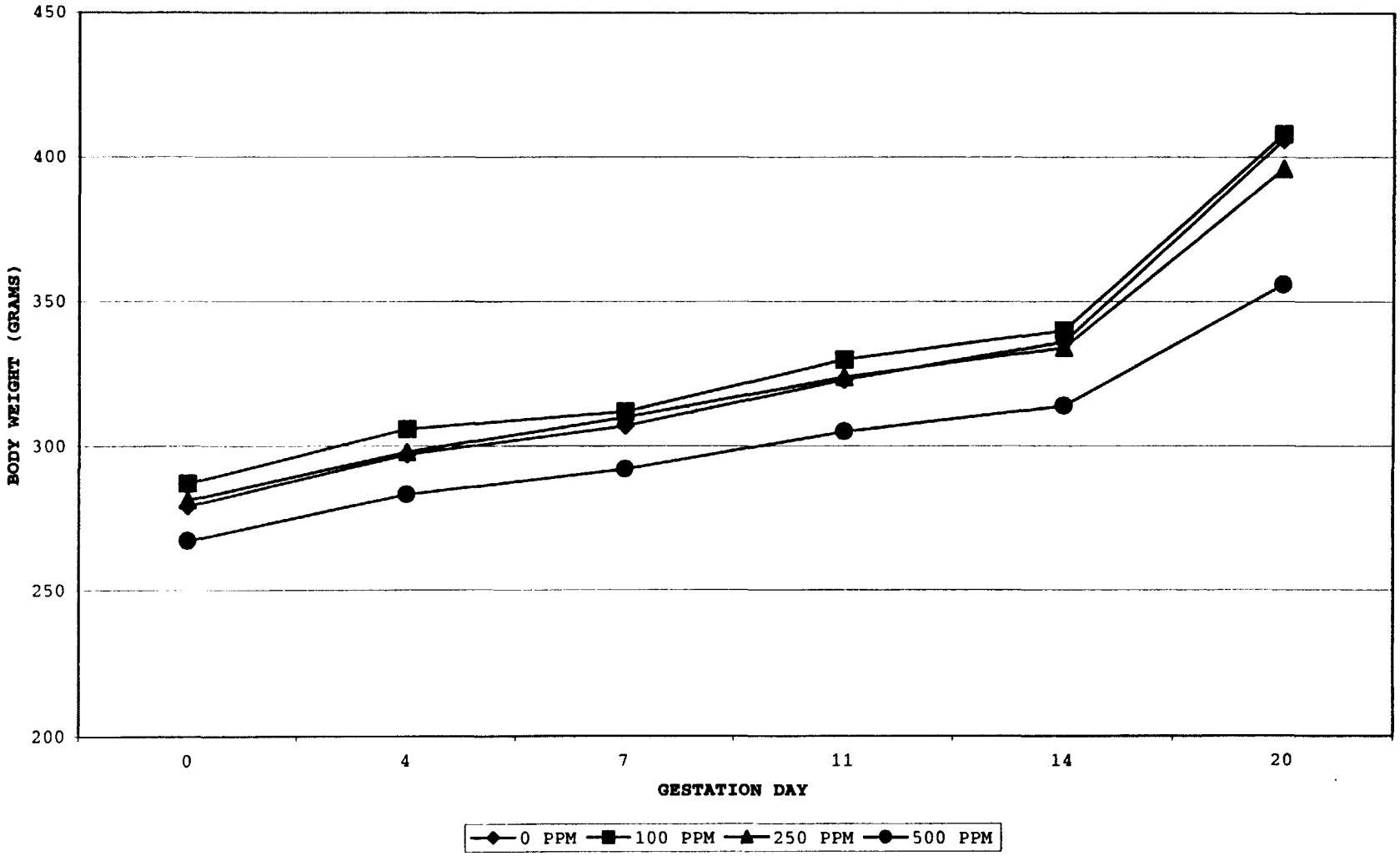

TABLE 59 (F1)

PROJECT NO.:WIL-380001D INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS PAGE 1

SPONSOR:BROMINATED SOLVENTS MEAN BODY WEIGHT CHANGES (GRAMS) DURING GESTATION

GROUP :	1	2	3	4
DAY 0- 4 MEAN	18.	19.	18.	16.
S.D./N	4.8/21	8.1/17	4.2/16	5.8/18
DAY 4- 7 MEAN	10.	7.*	11.	10.
S.D./N	4.3/21	3.4/17	4.3/16	4.2/18
DAY 7- 11 MEAN	16.	18.	15.	13.*
S.D./N	4.3/21	4.4/17	5.4/16	3.4/18
DAY 11- 14 MEAN	13.	9.	10.	9.
S.D./N	4.6/21	8.3/17	2.7/16	3.8/18
DAY 14- 20 MEAN	70.	68.	62.	42.**
S.D./N	9.6/21	13.4/17	16.3/16	18.8/18
DAY 0- 20 MEAN	127.	121.	115.	90.**
S.D./N	11.2/21	16.4/17	21.6/16	22.5/18

1- 0 PPM 2- 100 PPM 3- 250 PPM 4- 500 PPM

* = Significantly different from the control group at 0.05 using Dunnett's test
** = Significantly different from the control group at 0.01 using Dunnett's test
MEAN DIFFERENCES CALCULATED FROM INDIVIDUAL DIFFERENCES
NONGRAVID WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

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TABLE 60 (F1)

PROJECT NO.:WIL-380001D INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS MEAN BODY WEIGHTS (GRAMS) DURING LACTATION

GROUP :		1	2	3	4
DAY 1	MEAN	304.	308.	307.	293.
	S.D./N	24.8/22	26.4/17	26.7/16	26.4/17
DAY 4	MEAN	316.	318.	313.	296.*
	S.D./N	23.0/22	23.8/17	23.5/15	26.1/16
DAY 7	MEAN	322.	325.	319.	300.*
	S.D./N	23.1/22	21.9/17	23.6/15	27.1/16
DAY 14	MEAN	335.	340.	335.	316.*
	S.D./N	22.3/22	25.4/17	23.2/15	28.0/16
DAY 21	MEAN	315.	327.	317.	309.
	S.D./N	21.8/22	21.1/17	19.5/15	24.2/16

1- 0 PPM 2- 100 PPM 3- 250 PPM 4- 500 PPM

* = Significantly different from the control group at 0.05 using Dunnett's test

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02/13/2001

PROJECT NO.:WIL-380001D
SPONSOR:BROMINATED SOLVENTS

FIGURE 8 (F1 FEMALES)
INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS
MEAN BODY WEIGHTS (GRAMS) DURING LACTATION

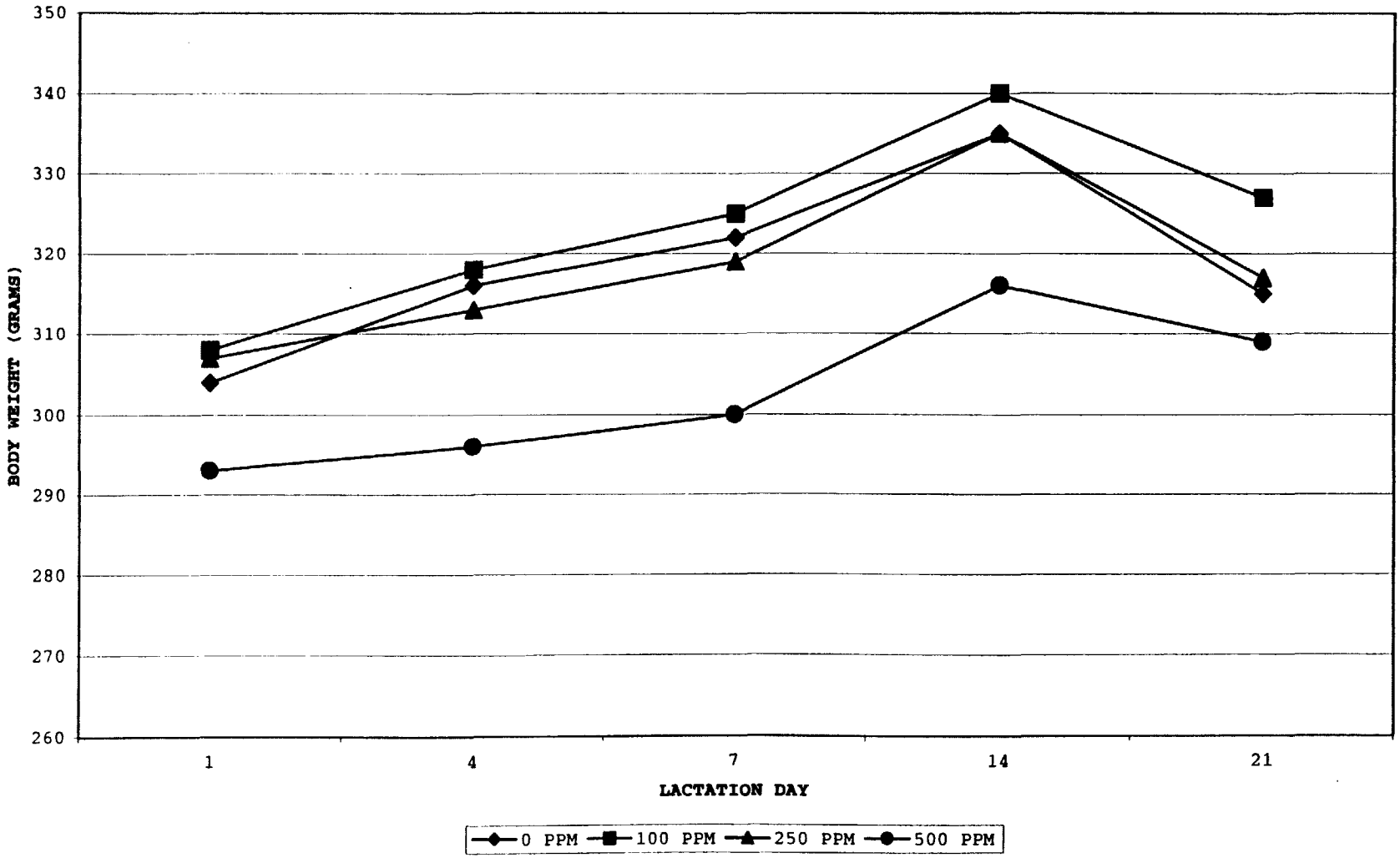

TABLE 61 (F1)

PROJECT NO.:WIL-380001D — INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 1

SPONSOR:BROMINATED SOLVENTS — MEAN BODY WEIGHT CHANGES (GRAMS) DURING LACTATION

GROUP :	1	2	3	4
DAY 1- 4 MEAN	12.	10.	5.	6.
S.D./N	9.1/22	9.4/17	8.8/15	7.9/16
DAY 4- 7 MEAN	5.	8.	6.	4.
S.D./N	6.6/22	8.5/17	8.4/15	7.4/16
DAY 7- 14 MEAN	14.	15.	16.	16.
S.D./N	23.0/22	8.8/17	12.0/15	13.9/16
DAY 14- 21 MEAN	-20.	-13.	-18.	-7.
S.D./N	21.2/22	11.5/17	14.4/15	12.2/16
DAY 1- 21 MEAN	11.	19.	10.	19.
S.D./N	22.5/22	15.2/17	13.7/15	12.7/16

1- 0 PPM 2- 100 PPM 3- 250 PPM 4- 500 PPM

None significantly different from control group

MEAN DIFFERENCES CALCULATED FROM INDIVIDUAL DIFFERENCES

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02/13/2001

TABLE 62 (F1)

PROJECT NO.:WIL-380001A INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS WEEKLY FOOD CONSUMPTION (GRAMS/ANIMAL/DAY) - SUMMARY OF MEANS

		----- M A L E -----			
GROUP:		0 PPM	100 PPM	250 PPM	500 PPM
WEEK 19 TO 20					
	MEAN	23.	22.	22.	21.*
	S.D.	2.5	2.1	2.2	2.9
	N	25	25	25	21
20 TO 21					
	MEAN	26.	25.	25.	24.
	S.D.	1.9	2.3	2.4	3.6
	N	25	25	25	24
21 TO 22					
	MEAN	28.	27.	27.	26.
	S.D.	2.0	2.4	2.6	2.8
	N	24	25	25	24
22 TO 23					
	MEAN	27.	26.	27.	26.
	S.D.	2.3	2.1	2.3	2.2
	N	24	25	25	24
23 TO 24					
	MEAN	27.	26.	27.	27.
	S.D.	2.2	2.5	2.4	1.9
	N	24	25	25	24

* = Significantly different from the control group at 0.05 using Dunnett's test

TABLE 62 (F1)

PROJECT NO.:WIL-380001A INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS WEEKLY FOOD CONSUMPTION (GRAMS/ANIMAL/DAY) - SUMMARY OF MEANS

		----- M A L E -----			
GROUP:		0 PPM	100 PPM	250 PPM	500 PPM
WEEK 24 TO 25					
	MEAN	27.	26.	27.	27.
	S.D.	2.5	2.6	2.3	2.0
	N	24	25	25	24
25 TO 26					
	MEAN	27.	26.	27.	27.
	S.D.	2.6	3.0	2.5	1.9
	N	24	25	25	23
26 TO 27					
	MEAN	27.	26.	27.	26.
	S.D.	2.3	2.8	2.7	2.0
	N	24	25	25	24
27 TO 28					
	MEAN	27.	25.	26.	26.
	S.D.	2.7	4.3	2.5	2.1
	N	24	25	25	24
28 TO 31					
	MEAN	FOOD CONSUMPTION NOT RECORDED DURING THE BREEDING PERIOD			
	S.D.				
	N				

None significantly different from control group

TABLE 62 (F1)

PROJECT NO.:WIL-380001A INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS WEEKLY FOOD CONSUMPTION (GRAMS/ANIMAL/DAY) - SUMMARY OF MEANS

	----- M A L E -----			
GROUP:	0 PPM	100 PPM	250 PPM	500 PPM
WEEK 31 TO 32				
MEAN	26.	24.**	25.	25.
S.D.	2.9	2.6	2.2	2.0
N	24	25	25	24
32 TO 33				
MEAN	25.	24.	24.	25.
S.D.	2.7	2.5	2.6	2.1
N	24	25	25	24
33 TO 34				
MEAN	25.	24.	24.	24.
S.D.	2.4	2.2	3.2	2.2
N	24	25	25	24
34 TO 35				
MEAN	26.	25.	25.	24.
S.D.	2.7	2.6	2.8	2.4
N	24	25	25	24
35 TO 36				
MEAN	25.	25.	25.	24.
S.D.	4.0	2.8	1.9	1.9
N	24	25	25	24

** = Significantly different from the control group at 0.01 using Dunnett's test

TABLE 62 (F1)

PROJECT NO.:WIL-380001A INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS WEEKLY FOOD CONSUMPTION (GRAMS/ANIMAL/DAY) - SUMMARY OF MEANS

	----- M A L E -----			
GROUP:	0 PPM	100 PPM	250 PPM	500 PPM
WEEK 36 TO 37				
MEAN	29.	25.	26.	24.
S.D.	9.4	6.3	6.5	5.6
N	24	25	25	24

None significantly different from control group

PBFSTv4.15
08/21/2000

TABLE 62 (F1)

PROJECT NO.:WIL-380001D INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS WEEKLY FOOD CONSUMPTION (GRAMS/ANIMAL/DAY) - SUMMARY OF MEANS

	----- F E M A L E -----			
GROUP:	0 PPM	100 PPM	250 PPM	500 PPM
19 TO 20				
MEAN	18.	18.	18.	18.
S.D.	1.5	1.5	1.6	1.8
N	25	25	25	22
20 TO 21				
MEAN	18.	18.	18.	18.
S.D.	1.9	2.6	1.9	1.8
N	25	25	25	25
21 TO 22				
MEAN	19.	19.	19.	19.
S.D.	1.8	2.0	2.3	2.0
N	25	25	25	25
22 TO 23				
MEAN	19.	19.	19.	19.
S.D.	1.8	2.0	1.7	2.3
N	25	25	25	25

None significantly different from control group

TABLE 62 (F1)

PROJECT NO.:WIL-380001D INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS WEEKLY FOOD CONSUMPTION (GRAMS/ANIMAL/DAY) - SUMMARY OF MEANS

	----- F E M A L E -----			
GROUP:	0 PPM	100 PPM	250 PPM	500 PPM
WEEK 23 TO 24				
MEAN	19.	19.	19.	19.
S.D.	2.0	1.9	1.9	2.3
N	25	25	25	25
24 TO 25				
MEAN	19.	19.	19.	19.
S.D.	2.1	2.0	1.8	2.0
N	25	25	25	25
25 TO 26				
MEAN	19.	19.	19.	19.
S.D.	1.8	1.9	2.0	2.0
N	25	25	25	25
26 TO 27				
MEAN	19.	19.	18.	18.
S.D.	1.7	1.9	1.6	1.6
N	25	25	25	25
27 TO 28				
MEAN	18.	19.	18.	18.
S.D.	1.7	1.7	1.4	1.6
N	25	25	25	25

None significantly different from control group

TABLE 62 (F1)

PROJECT NO.:WIL-380001D INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS WEEKLY FOOD CONSUMPTION (GRAMS/ANIMAL/DAY) - SUMMARY OF MEANS

	----- F E M A L E -----			
GROUP:	0 PPM	100 PPM	250 PPM	500 PPM
WEEK 28 TO 31	FOOD CONSUMPTION NOT RECORDED DURING BREEDING PERIOD			
31 TO 32				
MEAN	23.	16.	16.	A
S.D.	0.0	2.4	1.2	
N	1	4	5	
32 TO 33				
MEAN	A	18.	16.	A
S.D.		2.2	1.7	
N		4	5	
33 TO 34				
MEAN	17.	18.	16.	16.
S.D.	0.7	1.8	2.4	2.1
N	2	8	10	8
34 TO 35				
MEAN	18.	17.	17.	17.
S.D.	0.6	1.9	1.8	2.7
N	3	8	10	9

None significantly different from control group

A = REFER TO F1 GESTATION/LACTATION FOOD CONSUMPTION TABLES

TABLE 62 (F1)

PROJECT NO.:WIL-380001D INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS WEEKLY FOOD CONSUMPTION (GRAMS/ANIMAL/DAY) - SUMMARY OF MEANS

	----- F E M A L E -----			
GROUP:	0 PPM	100 PPM	250 PPM	500 PPM
WEEK 35 TO 36				
MEAN	23.	22.	20.	21.
S.D.	3.2	3.9	4.2	2.9
N	10	20	17	16
36 TO 37				
MEAN	22.	21.	21.	20.
S.D.	3.0	3.2	3.4	2.8
N	24	25	24	24

None significantly different from control group

PBFSTv4.16
02/13/2001

TABLE 63 (F1)

PROJECT NO.:WIL-380001A — INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 1

SPONSOR:BROMINATED SOLVENTS — WEEKLY FOOD CONSUMPTION (GRAMS/KG/DAY) - SUMMARY OF MEANS

	----- M A L E -----			
GROUP:	0 PPM	100 PPM	250 PPM	500 PPM
WEEK 19 TO 20				
MEAN	124.	127.	131.	131.*
S.D.	8.7	8.1	8.2	6.8
N	25	25	25	21
20 TO 21				
MEAN	106.	108.	110.	120.**
S.D.	7.4	6.9	6.7	12.2
N	25	25	25	24
21 TO 22				
MEAN	92.	92.	94.	104.**
S.D.	6.3	5.1	5.4	11.6
N	24	25	25	24
22 TO 23				
MEAN	77.	78.	79.	87.**
S.D.	5.1	4.1	4.2	9.7
N	24	25	25	24
23 TO 24				
MEAN	69.	70.	72.	79.**
S.D.	3.4	3.3	3.8	7.1
N	24	25	25	24

* = Significantly different from the control group at 0.05 using Dunnett's test

** = Significantly different from the control group at 0.01 using Dunnett's test

TABLE 63 (F1)

PROJECT NO.:WIL-380001A — INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 2

SPONSOR:BROMINATED SOLVENTS — WEEKLY FOOD CONSUMPTION (GRAMS/KG/DAY) - SUMMARY OF MEANS

	----- M A L E -----			
GROUP:	0 PPM	100 PPM	250 PPM	500 PPM
WEEK 24 TO 25				
MEAN	64.	65.	66.	71.**
S.D.	3.4	2.8	3.2	5.4
N	24	25	25	24
25 TO 26				
MEAN	61.	61.	63.*	65.**
S.D.	3.5	3.1	3.2	4.3
N	24	25	25	23
26 TO 27				
MEAN	57.	58.	59.*	60.**
S.D.	2.8	3.0	2.4	3.7
N	24	25	25	24
27 TO 28				
MEAN	55.	53.	56.	58.*
S.D.	3.2	7.0	2.1	3.5
N	24	25	25	24
28 TO 31				
MEAN	FOOD CONSUMPTION NOT RECORDED DURING THE BREEDING PERIOD			
S.D.				
N				

* = Significantly different from the control group at 0.05 using Dunnett's test

** = Significantly different from the control group at 0.01 using Dunnett's test

TABLE 63 (F1)

PROJECT NO.:WIL-380001A — INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 3

SPONSOR:BROMINATED SOLVENTS — WEEKLY FOOD CONSUMPTION (GRAMS/KG/DAY) - SUMMARY OF MEANS

	----- M A L E -----			
GROUP:	0 PPM	100 PPM	250 PPM	500 PPM
WEEK 31 TO 32				
MEAN	48.	47.	48.	51.**
S.D.	2.6	2.4	1.8	2.9
N	24	25	25	24
32 TO 33				
MEAN	46.	48.	46.	49.**
S.D.	3.1	2.0	3.2	2.9
N	24	25	25	24
33 TO 34				
MEAN	45.	46.	46.	48.*
S.D.	3.3	2.3	4.5	3.0
N	24	25	25	24
34 TO 35				
MEAN	46.	47.	45.	47.
S.D.	2.5	2.0	2.8	3.1
N	24	25	25	24
35 TO 36				
MEAN	44.	46.	45.	46.
S.D.	5.3	2.5	3.1	2.8
N	24	25	25	24

* = Significantly different from the control group at 0.05 using Dunnett's test

** = Significantly different from the control group at 0.01 using Dunnett's test

TABLE 63 (F1)

PROJECT NO.:WIL-380001A INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS PAGE 4

SPONSOR:BROMINATED SOLVENTS WEEKLY FOOD CONSUMPTION (GRAMS/KG/DAY) - SUMMARY OF MEANS

	----- M A L E -----			
GROUP:	0 PPM	100 PPM	250 PPM	500 PPM
WEEK 36 TO 37				
MEAN	49.	45.	46.	46.
S.D.	12.4	6.4	10.3	9.2
N	24	25	25	24

None significantly different from control group

PBFSTv4.15
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TABLE 63 (F1)

PROJECT NO.:WIL-380001D — INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 1

SPONSOR:BROMINATED SOLVENTS — WEEKLY FOOD CONSUMPTION (GRAMS/KG/DAY) - SUMMARY OF MEANS

	----- F E M A L E -----			
GROUP:	0 PPM	100 PPM	250 PPM	500 PPM
WEEK 19 TO 20				
MEAN	122.	122.	128.	133.**
S.D.	10.6	11.7	8.3	7.6
N	25	25	25	22
20 TO 21				
MEAN	104.	102.	108.	119.**
S.D.	7.6	13.8	6.5	16.3
N	25	25	25	25
21 TO 22				
MEAN	95.	95.	96.	104.**
S.D.	5.9	6.6	5.9	11.6
N	25	25	25	25
22 TO 23				
MEAN	85.	86.	87.	94.**
S.D.	7.6	5.3	4.5	11.1
N	25	25	25	25
23 TO 24				
MEAN	80.	80.	82.	87.**
S.D.	5.0	4.3	3.6	8.7
N	25	25	25	25

** = Significantly different from the control group at 0.01 using Dunnett's test

TABLE 63 (F1)

PROJECT NO.:WIL-380001D — INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 2

SPONSOR:BROMINATED SOLVENTS — WEEKLY FOOD CONSUMPTION (GRAMS/KG/DAY) - SUMMARY OF MEANS

	----- F E M A L E -----			
GROUP:	0 PPM	100 PPM	250 PPM	500 PPM
WEEK 24 TO 25				
MEAN	75.	74.	76.	80.**
S.D.	4.7	3.2	3.4	7.7
N	25	25	25	25
25 TO 26				
MEAN	71.	72.	74.	77.**
S.D.	4.6	2.9	5.1	6.9
N	25	25	25	25
26 TO 27				
MEAN	68.	69.	69.	71.
S.D.	4.3	3.2	3.5	6.4
N	25	25	25	25
27 TO 28				
MEAN	65.	66.	67.	69.**
S.D.	4.2	3.8	4.2	6.0
N	25	25	25	25
28 TO 31	FOOD CONSUMPTION NOT RECORDED DURING BREEDING PERIOD			

** = Significantly different from the control group at 0.01 using Dunnett's test

TABLE 63 (F1)

PROJECT NO.:WIL-380001D — INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 3

SPONSOR:BROMINATED SOLVENTS — WEEKLY FOOD CONSUMPTION (GRAMS/KG/DAY) - SUMMARY OF MEANS

		----- F E M A L E -----			
	GROUP:	0 PPM	100 PPM	250 PPM	500 PPM
WEEK	31 TO 32				
	MEAN	51.	52.	56.	A
	S.D.	0.0	5.7	5.9	
	N	1	4	5	
	32 TO 33				
	MEAN	A	59.	55.	A
	S.D.		6.5	6.4	
	N		4	5	
	33 TO 34				
	MEAN	50.	56.	54.	52.
	S.D.	2.1	3.6	6.4	6.7
	N	2	8	10	8
	34 TO 35				
	MEAN	54.	54.	56.	57.
	S.D.	0.6	4.3	6.2	7.5
	N	3	8	10	9
	35 TO 36				
	MEAN	68.	63.	61.	63.
	S.D.	22.8	8.6	11.7	8.8
	N	4	13	14	11

None significantly different from control group

A = REFER TO F1 GESTATION/LACTATION FOOD CONSUMPTION TABLES

TABLE 63 (F1)

PROJECT NO.:WIL-380001D — INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 4

SPONSOR:BROMINATED SOLVENTS — WEEKLY FOOD CONSUMPTION (GRAMS/KG/DAY) - SUMMARY OF MEANS

	----- F E M A L E -----			
GROUP:	0 PPM	100 PPM	250 PPM	500 PPM
WEEK 36 TO 37				
MEAN	70.	66.	68.	67.
S.D.	8.5	8.9	10.7	10.8
N	23	25	24	23

None significantly different from control group

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TABLE 64 (F1)

PROJECT NO.:WIL-380001A INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS

SUMMARY OF FOOD EFFICIENCY

(BODY WEIGHT GAINED AS PER CENT OF FEED CONSUMED)

	----- M A L E -----			
GROUP:	0 PPM	100 PPM	250 PPM	500 PPM
WEEK 19 TO 20				
MEAN	38.4	37.7	37.8	37.3
S.D.	4.60	4.90	4.10	4.55
N	25	25	25	21
20 TO 21				
MEAN	33.8	33.9	33.5	33.6
S.D.	3.45	3.03	2.69	4.53
N	25	25	25	24
21 TO 22				
MEAN	28.4	27.7	29.1	29.0
S.D.	3.54	3.69	3.07	4.29
N	24	25	25	24
22 TO 23				
MEAN	22.9	22.4	22.7	24.2
S.D.	4.09	4.73	3.21	4.15
N	24	25	25	24
23 TO 24				
MEAN	17.9	17.1	18.5	19.6
S.D.	2.78	3.53	2.32	4.59
N	24	25	25	24

None significantly different from control group

TABLE 64 (F1)

PROJECT NO.:WIL-380001A INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS

SUMMARY OF FOOD EFFICIENCY

(BODY WEIGHT GAINED AS PER CENT OF FEED CONSUMED)

	----- M A L E -----			
GROUP:	0 PPM	100 PPM	250 PPM	500 PPM
WEEK 24 TO 25				
MEAN	14.8	13.6	14.7	15.5
S.D.	2.33	4.88	2.72	2.72
N	24	25	25	24
25 TO 26				
MEAN	12.6	11.4	12.0	12.2
S.D.	2.88	2.74	2.64	3.55
N	24	25	25	23
26 TO 27				
MEAN	11.7	10.5	10.7	9.7
S.D.	3.40	3.23	3.22	3.13
N	24	25	25	24
27 TO 28				
MEAN	7.9	2.0	7.3	7.7
S.D.	4.31	26.21	2.95	3.24
N	24	25	25	24
28 TO 31				
MEAN	FOOD CONSUMPTION NOT RECORDED DURING THE BREEDING PERIOD			
S.D.				
N				

None significantly different from control group

TABLE 64 (F1)

PROJECT NO.:WIL-380001A — INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 3

SPONSOR:BROMINATED SOLVENTS

SUMMARY OF FOOD EFFICIENCY

(BODY WEIGHT GAINED AS PER CENT OF FEED CONSUMED)

	----- M A L E -----			
GROUP:	0 PPM	100 PPM	250 PPM	500 PPM
WEEK 31 TO 32				
MEAN	3.1	2.8	3.1	5.1
S.D.	5.81	4.60	4.08	3.50
N	24	25	25	24
32 TO 33				
MEAN	5.2	7.1	3.0	4.6
S.D.	4.65	2.62	6.91	3.64
N	24	25	25	24
33 TO 34				
MEAN	6.2	6.7	7.2	5.4
S.D.	3.29	2.91	4.90	4.11
N	24	25	25	24
34 TO 35				
MEAN	5.0	5.4	5.8	4.1
S.D.	3.85	3.53	5.65	3.11
N	24	25	25	24
35 TO 36				
MEAN	2.6	4.8	5.5	3.8
S.D.	7.60	2.76	3.29	3.05
N	24	25	25	24

None significantly different from control group

TABLE 64 (F1)

PROJECT NO.:WIL-380001A INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS

SUMMARY OF FOOD EFFICIENCY

(BODY WEIGHT GAINED AS PER CENT OF FEED CONSUMED)

	----- M A L E -----			
GROUP:	0 PPM	100 PPM	250 PPM	500 PPM
WEEK 36 TO 37				
MEAN	3.5	2.5	4.0	2.2
S.D.	3.22	2.49	3.76	2.27
N	24	25	25	24

None significantly different from control group

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08/21/2000

TABLE 64 (F1)

PROJECT NO.:WIL-380001D — INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 1

SPONSOR:BROMINATED SOLVENTS

SUMMARY OF FOOD EFFICIENCY

(BODY WEIGHT GAINED AS PER CENT OF FEED CONSUMED)

	----- F E M A L E -----			
GROUP:	0 PPM	100 PPM	250 PPM	500 PPM
WEEK 19 TO 20				
MEAN	26.7	27.5	26.6	28.6
S.D.	6.41	6.45	5.61	5.42
N	25	25	25	22
20 TO 21				
MEAN	19.6	17.7	18.7	19.9
S.D.	3.24	7.04	3.75	6.30
N	25	25	25	25
21 TO 22				
MEAN	18.5	18.7	18.7	18.0
S.D.	3.16	4.78	4.98	3.09
N	25	25	25	25
22 TO 23				
MEAN	14.8	15.2	12.6	15.4
S.D.	4.58	3.81	6.61	3.90
N	25	25	25	25
23 TO 24				
MEAN	12.5	12.2	12.9	11.4
S.D.	5.54	4.37	4.01	4.44
N	25	25	25	25

None significantly different from control group

TABLE 64 (F1)

PROJECT NO.:WIL-380001D — INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 2

SPONSOR:BROMINATED SOLVENTS

SUMMARY OF FOOD EFFICIENCY

(BODY WEIGHT GAINED AS PER CENT OF FEED CONSUMED)

	----- F E M A L E -----			
GROUP:	0 PPM	100 PPM	250 PPM	500 PPM
WEEK 24 TO 25				
MEAN	10.9	9.4	7.9	10.3
S.D.	4.35	4.52	4.90	5.79
N	25	25	25	25
25 TO 26				
MEAN	5.9	7.8	8.4	7.5
S.D.	4.31	4.89	5.55	3.30
N	25	25	25	25
26 TO 27				
MEAN	8.1	6.9	5.2	6.2
S.D.	4.69	5.53	4.45	4.88
N	25	25	25	25
27 TO 28				
MEAN	4.2	6.1	6.7	6.8
S.D.	4.01	5.40	3.23	3.94
N	25	25	25	25
28 TO 31	FOOD CONSUMPTION NOT RECORDED DURING BREEDING PERIOD			

None significantly different from control group

TABLE 64 (F1)

PROJECT NO.:WIL-380001D — INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 3

SPONSOR:BROMINATED SOLVENTS

SUMMARY OF FOOD EFFICIENCY

(BODY WEIGHT GAINED AS PER CENT OF FEED CONSUMED)

	----- F E M A L E -----			
GROUP:	0 PPM	100 PPM	250 PPM	500 PPM
WEEK 31 TO 32				
MEAN	55.3	2.3	5.4	A
S.D.	0.00	3.37	6.38	
N	1	4	5	
32 TO 33				
MEAN	A	5.0	2.3	A
S.D.		6.63	6.89	
N		4	5	
33 TO 34				
MEAN	8.3	7.5	7.0	4.7
S.D.	3.39	4.26	7.07	8.96
N	2	8	10	8
34 TO 35				
MEAN	1.3	3.3	2.1	2.2
S.D.	2.31	2.73	6.44	4.79
N	3	8	10	9
35 TO 36				
MEAN	2.4	1.0	2.5	3.9
S.D.	6.64	7.29	10.80	5.44
N	4	13	14	11

None significantly different from control group

A = REFER TO F1 GESTATION/LACTATION FOOD CONSUMPTION TABLES

TABLE 64 (F1)

PROJECT NO.:WIL-380001D INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS

SUMMARY OF FOOD EFFICIENCY

(BODY WEIGHT GAINED AS PER CENT OF FEED CONSUMED)

	----- F E M A L E -----			
GROUP:	0 PPM	100 PPM	250 PPM	500 PPM
WEEK 36 TO 37				
MEAN	7.2	4.3	6.7	3.4
S.D.	7.12	5.39	6.00	7.73
N	23	25	24	23

None significantly different from control group

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02/13/2001

TABLE 65 (F1)

PROJECT NO.:WIL-380001D — INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 1

SPONSOR:BROMINATED SOLVENTS — MEAN FOOD CONSUMPTION DURING GESTATION (GRAMS/ANIMAL/DAY)

GROUP :	1	2	3	4
DAY 0- 4 MEAN	18.	19.	18.	17.
S.D./N	2.0/21	2.0/17	1.3/16	1.3/18
DAY 4- 7 MEAN	20.	21.	22.	20.
S.D./N	2.2/21	2.1/17	3.5/16	1.5/18
DAY 7- 11 MEAN	21.	21.	21.	21.
S.D./N	2.4/21	2.3/17	2.2/16	4.8/18
DAY 11- 14 MEAN	20.	21.	21.	20.
S.D./N	2.0/21	2.4/17	2.1/16	2.0/18
DAY 14- 20 MEAN	22.	21.	21.	20.
S.D./N	2.0/21	2.4/17	2.3/16	2.0/18
DAY 0- 20 MEAN	20.	20.	21.	20.
S.D./N	1.7/21	1.8/17	1.8/16	1.6/18

1- 0 PPM 2- 100 PPM 3- 250 PPM 4- 500 PPM

None significantly different from control group

NONGRAVID WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

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TABLE 66 (F1)

PROJECT NO.:WIL-380001D — INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 1

SPONSOR:BROMINATED SOLVENTS — MEAN FOOD CONSUMPTION DURING GESTATION (GRAMS/KG/DAY)

GROUP :	1	2	3	4
DAY 0- 4 MEAN	61.	64.	63.	63.
S.D./N	5.9/21	5.8/17	4.9/16	4.6/18
DAY 4- 7 MEAN	65.	66.	71.*	70.
S.D./N	5.7/21	5.5/17	11.1/16	5.6/18
DAY 7- 11 MEAN	66.	66.	67.	71.
S.D./N	5.8/21	4.6/17	4.9/16	18.0/18
DAY 11- 14 MEAN	62.	62.	64.	65.
S.D./N	4.8/21	4.6/17	6.7/16	6.0/18
DAY 14- 20 MEAN	58.	55.	58.	60.
S.D./N	4.3/21	5.6/17	6.1/16	7.0/18
DAY 0- 20 MEAN	62.	61.	64.	65.
S.D./N	3.8/21	4.2/17	5.1/16	6.5/18

1- 0 PPM 2- 100 PPM 3- 250 PPM 4- 500 PPM

* = Significantly different from the control group at 0.05 using Dunnett's test

NONGRAVID WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

PGFWSUv4.02
08/21/2000

TABLE 67 (F1)

PROJECT NO.:WIL-380001D
SPONSOR:BROMINATED SOLVENTS

INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS
SUMMARY OF FOOD EFFICIENCY DURING GESTATION
(BODY WEIGHT GAINED AS PER CENT OF FEED CONSUMED)

GROUP :	1	2	3	4
DAY 0- 4 MEAN	25.8	24.7	24.2	23.3
S.D./N	6.11/21	9.46/17	5.70/16	8.22/18
DAY 4- 7 MEAN	16.3	10.7*	17.9	15.7
S.D./N	6.58/21	5.18/17	6.86/16	6.29/18
DAY 7- 11 MEAN	19.7	21.4	16.9	15.6*
S.D./N	4.70/21	4.62/17	5.81/16	4.87/18
DAY 11- 14 MEAN	20.9	14.3	15.6	15.8
S.D./N	7.85/21	14.27/17	4.36/16	7.09/18
DAY 14- 20 MEAN	54.6	55.3	49.1	35.8**
S.D./N	7.71/21	8.43/17	11.60/16	16.20/18
DAY 0- 20 MEAN	31.7	29.7	27.9*	23.1**
S.D./N	2.64/21	2.73/17	4.72/16	6.08/18

1- 0 PPM 2- 100 PPM 3- 250 PPM 4- 500 PPM

* = Significantly different from the control group at 0.05 using Dunnett's test
** = Significantly different from the control group at 0.01 using Dunnett's test
NONGRAVID WEIGHT(S) NOT INCLUDED IN CALCULATION OF MEAN

PGFWSUv4.02
08/21/2000

TABLE 68 (F1)

PROJECT NO.:WIL-380001D — INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 1

SPONSOR:BROMINATED SOLVENTS — MEAN FOOD CONSUMPTION DURING LACTATION (GRAMS/ANIMAL/DAY)

GROUP :	1	2	3	4
DAY 1- 4 MEAN	31.	31.	27.	23.**
S.D./N	5.1/22	7.0/17	4.9/15	3.7/16
DAY 4- 7 MEAN	33.	33.	35.	28.*
S.D./N	3.8/22	4.2/17	9.8/15	7.1/16
DAY 7- 14 MEAN	43.	43.	40.	34.**
S.D./N	3.6/22	5.1/17	6.8/15	7.1/16
DAY 14- 21 MEAN	56.	55.	52.	45.**
S.D./N	4.1/21	4.7/16	6.9/15	9.9/16
DAY 1- 21 MEAN	45.	44.	42.	35.**
S.D./N	3.3/21	4.7/16	6.2/15	7.2/16

1- 0 PPM 2- 100 PPM 3- 250 PPM 4- 500 PPM

* = Significantly different from the control group at 0.05 using Dunnett's test

** = Significantly different from the control group at 0.01 using Dunnett's test

PLFWSUv4.02
02/13/2001

TABLE 69 (F1)

PROJECT NO.:WIL-380001D — INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 1

SPONSOR:BROMINATED SOLVENTS — MEAN FOOD CONSUMPTION DURING LACTATION (GRAMS/KG/DAY)

GROUP :	1	2	3	4
DAY 1- 4 MEAN	100.	101.	88.	78.**
S.D./N	15.5/22	23.6/17	16.7/15	12.0/16
DAY 4- 7 MEAN	105.	103.	112.	93.
S.D./N	10.9/22	12.8/17	31.7/15	21.3/16
DAY 7- 14 MEAN	131.	128.	122.	111.**
S.D./N	8.4/22	12.5/17	19.8/15	21.7/16
DAY 14- 21 MEAN	173.	165.	159.	145.**
S.D./N	12.0/21	12.1/16	19.3/15	31.8/16
DAY 1- 21 MEAN	140.	135.	131.	118.**
S.D./N	8.6/21	12.5/16	18.8/15	23.4/16

1- 0 PPM 2- 100 PPM 3- 250 PPM 4- 500 PPM

** = Significantly different from the control group at 0.01 using Dunnett's test

PLFWSUv4.02
02/13/2001

TABLE 70 (F1)

PROJECT NO.:WIL-380001D — INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 1

SPONSOR:BROMINATED SOLVENTS

SUMMARY OF FOOD EFFICIENCY DURING LACTATION

(BODY WEIGHT GAINED AS PER CENT OF FEED CONSUMED)

GROUP :	1	2	3	4
DAY 1- 4 MEAN	12.3	10.2	6.3	9.5
S.D./N	9.15/22	9.41/17	9.88/15	11.28/16
DAY 4- 7 MEAN	5.1	7.8	6.9	3.7
S.D./N	6.29/22	8.08/17	7.20/15	9.39/16
DAY 7- 14 MEAN	4.4	4.9	5.5	6.9
S.D./N	8.19/22	2.63/17	3.93/15	5.77/16
DAY 14- 21 MEAN	-5.1	-3.6	-4.8	-2.4
S.D./N	5.39/21	2.74/16	3.92/15	3.68/16
DAY 1- 21 MEAN	1.2	2.0	1.2	2.8
S.D./N	2.58/21	1.63/16	1.69/15	1.93/16

1- 0 PPM 2- 100 PPM 3- 250 PPM 4- 500 PPM

None significantly different from control group

PLFWSUv4.02
02/13/2001

TABLE 71 (F1)

PROJECT NO.:WIL-380001D INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS PAGE 1

SPONSOR:BROMINATED SOLVENTS GESTATION LENGTH SUMMARY

DOSE GROUP :		1	2	3	4
NO. OF ANIMALS		21	16	16	17
GESTATION LENGTH (DAYS)	MEAN	22.0	21.8	21.9	22.2
	S.D.	0.22	0.40	0.44	0.73

1- 0 PPM 2- 100 PPM 3- 250 PPM 4- 500 PPM

None significantly different from control group

PGLv4.02
08/21/2000

TABLE 72 (F1 MALES - SCHEDULED NECROPSY)

PROJECT NO.:WIL-380001A — AN INHAL. 2-GEN. REPRO. TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 1

SPONSOR:BROMINATED SOLVENTS

TESTICULAR AND EPIDIDYMAL SPERM NUMBERS

(NO. OF SPERM IN MILLIONS/GRAM OF TISSUE) - SUMMARY OF MEANS

HTM-IVOS

	----- M A L E -----			
GROUP:	0 PPM	100 PPM	250 PPM	500 PPM
LEFT TESTIS				
MEAN	106.9	104.5	103.4	112.2
S.D.	21.37	18.39	21.41	22.80
N	24	25	25	24
LEFT EPIDIDYMIS				
MEAN	640.1	609.1	573.7	635.3
S.D.	141.82	115.22	97.17	160.50
N	23	23	24	24

None significantly different from the control group

MANUALv1.0
08/30/2000

TABLE 73 (F1 MALES - SCHEDULED NECROPSY)

PROJECT NO.:WIL-380001A — AN INHAL. 2-GEN. REPRO. TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 1

SPONSOR:BROMINATED SOLVENTS

SPERM PRODUCTION RATE

(NO. OF SPERM IN MILLIONS/GRAM OF TISSUE/DAY) - SUMMARY OF MEANS

HTM-IVOS

	----- M A L E -----			
GROUP:	0 PPM	100 PPM	250 PPM	500 PPM
LEFT TESTIS				
MEAN	17.5	17.1	16.9	18.4
S.D.	3.50	3.01	3.51	3.73
N	24	25	25	24

None significantly different from the control group

$$\text{A: SPERM PRODUCTION RATE} = \frac{\text{NUMBER OF SPERM PER GRAM OF TISSUE}}{\text{6.1 DAYS}}$$

6.1 DAYS = THE RATE OF TURNOVER OF THE GERMINAL EPITHELIUM

TABLE 74 (F1 MALES - SCHEDULED NECROPSY)

PROJECT NO.:WIL-380001A — INHALATION 2G REPODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 1

SPONSOR:BROMINATED SOLVENTS

SPERM MOTILITY ASSESSMENT (PERCENTAGE)

SUMMARY OF MEANS

HTM-IVOS

	----- M A L E -----			
GROUP:	0 PPM	100 PPM	250 PPM	500 PPM
MOTILE SPERM				
MEAN	88.9	86.4	84.8*	74.4**
S.D.	4.52	4.96	6.02	14.06
N	24	25	25	24

* = Significantly from the control group at 0.05 using Kruskal-Wallis test

** = Significantly from the control group at 0.01 using Kruskal-Wallis test

MANUALv1.0
08/30/2000

TABLE 75 (F1 MALES - SCHEDULED NECROPSY)

PROJECT NO.:WIL-380001A — INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 1

SPONSOR:BROMINATED SOLVENTS — SPERM MORPHOLOGY DIFFERENTIAL COUNT (PERCENTAGE)

SUMMARY OF MEANS

	----- M A L E -----			
GROUP:	0 PPM	100 PPM	250 PPM	500 PPM
NORMAL				
MEAN	99.5	98.9**	99.1	95.3**
S.D.	0.79	0.95	1.13	6.51
N	24	25	25	24
NORMALLY SHAPED HEAD SEPARATED FROM FLAGELLUM				
MEAN	0.2	0.5	0.4	1.6
S.D.	0.47	0.68	0.73	4.12
N	24	25	25	24
HEAD ABSENT WITH NORMAL FLAGELLUM				
MEAN	0.2	0.6	0.4	2.0
S.D.	0.57	0.75	0.61	2.99
N	24	25	25	24
HEAD ABSENT WITH ABNORMAL FLAGELLUM				
MEAN	0.0	0.0	0.0	0.0
S.D.	0.00	0.00	0.00	0.00
N	24	25	25	24
MISSHAPEN HEAD WITH NORMAL FLAGELLUM				
MEAN	0.0	0.0	0.0	0.2
S.D.	0.14	0.00	0.10	0.50
N	24	25	25	24
MISSHAPEN HEAD WITH ABNORMAL FLAGELLUM				
MEAN	0.0	0.0	0.0	0.0
S.D.	0.00	0.00	0.00	0.00
N	24	25	25	24

** = Percent normal sperm significantly different from the control group at 0.01 using Kruskal-Wallis test

TABLE 75 (F1 MALES - SCHEDULED NECROPSY)

PROJECT NO.:WIL-380001A — INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 2

SPONSOR:BROMINATED SOLVENTS — SPERM MORPHOLOGY DIFFERENTIAL COUNT (PERCENTAGE)

SUMMARY OF MEANS

	----- M A L E -----			
GROUP:	0 PPM	100 PPM	250 PPM	500 PPM
DEGENERATIVE FLAGELLAR DEFECTS WITH NORMAL HEAD				
MEAN	0.0	0.0	0.0	0.0
S.D.	0.00	0.00	0.00	0.00
N	24	25	25	24
THER FLAGELLAR DEFECTS WITH NORMAL HEAD				
MEAN	0.0	0.0	0.0	0.0
S.D.	0.00	0.00	0.00	0.00
N	24	25	25	24

MANUALv1.0
08/31/2000

TABLE 76 (F1 MALES - SCHEDULED NECROPSY)

PROJECT NO.:WIL-380001A — INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 1

SPONSOR:BROMINATED SOLVENTS — SPERM MORPHOLOGY COUNTS (ABSOLUTE NUMBER) - SUMMARY OF MEANS

	----- M A L E -----			
GROUP:	0 PPM	100 PPM	250 PPM	500 PPM
NORMAL				
MEAN	199	199	198	191
S.D.	1.6	1.6	2.3	13.0
N	24	25	25	24
NORMALLY SHAPED HEAD SEPARATED FROM FLAGELLUM				
MEAN	0	1	1	5
S.D.	0.9	1.4	1.5	8.2
N	24	25	25	24
HEAD ABSENT WITH NORMAL FLAGELLUM				
MEAN	0	1	1	4
S.D.	1.1	1.5	1.2	6.0
N	24	25	25	24
HEAD ABSENT WITH ABNORMAL FLAGELLUM				
MEAN	0	0	0	0
S.D.	0.0	0.0	0.0	0.0
N	24	25	25	24
MISSHAPEN HEAD WITH NORMAL FLAGELLUM				
MEAN	0	0	0	0
S.D.	0.3	0.0	0.0	1.0
N	24	25	25	24
MISSHAPEN HEAD WITH ABNORMAL FLAGELLUM				
MEAN	0	0	0	0
S.D.	0.0	0.0	0.0	0.0
N	24	25	25	24

TABLE 76 (F1 MALES - SCHEDULED NECROPSY)

PROJECT NO.:WIL-380001A — INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 2

SPONSOR:BROMINATED SOLVENTS — SPERM MORPHOLOGY COUNTS (ABSOLUTE NUMBER) - SUMMARY OF MEANS

	----- M A L E -----			
GROUP:	0 PPM	100 PPM	250 PPM	500 PPM
DEGENERATIVE FLAGELLAR DEFECTS WITH NORMAL HEAD				
MEAN	0	0	0	0
S.D.	0.0	0.0	0.0	0.0
N	24	25	25	24
OTHER FLAGELLAR DEFECTS WITH NORMAL HEAD				
MEAN	0	0	0	0
S.D.	0.0	0.0	0.0	0.0
N	24	25	25	24

MANUALv1.0
09/06/2000

TABLE 77 (F1 - UNSCHEDULED DEATHS)

PROJECT NO.:WIL-380001A INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS GROSS NECROPSY OBSERVATIONS INCIDENCE SUMMARY

FOUND DEAD OR EUTHANIZED MORIBUND OR IN EXTREMIS

	------- M A L E -------			
GROUP	1	2	3	4
NUMBER OF ANIMALS IN DOSE GROUP	25	25	25	25
NUMBER OF ANIMALS EXAMINED	1	0	0	1
CECUM				
-DISTENDED	1	0	0	0
LUNGS				
-DARK RED AREA(S)	1	0	0	1
SEMINAL VESICLES				
-SMALL	1	0	0	0
SKIN				
-RED MATTING	1	0	0	0
STOMACH				
-DARK RED AREA(S)	0	0	0	1
TEETH				
-MALALIGNED	1	0	0	0

1- 0 PPM 2- 100 PPM 3- 250 PPM 4- 500 PPM

PGRSIv4.02
08/21/2000

TABLE 78 (F1 - SCHEDULED NECROPSY)

PROJECT NO.:WIL-380001A — INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 1

SPONSOR:BROMINATED SOLVENTS — GROSS NECROPSY OBSERVATIONS INCIDENCE SUMMARY

SCHEDULED NECROPSY

	------- MALE -------			
GROUP	1	2	3	4
NUMBER OF ANIMALS IN DOSE GROUP	25	25	25	25
NUMBER OF ANIMALS EXAMINED	24	25	25	24
KIDNEYS				
-DEPRESSED AREA(S)	1	3	1	2
-DILATED PELVIS	0	0	4	0
LIVER				
-WHITE AREA(S)	1	0	0	0
LUNGS				
-DARK RED AREA(S)	0	0	0	2
-DARK RED	0	1	1	1
RT EPIDIDYMIS				
-GREEN DISCOLORATION	0	0	1	0
SPLEEN				
-ENLARGED	1	0	0	0
-CYST(S)	0	1	0	0
ADIPOSE TISSUE				
-NECROTIC	1	0	0	0
TEETH				
-BROKEN	0	0	1	0
NO SIGNIFICANT CHANGES OBSERVED - ALL EXAMINED TISSUES	21	20	17	19

1- 0 PPM 2- 100 PPM 3- 250 PPM 4- 500 PPM

PGRSIv4.02
02/22/2001

TABLE 78 (F1 - SCHEDULED NECROPSY)

PROJECT NO.:WIL-380001D — INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 1

SPONSOR:BROMINATED SOLVENTS — GROSS NECROPSY OBSERVATIONS INCIDENCE SUMMARY

SCHEDULED NECROPSY

	----- FEMALE -----			
GROUP	1	2	3	4
NUMBER OF ANIMALS IN DOSE GROUP	25	25	25	25
NUMBER OF ANIMALS EXAMINED	25	25	25	25
KIDNEYS				
-DILATED PELVIS	0	0	1	2
-DEPRESSED AREA(S)	0	0	1	0
LUNGS				
-DARK RED	1	3	5	2
-DARK RED AREA(S)	2	2	0	0
OVARIES				
-CYST(S)	2	0	0	1
-ENLARGED	0	0	0	1
-WHITE AREA(S)	0	0	0	1
SKIN				
-HAIR LOSS	1	1	0	1
-MASS	0	2	0	0
-RED MATTING	0	1	0	0
UTERUS				
-CLEAR FLUID FILLED	0	0	0	2
EAR(S)				
-SWOLLEN	1	1	1	1
-REDDENED	0	0	1	0
CLITORAL GLAND				
-ENLARGED	0	0	1	0

1- 0 PPM 2- 100 PPM 3- 250 PPM 4- 500 PPM

TABLE 78 (F1 - SCHEDULED NECROPSY)

PROJECT NO.:WIL-380001D — INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 2

SPONSOR:BROMINATED SOLVENTS — GROSS NECROPSY OBSERVATIONS INCIDENCE SUMMARY

SCHEDULED NECROPSY

	----- FEMALE -----			
GROUP	1	2	3	4
NUMBER OF ANIMALS IN DOSE GROUP	25	25	25	25
NUMBER OF ANIMALS EXAMINED	25	25	25	25
CLITORAL GLAND - CONTINUED				
-GREEN DISCOLORATION	0	0	1	0
TEETH				
-MALALIGNED	0	1	0	0
NO SIGNIFICANT CHANGES OBSERVED - ALL EXAMINED TISSUES	19	19	16	19

1- 0 PPM 2- 100 PPM 3- 250 PPM 4- 500 PPM

PGRSIv4.02
08/21/2000

TABLE 79 (F1)

PROJECT NO.:WIL-380001D INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS PAGE 1

SPONSOR:BROMINATED SOLVENTS SUMMARY OF IMPLANTATION SITES

GROUP:		0 PPM	100 PPM	250 PPM	500 PPM
IMPLANTATION SITES					
	MEAN	15.5	15.8	13.5	9.8**
	S.D.	2.11	3.29	4.34	4.93
	N	22	17	16	17
NUMBER BORN					
	MEAN	14.9	15.1	13.1	8.6**
	S.D.	1.97	3.35	4.12	4.51
	N	22	17	16	17
UNACCOUNTED SITES					
	MEAN	0.5	0.6	0.4	1.2
	S.D.	0.86	1.22	0.63	1.09
	N	22	17	16	17

** = Significantly different from the control group at 0.01 using Dunnett's test

NOTE: ONLY DAMS THAT HAVE DELIVERED ONE OR MORE PUPS ARE INCLUDED IN CALCULATION OF MEAN.

PISSUv4.02
08/21/2000

TABLE 80 (F1)

PROJECT NO.:WIL-380001A INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS ORGAN WEIGHTS (GRAMS) - SUMMARY OF MEANS

		----- M A L E -----			
GROUP:		0 PPM	100 PPM	250 PPM	500 PPM
BRAIN					
	MEAN	2.21	2.11**	2.12**	2.01**
	S.D.	0.092	0.111	0.109	0.079
	N	24	25	25	24
LIVER					
	MEAN	20.18	18.54	19.94	21.25
	S.D.	3.353	2.304	2.994	4.126
	N	24	25	25	24
KIDNEYS					
	MEAN	3.73	3.37**	3.52	3.40*
	S.D.	0.455	0.354	0.349	0.450
	N	24	25	25	24
SPLEEN					
	MEAN	0.92	0.83	0.90	0.89
	S.D.	0.168	0.119	0.135	0.149
	N	24	25	25	24
LUNGS					
	MEAN	2.79	2.56	2.65	2.87
	S.D.	0.920	0.658	0.887	0.821
	N	24	25	25	24

* = Significantly different from the control group at 0.05 using Dunnett's test

** = Significantly different from the control group at 0.01 using Dunnett's test

TABLE 80 (F1)

PROJECT NO.:WIL-380001A — INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 2

SPONSOR:BROMINATED SOLVENTS — ORGAN WEIGHTS (GRAMS) - SUMMARY OF MEANS

	----- M A L E -----			
GROUP:	0 PPM	100 PPM	250 PPM	500 PPM
SEM VES/COAG GL				
MEAN	2.14	1.92	1.83**	1.96
S.D.	0.334	0.358	0.281	0.401
N	24	25	25	24
PROSTATE				
MEAN	1.16	1.00	1.06	1.05
S.D.	0.258	0.285	0.243	0.205
N	24	25	25	24
RT TESTIS				
MEAN	1.84	1.77	1.76	1.72
S.D.	0.171	0.126	0.151	0.170
N	24	25	25	24
LT TESTIS				
MEAN	1.80	1.77	1.77	1.73
S.D.	0.115	0.131	0.154	0.179
N	24	25	25	24
RT EPIDIDYMIS				
MEAN	0.74	0.73	0.74	0.69
S.D.	0.049	0.068	0.068	0.089
N	24	25	25	24

** = Significantly different from the control group at 0.01 using Dunnett's test

TABLE 80 (F1)

PROJECT NO.:WIL-380001A INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS PAGE 3

SPONSOR:BROMINATED SOLVENTS ORGAN WEIGHTS (GRAMS) - SUMMARY OF MEANS

	----- M A L E -----			
GROUP:	0 PPM	100 PPM	250 PPM	500 PPM
LT EPIDIDYMIS				
MEAN	0.72	0.73	0.73	0.69
S.D.	0.068	0.068	0.068	0.080
N	24	25	24	24
RT CAUDA EPID				
MEAN	0.3178	0.3129	0.3029	0.2720**
S.D.	0.03778	0.03862	0.03885	0.03787
N	24	25	25	24
LT CAUDA EPID				
MEAN	0.3304	0.3325	0.3221	0.2967*
S.D.	0.03279	0.03912	0.03981	0.04462
N	24	25	25	24
THYMUS GLAND				
MEAN	0.2319	0.2463	0.2702	0.2762*
S.D.	0.05952	0.06420	0.05165	0.05771
N	24	25	25	24
ADRENAL GLANDS				
MEAN	0.0602	0.0571	0.0561	0.0553
S.D.	0.00928	0.00711	0.00911	0.00735
N	24	25	25	24

* = Significantly different from the control group at 0.05 using Dunnett's test

** = Significantly different from the control group at 0.01 using Dunnett's test

TABLE 80 (F1)

PROJECT NO.:WIL-380001A INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS PAGE 4

SPONSOR:BROMINATED SOLVENTS ORGAN WEIGHTS (GRAMS) - SUMMARY OF MEANS

	----- M A L E -----			
GROUP:	0 PPM	100 PPM	250 PPM	500 PPM
PITUITARY				
MEAN	0.0152	0.0142	0.0141	0.0132**
S.D.	0.00284	0.00218	0.00152	0.00224
N	24	25	25	24

** = Significantly different from the control group at 0.01 using Dunnett's test

POFBSTv4.04
02/13/2001

TABLE 80 (F1)

PROJECT NO.:WIL-380001D — INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 1

SPONSOR:BROMINATED SOLVENTS — ORGAN WEIGHTS (GRAMS) - SUMMARY OF MEANS

		----- F E M A L E -----			
GROUP:		0 PPM	100 PPM	250 PPM	500 PPM
BRAIN					
	MEAN	1.97	1.96	1.92	1.89**
	S.D.	0.076	0.073	0.067	0.102
	N	25	25	25	25
LIVER					
	MEAN	12.27	12.57	12.44	12.53
	S.D.	1.571	1.559	1.641	1.894
	N	25	25	25	25
KIDNEYS					
	MEAN	2.10	2.18	2.14	2.07
	S.D.	0.180	0.279	0.233	0.224
	N	25	25	25	25
SPLEEN					
	MEAN	0.65	0.63	0.65	0.66
	S.D.	0.098	0.105	0.094	0.122
	N	25	25	25	25
LUNGS					
	MEAN	2.00	2.30	2.13	2.05
	S.D.	0.715	0.807	0.717	0.756
	N	25	25	25	25

** = Significantly different from the control group at 0.01 using Dunnett's test

TABLE 80 (F1)

PROJECT NO.:WIL-380001D — INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 2

SPONSOR:BROMINATED SOLVENTS — ORGAN WEIGHTS (GRAMS) - SUMMARY OF MEANS

	----- F E M A L E -----			
GROUP:	0 PPM	100 PPM	250 PPM	500 PPM
UTERUS/CX/OD				
MEAN	0.73	0.72	0.69	0.67
S.D.	0.248	0.231	0.184	0.294
N	25	25	25	25
OVARIES				
MEAN	0.1131	0.1077	0.1056	0.1062
S.D.	0.01554	0.03170	0.02791	0.02302
N	25	25	25	25
THYMUS GLAND				
MEAN	0.2711	0.2452	0.2684	0.2435
S.D.	0.05710	0.05066	0.07564	0.04658
N	25	25	25	25
ADRENAL GLANDS				
MEAN	0.0672	0.0721	0.0703	0.0647
S.D.	0.00607	0.01123	0.01155	0.01031
N	24	25	25	25
PITUITARY				
MEAN	0.0157	0.0166	0.0162	0.0163
S.D.	0.00254	0.00349	0.00358	0.00330
N	25	25	25	25

None significantly different from control group

POFBSTv4.03
08/21/2000

TABLE 81 (F1)

PROJECT NO.:WIL-380001A INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS ORGAN WEIGHTS RELATIVE TO FINAL BODY WEIGHTS (GRAMS/100 GRAMS)

	----- M A L E -----			
GROUP:	0 PPM	100 PPM	250 PPM	500 PPM
FINAL BODY WT(G)				
MEAN	583.	543.*	562.	526.**
S.D.	65.7	63.9	55.3	43.3
N	24	25	25	24
BRAIN				
MEAN	0.382	0.392	0.379	0.384
S.D.	0.0379	0.0401	0.0365	0.0313
N	24	25	25	24
LIVER				
MEAN	3.455	3.424	3.538	4.017**
S.D.	0.3775	0.3348	0.3198	0.5570
N	24	25	25	24
KIDNEYS				
MEAN	0.640	0.624	0.627	0.645
S.D.	0.0548	0.0672	0.0523	0.0587
N	24	25	25	24
SPLEEN				
MEAN	0.157	0.153	0.161	0.169
S.D.	0.0203	0.0214	0.0231	0.0264
N	24	25	25	24

* = Significantly different from the control group at 0.05 using Dunnett's test

** = Significantly different from the control group at 0.01 using Dunnett's test

TABLE 81 (F1)

PROJECT NO.:WIL-380001A INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS ORGAN WEIGHTS RELATIVE TO FINAL BODY WEIGHTS (GRAMS/100 GRAMS)

		----- M A L E -----			
GROUP:		0 PPM	100 PPM	250 PPM	500 PPM
LUNGS					
	MEAN	0.487	0.477	0.474	0.552
	S.D.	0.1858	0.1332	0.1581	0.1684
	N	24	25	25	24
SEM VES/COAG GL					
	MEAN	0.371	0.361	0.326	0.373
	S.D.	0.0712	0.0914	0.0508	0.0760
	N	24	25	25	24
PROSTATE					
	MEAN	0.200	0.187	0.190	0.201
	S.D.	0.0405	0.0595	0.0502	0.0371
	N	24	25	25	24
RT TESTIS					
	MEAN	0.319	0.330	0.316	0.329
	S.D.	0.0439	0.0377	0.0416	0.0303
	N	24	25	25	24
LT TESTIS					
	MEAN	0.313	0.328	0.318	0.330
	S.D.	0.0404	0.0363	0.0393	0.0314
	N	24	25	25	24

None significantly different from control group

TABLE 81 (F1)

PROJECT NO.:WIL-380001A INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS ORGAN WEIGHTS RELATIVE TO FINAL BODY WEIGHTS (GRAMS/100 GRAMS)

	----- M A L E -----			
GROUP:	0 PPM	100 PPM	250 PPM	500 PPM
RT EPIDIDYMIS				
MEAN	0.127	0.137	0.132	0.132
S.D.	0.0111	0.0184	0.0154	0.0147
N	24	25	25	24
LT EPIDIDYMIS				
MEAN	0.125	0.136	0.130	0.132
S.D.	0.0133	0.0220	0.0150	0.0138
N	24	25	24	24
RT CAUDA EPID				
MEAN	0.055	0.058	0.054	0.052
S.D.	0.0075	0.0104	0.0083	0.0073
N	24	25	25	24
LT CAUDA EPID				
MEAN	0.057	0.062	0.058	0.056
S.D.	0.0061	0.0111	0.0089	0.0075
N	24	25	25	24
THYMUS GLAND				
MEAN	0.040	0.045	0.048*	0.052**
S.D.	0.0114	0.0110	0.0091	0.0102
N	24	25	25	24

* = Significantly different from the control group at 0.05 using Dunnett's test

** = Significantly different from the control group at 0.01 using Dunnett's test

TABLE 81 (F1)

PROJECT NO.:WIL-380001A INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS ORGAN WEIGHTS RELATIVE TO FINAL BODY WEIGHTS (GRAMS/100 GRAMS)

	----- M A L E -----			
GROUP:	0 PPM	100 PPM	250 PPM	500 PPM
ADRENAL GLANDS				
MEAN	0.010	0.011	0.010	0.011
S.D.	0.0016	0.0014	0.0020	0.0013
N	24	25	25	24
PITUITARY				
MEAN	0.003	0.003	0.003	0.003
S.D.	0.0005	0.0006	0.0005	0.0005
N	24	25	25	24

None significantly different from control group

POFBSTv4.04
02/13/2001

TABLE 81 (F1)

PROJECT NO.:WIL-380001D INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS PAGE 1

SPONSOR:BROMINATED SOLVENTS ORGAN WEIGHTS RELATIVE TO FINAL BODY WEIGHTS (GRAMS/100 GRAMS)

	----- F E M A L E -----			
GROUP:	0 PPM	100 PPM	250 PPM	500 PPM
FINAL BODY WT(G)				
MEAN	321.	325.	318.	309.
S.D.	27.3	28.1	26.7	29.5
N	25	25	25	25
BRAIN				
MEAN	0.615	0.606	0.608	0.617
S.D.	0.0520	0.0549	0.0470	0.0588
N	25	25	25	25
LIVER				
MEAN	3.811	3.873	3.914	4.059
S.D.	0.2847	0.3744	0.4246	0.4546
N	25	25	25	25
KIDNEYS				
MEAN	0.655	0.672	0.673	0.673
S.D.	0.0431	0.0756	0.0727	0.0629
N	25	25	25	25
SPLEEN				
MEAN	0.203	0.195	0.204	0.213
S.D.	0.0299	0.0289	0.0352	0.0356
N	25	25	25	25

None significantly different from control group

TABLE 81 (F1)

PROJECT NO.:WIL-380001D INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS PAGE 2

SPONSOR:BROMINATED SOLVENTS ORGAN WEIGHTS RELATIVE TO FINAL BODY WEIGHTS (GRAMS/100 GRAMS)

	----- F E M A L E -----			
GROUP:	0 PPM	100 PPM	250 PPM	500 PPM
LUNGS				
MEAN	0.625	0.710	0.675	0.666
S.D.	0.2256	0.2425	0.2337	0.2399
N	25	25	25	25
UTERUS/CX/OD				
MEAN	0.226	0.223	0.219	0.220
S.D.	0.0742	0.0712	0.0601	0.1033
N	25	25	25	25
OVARIES				
MEAN	0.035	0.033	0.033	0.035
S.D.	0.0055	0.0093	0.0087	0.0076
N	25	25	25	25
THYMUS GLAND				
MEAN	0.085	0.076	0.085	0.079
S.D.	0.0171	0.0151	0.0247	0.0164
N	25	25	25	25
ADRENAL GLANDS				
MEAN	0.021	0.022	0.022	0.021
S.D.	0.0027	0.0032	0.0042	0.0045
N	24	25	25	25

None significantly different from control group

TABLE 81 (F1)

PROJECT NO.:WIL-380001D INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS PAGE 3

SPONSOR:BROMINATED SOLVENTS ORGAN WEIGHTS RELATIVE TO FINAL BODY WEIGHTS (GRAMS/100 GRAMS)

	----- F E M A L E -----			
GROUP:	0 PPM	100 PPM	250 PPM	500 PPM
PITUITARY				
MEAN	0.005	0.005	0.005	0.005
S.D.	0.0009	0.0009	0.0013	0.0010
N	25	25	25	25

None significantly different from control group

POFBSTv4.03
08/21/2000

TABLE 82 (F1 - UNSCHEDULED DEATHS)

PROJECT NO.:WIL-380001A — INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 1

SPONSOR:BROMINATED SOLVENTS — HISTOMORPHOLOGICAL DIAGNOSIS -- SUMMARY INCIDENCE

----- MALE -----

GROUP:	1	2	3	4
NUMBER OF ANIMALS IN DOSE GROUP	25	25	25	25
NUMBER OF ANIMALS EXAMINED	1	0	0	1
BRAIN				
TOTAL NUMBER EXAMINED	1	0	0	1
EXAMINED, UNREMARKABLE	1	0	0	1
CECUM				
TOTAL NUMBER EXAMINED	1	NA	NA	NA
EXAMINED, UNREMARKABLE	1	NA	NA	NA
EPIDIDYMIDES				
TOTAL NUMBER EXAMINED	1	0	0	1
EXAMINED, UNREMARKABLE	1	0	0	0
-IMMATURE (JUVENILE DEVELOPMENT)	0	0	0	1
PRESENT	NONE	NONE	NONE	1
KIDNEYS				
TOTAL NUMBER EXAMINED	1	0	0	1
EXAMINED, UNREMARKABLE	0	0	0	0
-BASOPHILIC TUBULES	0	0	0	1
MINIMAL	NONE	NONE	NONE	1
-CYST, MEDULLARY	1	0	0	0
MINIMAL	1	NONE	NONE	NONE

1- 0 PPM 2- 100 PPM 3- 250 PPM 4- 500 PPM

NA = NOT APPLICABLE

TABLE 82 (F1 - UNSCHEDULED DEATHS)

PROJECT NO.:WIL-380001A INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS PAGE 2

SPONSOR:BROMINATED SOLVENTS HISTOMORPHOLOGICAL DIAGNOSIS -- SUMMARY INCIDENCE

----- MALE -----

GROUP:	1	2	3	4
NUMBER OF ANIMALS IN DOSE GROUP	25	25	25	25
NUMBER OF ANIMALS EXAMINED	1	0	0	1
LIVER				
TOTAL NUMBER EXAMINED	1	0	0	1
EXAMINED, UNREMARKABLE	0	0	0	0
-INFILTRATE, MONONUCLEAR	1	0	0	0
MILD	1	NONE	NONE	NONE
-HEMATOPOIESIS, EXTRAMEDULLARY	0	0	0	1
MINIMAL	NONE	NONE	NONE	1
-VACUOLATION, HEPATOCELLULAR, CENTRILOBULAR	0	0	0	1
MINIMAL	NONE	NONE	NONE	1
COAGULATING GL.				
TOTAL NUMBER EXAMINED	1	0	0	1
EXAMINED, UNREMARKABLE	1	0	0	0
-IMMATURE	0	0	0	1
PRESENT	NONE	NONE	NONE	1
LUNGS				
TOTAL NUMBER EXAMINED	1	0	0	1
EXAMINED, UNREMARKABLE	0	0	0	0
-INFILTRATE, LYMPHOCYTE, PERIBRONCHIAL	1	0	0	1
MINIMAL	1	NONE	NONE	1
-MACROPHAGES, ALVEOLAR	1	0	0	0
MINIMAL	1	NONE	NONE	NONE
-HEMORRHAGE	1	0	0	0
MODERATE	1	NONE	NONE	NONE

1- 0 PPM 2- 100 PPM 3- 250 PPM 4- 500 PPM

TABLE 82 (F1 - UNSCHEDULED DEATHS)

PROJECT NO.:WIL-380001A INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS HISTOMORPHOLOGICAL DIAGNOSIS -- SUMMARY INCIDENCE

----- MALE -----

GROUP:	1	2	3	4
NUMBER OF ANIMALS IN DOSE GROUP	25	25	25	25
NUMBER OF ANIMALS EXAMINED	1	0	0	1
LUNGS - CONTINUED				
-INFILTRATE, MONONUCLEAR, PERIVASCULAR	1	0	0	0
MINIMAL	1	NONE	NONE	NONE
-INFLAMMATION, SUBACUTE	1	0	0	0
MINIMAL	1	NONE	NONE	NONE
PITUITARY				
TOTAL NUMBER EXAMINED	1	0	0	1
EXAMINED, UNREMARKABLE	1	0	0	1
PROSTATE				
TOTAL NUMBER EXAMINED	1	0	0	1
EXAMINED, UNREMARKABLE	1	0	0	1
SEMINAL VESICLES				
TOTAL NUMBER EXAMINED	1	0	0	1
EXAMINED, UNREMARKABLE	1	0	0	0
-IMMATURE	0	0	0	1
PRESENT	NONE	NONE	NONE	1
SPLEEN				
TOTAL NUMBER EXAMINED	1	0	0	1
EXAMINED, UNREMARKABLE	0	0	0	0
-HEMATOPOIESIS, EXTRAMEDULLARY	1	0	0	1
MINIMAL	1	NONE	NONE	1

1- 0 PPM 2- 100 PPM 3- 250 PPM 4- 500 PPM

TABLE 82 (F1 - UNSCHEDULED DEATHS)

PROJECT NO.:WIL-380001A INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS HISTOMORPHOLOGICAL DIAGNOSIS -- SUMMARY INCIDENCE

----- MALE -----

GROUP:	1	2	3	4
NUMBER OF ANIMALS IN DOSE GROUP	25	25	25	25
NUMBER OF ANIMALS EXAMINED	1	0	0	1
SPLEEN - CONTINUED				
-PIGMENT, BROWN	1	0	0	1
MINIMAL	1	NONE	NONE	1
-NECROSIS, LYMPHOID	0	0	0	1
MILD	NONE	NONE	NONE	1
ADRENAL CORTEX				
TOTAL NUMBER EXAMINED	1	0	0	1
EXAMINED, UNREMARKABLE	1	0	0	1
TESTES				
TOTAL NUMBER EXAMINED	1	0	0	1
EXAMINED, UNREMARKABLE	0	0	0	0
-VACUOLATION, SEMINIFEROUS EPITHELIUM	1	0	0	0
MINIMAL	1	NONE	NONE	NONE
-IMMATURE	0	0	0	1
PRESENT	NONE	NONE	NONE	1
THYMUS GLAND				
TOTAL NUMBER EXAMINED	1	0	0	1
EXAMINED, UNREMARKABLE	0	0	0	0
-ATROPHY	1	0	0	0
MILD	1	NONE	NONE	NONE
-NECROSIS, LYMPHOID	1	0	0	1
MINIMAL	NONE	NONE	NONE	1
MILD	1	NONE	NONE	NONE

1- 0 PPM 2- 100 PPM 3- 250 PPM 4- 500 PPM

TABLE 82 (F1 - UNSCHEDULED DEATHS)

PROJECT NO.:WIL-380001A — INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 5

SPONSOR:BROMINATED SOLVENTS — HISTOMORPHOLOGICAL DIAGNOSIS -- SUMMARY INCIDENCE

----- MALE -----

GROUP:	1	2	3	4
NUMBER OF ANIMALS IN DOSE GROUP	25	25	25	25
NUMBER OF ANIMALS EXAMINED	1	0	0	1
ADRENAL MEDULLA				
TOTAL NUMBER EXAMINED	1	0	0	1
EXAMINED, UNREMARKABLE	1	0	0	1
BASAL GANGLIA				
TOTAL NUMBER EXAMINED	1	NA	NA	1
EXAMINED, UNREMARKABLE	1	NA	NA	1
STOMACH, GLD				
TOTAL NUMBER EXAMINED	NA	NA	NA	1
EXAMINED, UNREMARKABLE	NA	NA	NA	0
-EROSION	NA	NA	NA	1
MODERATE	NA	NA	NA	1
STOMACH, NONGLD				
TOTAL NUMBER EXAMINED	NA	NA	NA	1
EXAMINED, UNREMARKABLE	NA	NA	NA	1
CAUSE DEATH/MORB				
TOTAL NUMBER EXAMINED	1	NA	NA	1
EXAMINED, UNREMARKABLE	0	NA	NA	0
-UNDETERMINED	1	NA	NA	1
PRESENT	1	NA	NA	1

1- 0 PPM 2- 100 PPM 3- 250 PPM 4- 500 PPM

NA = NOT APPLICABLE

PHSI2v4.17
02/28/2001

TABLE 83 (F1 - SCHEDULED NECROPSY)

PROJECT NO.:WIL-380001A INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS HISTOMORPHOLOGICAL DIAGNOSIS -- SUMMARY INCIDENCE

----- MALE -----

GROUP:	1	2	3	4
NUMBER OF ANIMALS IN DOSE GROUP	25	25	25	25
NUMBER OF ANIMALS EXAMINED	24	25	25	24
BRAIN				
TOTAL NUMBER EXAMINED	24	NA	NA	24
EXAMINED, UNREMARKABLE	24	NA	NA	24
EPIDIDYMIDES				
TOTAL NUMBER EXAMINED	24	NA	1	24
EXAMINED, UNREMARKABLE	17	NA	1	22
-INFILTRATE, MONONUCLEAR	7	NA	0	2
MINIMAL	7	NA	NA	2
KIDNEYS				
TOTAL NUMBER EXAMINED	24	25	25	24
EXAMINED, UNREMARKABLE	2	8	5	0
-BASOPHILIC TUBULES	20	13*	16	17
MINIMAL	19	12	15	16
MILD	1	1	1	1
-INFILTRATE, MONONUCLEAR	11	9	1*	20*
MINIMAL	11	9	1	20
-MINERALIZATION, PAPILLARY TUBULAR	1	2	1	0
MINIMAL	1	2	1	NONE
-MINERALIZATION, PELVIC	0	1	0	3
MINIMAL	NONE	1	NONE	2
MILD	NONE	NONE	NONE	1
-HYPERPLASIA, TRANSITIONAL CELL	1	1	2	2
MINIMAL	1	1	2	1
MILD	NONE	NONE	NONE	1

1- 0 PPM 2- 100 PPM 3- 250 PPM 4- 500 PPM

* = SIGNIFICANTLY DIFFERENT FROM THE CONTROL GROUP AT THE 0.05 LEVEL USING 2-TAILED FISHER'S EXACT TEST.

NA = NOT APPLICABLE

TABLE 83 (F1 - SCHEDULED NECROPSY)

PROJECT NO.:WIL-380001A INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS HISTOMORPHOLOGICAL DIAGNOSIS -- SUMMARY INCIDENCE

----- MALE -----

GROUP:	1	2	3	4
NUMBER OF ANIMALS IN DOSE GROUP	25	25	25	25
NUMBER OF ANIMALS EXAMINED	24	25	25	24
KIDNEYS - CONTINUED				
-CYST, MEDULLARY	1	1	2	2
MINIMAL	1	1	2	2
-PYELITIS, ACUTE	2	0	0	0
MINIMAL	2	NONE	NONE	NONE
-HYDRONEPHROSIS	0	0	3	0
MINIMAL	NONE	NONE	2	NONE
MILD	NONE	NONE	1	NONE
LIVER				
TOTAL NUMBER EXAMINED	24	25	25	24
EXAMINED, UNREMARKABLE	0	1	0	0
-INFILTRATE, MONONUCLEAR	24	21	23	23
MINIMAL	24	21	23	23
-VACUOLATION, HEPATOCELLULAR, CENTRILOBULAR	0	0	15*	23*
MINIMAL	NONE	NONE	11	3
MILD	NONE	NONE	4	20
-INCREASED GLYCOGEN	19	18	17	24*
MINIMAL	13	7	4	3
MILD	5	9	9	8
MODERATE	1	2	4	13
-FOCUS, EOSINOPHILIC CELL	1	0	0	0
MINIMAL	1	NONE	NONE	NONE
-VACUOLATION, HEPATOCELLULAR	1	0	0	0
MINIMAL	1	NONE	NONE	NONE

1- 0 PPM 2- 100 PPM 3- 250 PPM 4- 500 PPM

* = SIGNIFICANTLY DIFFERENT FROM THE CONTROL GROUP AT THE 0.05 LEVEL USING 2-TAILED FISHER'S EXACT TEST.

TABLE 83 (F1 - SCHEDULED NECROPSY)

PROJECT NO.:WIL-380001A INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS HISTOMORPHOLOGICAL DIAGNOSIS -- SUMMARY INCIDENCE

----- MALE -----

GROUP:	1	2	3	4
NUMBER OF ANIMALS IN DOSE GROUP	25	25	25	25
NUMBER OF ANIMALS EXAMINED	24	25	25	24
LIVER - CONTINUED				
-NECROSIS, HEPATOCELLULAR	0	0	1	0
MINIMAL	NONE	NONE	1	NONE
-ANGIECTASIS	0	0	1	0
MINIMAL	NONE	NONE	1	NONE
-HYPERPLASIA, BILE DUCT	0	1	0	0
MINIMAL	NONE	1	NONE	NONE
COAGULATING GL.				
TOTAL NUMBER EXAMINED	23	NA	NA	24
EXAMINED, UNREMARKABLE	23	NA	NA	24
NOT EXAMINED	1	NA	NA	0
LUNGS				
TOTAL NUMBER EXAMINED	24	1	1	24
EXAMINED, UNREMARKABLE	0	0	0	0
-INFILTRATE, NEUTROPHIL, PERIVASCULAR	4	0	0	0
MINIMAL	4	NA	NA	NONE
-INFILTRATE, LYMPHOCYTE, PERIBRONCHIAL	23	1	1	22
MINIMAL	20	1	1	20
MILD	3	NA	NA	2
-MACROPHAGES, ALVEOLAR	17	0	0	13
MINIMAL	15	NA	NA	13
MILD	2	NA	NA	NONE

1- 0 PPM 2- 100 PPM 3- 250 PPM 4- 500 PPM

NONE SIGNIFICANTLY DIFFERENT FROM THE CONTROL GROUP USING 2-TAILED FISHER'S EXACT TEST.

NA = NOT APPLICABLE

TABLE 83 (F1 - SCHEDULED NECROPSY)

PROJECT NO.:WIL-380001A INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS HISTOMORPHOLOGICAL DIAGNOSIS -- SUMMARY INCIDENCE

----- MALE -----

GROUP:	1	2	3	4
NUMBER OF ANIMALS IN DOSE GROUP	25	25	25	25
NUMBER OF ANIMALS EXAMINED	24	25	25	24
LUNGS - CONTINUED				
-MINERALIZATION, VASCULAR	22	1	1	18
MINIMAL	22	1	1	18
-HEMORRHAGE	3	1	0	3
MINIMAL	3	NA	NA	NONE
MILD	NONE	NA	NA	2
MODERATE	NONE	1	NA	1
-INFILTRATE, MONONUCLEAR, PERIVASCULAR	21	1	1	24
MINIMAL	19	1	1	23
MILD	2	NA	NA	1
-INFLAMMATION, SUBACUTE	2	0	0	0
MINIMAL	2	NA	NA	NONE
-INFLAMMATION, ACUTE	1	0	0	0
MINIMAL	1	NA	NA	NONE
-CONGESTION	0	0	0	1
MILD	NONE	NA	NA	1
PITUITARY				
TOTAL NUMBER EXAMINED	24	NA	NA	24
EXAMINED, UNREMARKABLE	24	NA	NA	23
-CYST, PARS INTERMEDIA	0	NA	NA	1
MODERATE	NONE	NA	NA	1

1- 0 PPM 2- 100 PPM 3- 250 PPM 4- 500 PPM

NONE SIGNIFICANTLY DIFFERENT FROM THE CONTROL GROUP USING 2-TAILED FISHER'S EXACT TEST.

NA = NOT APPLICABLE

TABLE 83 (F1 - SCHEDULED NECROPSY)

PROJECT NO.:WIL-380001A INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS HISTOMORPHOLOGICAL DIAGNOSIS -- SUMMARY INCIDENCE

----- MALE -----

GROUP:	1	2	3	4
NUMBER OF ANIMALS IN DOSE GROUP	25	25	25	25
NUMBER OF ANIMALS EXAMINED	24	25	25	24
PROSTATE				
TOTAL NUMBER EXAMINED	24	NA	NA	24
EXAMINED, UNREMARKABLE	5	NA	NA	4
-INFILTRATE, MONONUCLEAR	18	NA	NA	18
MINIMAL	10	NA	NA	16
MILD	8	NA	NA	2
-INFLAMMATION, ACUTE	3	NA	NA	13*
MINIMAL	3	NA	NA	7
MILD	NONE	NA	NA	6
-HYPERPLASIA, ACINAR CELL	4	NA	NA	1
MINIMAL	4	NA	NA	1
SEMINAL VESICLES				
TOTAL NUMBER EXAMINED	24	NA	NA	24
EXAMINED, UNREMARKABLE	24	NA	NA	24
SPLEEN				
TOTAL NUMBER EXAMINED	24	1	NA	24
EXAMINED, UNREMARKABLE	0	0	NA	0
-CYST	0	1*	NA	0
MILD	NONE	1	NA	NONE
-HEMATOPOIESIS, EXTRAMEDULLARY	24	1	NA	24
MINIMAL	20	NA	NA	23
MILD	4	1	NA	1

1- 0 PPM 2- 100 PPM 3- 250 PPM 4- 500 PPM

* = SIGNIFICANTLY DIFFERENT FROM THE CONTROL GROUP AT THE 0.05 LEVEL USING 2-TAILED FISHER'S EXACT TEST.

NA = NOT APPLICABLE

TABLE 83 (F1 - SCHEDULED NECROPSY)

PROJECT NO.:WIL-380001A INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS HISTOMORPHOLOGICAL DIAGNOSIS -- SUMMARY INCIDENCE

----- MALE -----

GROUP:	1	2	3	4
NUMBER OF ANIMALS IN DOSE GROUP	25	25	25	25
NUMBER OF ANIMALS EXAMINED	24	25	25	24
SPLEEN - CONTINUED				
-PIGMENT, BROWN	24	1	NA	24
MILD	17	1	NA	18
MODERATE	7	NA	NA	6
ADRENAL CORTEX				
TOTAL NUMBER EXAMINED	24	NA	NA	24
EXAMINED, UNREMARKABLE	24	NA	NA	23
-INFILTRATE, MONONUCLEAR	0	NA	NA	1
MINIMAL	NONE	NA	NA	1
TESTES				
TOTAL NUMBER EXAMINED	24	NA	NA	24
EXAMINED, UNREMARKABLE	20	NA	NA	21
-VACUOLATION, SEMINIFEROUS EPITHELIUM	4	NA	NA	2
MINIMAL	4	NA	NA	2
-DEGENERATION, SEMINIFEROUS EPITHELIUM	3	NA	NA	2
MINIMAL	3	NA	NA	2
-DILATATION, SEMINIFEROUS TUBULES	1	NA	NA	0
MILD	1	NA	NA	NONE
THYMUS GLAND				
TOTAL NUMBER EXAMINED	24	NA	NA	24
EXAMINED, UNREMARKABLE	13	NA	NA	14
-HEMORRHAGE	11	NA	NA	9
MINIMAL	11	NA	NA	9

1- 0 PPM 2- 100 PPM 3- 250 PPM 4- 500 PPM

NONE SIGNIFICANTLY DIFFERENT FROM THE CONTROL GROUP USING 2-TAILED FISHER'S EXACT TEST.

NA = NOT APPLICABLE

TABLE 83 (F1 - SCHEDULED NECROPSY)

----- MALE -----

GROUP:	1	2	3	4
NUMBER OF ANIMALS IN DOSE GROUP	25	25	25	25
NUMBER OF ANIMALS EXAMINED	24	25	25	24
THYMUS GLAND - CONTINUED				
-ATROPHY	0	NA	NA	1
MILD	NONE	NA	NA	1
ADRENAL MEDULLA				
TOTAL NUMBER EXAMINED	24	NA	NA	24
EXAMINED, UNREMARKABLE	24	NA	NA	24
BASAL GANGLIA				
TOTAL NUMBER EXAMINED	24	NA	NA	24
EXAMINED, UNREMARKABLE	24	NA	NA	24
ADIPOSE TISSUE				
TOTAL NUMBER EXAMINED	1	NA	NA	NA
EXAMINED, UNREMARKABLE	0	NA	NA	NA
-INFLAMMATION, CHRONIC	1	NA	NA	NA
MILD	1	NA	NA	NA

1- 0 PPM 2- 100 PPM 3- 250 PPM 4- 500 PPM
NONE SIGNIFICANTLY DIFFERENT FROM THE CONTROL GROUP USING 2-TAILED FISHER'S EXACT TEST.
NA = NOT APPLICABLE

TABLE 83 (F1 - SCHEDULED NECROPSY)

PROJECT NO.:WIL-380001D — INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 1

SPONSOR:BROMINATED SOLVENTS — HISTOMORPHOLOGICAL DIAGNOSIS -- SUMMARY INCIDENCE

----- FEMALE -----

GROUP:	1	2	3	4
NUMBER OF ANIMALS IN DOSE GROUP	25	25	25	25
NUMBER OF ANIMALS EXAMINED	25	25	25	25
OVIDUCTS				
TOTAL NUMBER EXAMINED	25	NA	NA	24-A
EXAMINED, UNREMARKABLE	25	NA	NA	24
NOT EXAMINED	0	NA	NA	1-A
BRAIN				
TOTAL NUMBER EXAMINED	25	NA	NA	25
EXAMINED, UNREMARKABLE	25	NA	NA	25
KIDNEYS				
TOTAL NUMBER EXAMINED	25	25	25	25
EXAMINED, UNREMARKABLE	8	10	9	5
-BASOPHILIC TUBULES	5	7	1	6
MINIMAL	5	7	1	6
-INFILTRATE, MONONUCLEAR	5	5	5	7
MINIMAL	4	5	5	7
MILD	1	NONE	NONE	NONE
-MINERALIZATION, TUBULAR	4	2	2	5
MINIMAL	4	2	2	5
-MINERALIZATION, PAPILLARY TUBULAR	2	2	2	6
MINIMAL	2	2	2	6
-MINERALIZATION, PELVIC	4	5	7	8
MINIMAL	3	5	6	8
MILD	1	NONE	1	NONE

1- 0 PPM 2- 100 PPM 3- 250 PPM 4- 500 PPM

NONE SIGNIFICANTLY DIFFERENT FROM THE CONTROL GROUP USING 2-TAILED FISHER'S EXACT TEST.

NA = NOT APPLICABLE

A = OVARIES/OVIDUCTS FOR ANIMAL NO. 32842-09 WERE MISLABLED AS NO. 32842-10; BOTH SETS OF SLIDES WERE READ UNDER THE DATA FILE FEMALE NO. 32842-10.

TABLE 83 (F1 - SCHEDULED NECROPSY)

PROJECT NO.:WIL-380001D — INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 2

SPONSOR:BROMINATED SOLVENTS — HISTOMORPHOLOGICAL DIAGNOSIS -- SUMMARY INCIDENCE

----- FEMALE -----

GROUP:	1	2	3	4
NUMBER OF ANIMALS IN DOSE GROUP	25	25	25	25
NUMBER OF ANIMALS EXAMINED	25	25	25	25
KIDNEYS - CONTINUED				
-HYPERPLASIA, TRANSITIONAL CELL	2	3	2	2
MINIMAL	NONE	3	2	2
MILD	2	NONE	NONE	NONE
-CYST, MEDULLARY	2	2	2	1
MINIMAL	2	2	2	NONE
MILD	NONE	NONE	NONE	1
-PYELITIS, ACUTE	1	0	0	0
MINIMAL	1	NONE	NONE	NONE
-HYDRONEPHROSIS	0	0	1	3
MINIMAL	NONE	NONE	1	1
MILD	NONE	NONE	NONE	2
-CAST, HYALINE	0	1	0	0
MINIMAL	NONE	1	NONE	NONE
-PYELITIS, CHRONIC	0	0	1	0
MINIMAL	NONE	NONE	1	NONE
LIVER				
TOTAL NUMBER EXAMINED	25	25	25	25
EXAMINED, UNREMARKABLE	0	0	0	1
-INFILTRATE, MONONUCLEAR	24	24	24	24
MINIMAL	24	24	24	24
-HEMATOPOIESIS, EXTRAMEDULLARY	1	1	1	2
MINIMAL	1	1	1	2

1- 0 PPM 2- 100 PPM 3- 250 PPM 4- 500 PPM

NONE SIGNIFICANTLY DIFFERENT FROM THE CONTROL GROUP USING 2-TAILED FISHER'S EXACT TEST.

TABLE 83 (F1 - SCHEDULED NECROPSY)

PROJECT NO.:WIL-380001D INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS HISTOMORPHOLOGICAL DIAGNOSIS -- SUMMARY INCIDENCE

----- FEMALE -----

GROUP:	1	2	3	4
NUMBER OF ANIMALS IN DOSE GROUP	25	25	25	25
NUMBER OF ANIMALS EXAMINED	25	25	25	25
LIVER - CONTINUED				
-INCREASED GLYCOGEN	16	24*	23*	23*
MINIMAL	4	10	5	5
MILD	10	13	9	9
MODERATE	2	1	9	9
-VACUOLATION, HEPATOCELLULAR, CENTRILOBULAR	0	0	2	6*
MINIMAL	NONE	NONE	2	4
MILD	NONE	NONE	NONE	2
LUNGS				
TOTAL NUMBER EXAMINED	25	5	5	25
EXAMINED, UNREMARKABLE	0	0	0	0
-INFILTRATE, NEUTROPHIL, PERIVASCULAR	4	0	1	1
MINIMAL	4	NA	1	1
-INFILTRATE, LYMPHOCYTE, PERIBRONCHIAL	22	5	5	22
MINIMAL	22	5	5	19
MILD	NONE	NA	NA	3
-MACROPHAGES, ALVEOLAR	8	0	1	10
MINIMAL	8	NA	1	10
-MINERALIZATION, VASCULAR	15	5	3	18
MINIMAL	15	5	3	18
-INFILTRATE, MONONUCLEAR, PERIVASCULAR	18	3	4	22
MINIMAL	18	3	4	21
MILD	NONE	NA	NA	1

1- 0 PPM 2- 100 PPM 3- 250 PPM 4- 500 PPM

* = SIGNIFICANTLY DIFFERENT FROM THE CONTROL GROUP AT THE 0.05 LEVEL USING 2-TAILED FISHER'S EXACT TEST.

NA = NOT APPLICABLE

TABLE 83 (F1 - SCHEDULED NECROPSY)

PROJECT NO.:WIL-380001D — INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 4

SPONSOR:BROMINATED SOLVENTS — HISTOMORPHOLOGICAL DIAGNOSIS -- SUMMARY INCIDENCE

----- FEMALE -----

GROUP:	1	2	3	4
NUMBER OF ANIMALS IN DOSE GROUP	25	25	25	25
NUMBER OF ANIMALS EXAMINED	25	25	25	25
LUNGS - CONTINUED				
-HEMORRHAGE	3	3*	3*	4
MINIMAL	1	2	2	NONE
MILD	1	NA	1	1
MODERATE	1	NA	NA	3
SEVERE	NONE	1	NA	NONE
-CONGESTION	0	2*	1	0
MINIMAL	NONE	1	NA	NONE
MILD	NONE	1	1	NONE
ADRENAL CORTEX				
TOTAL NUMBER EXAMINED	25	NA	NA	25
EXAMINED, UNREMARKABLE	25	NA	NA	25
ADRENAL MEDULLA				
TOTAL NUMBER EXAMINED	25	NA	NA	25
EXAMINED, UNREMARKABLE	25	NA	NA	25
OVARIES				
TOTAL NUMBER EXAMINED	25	25	25	24-A
EXAMINED, UNREMARKABLE	12	12	8	5
NOT EXAMINED	0	0	0	1-A
-DECREASED CORPORA LUTEA	3	3	7	4
MINIMAL	1	NONE	1	1
MILD	2	NONE	2	2
MODERATE	NONE	NONE	2	NONE
SEVERE	NONE	3	2	1

1- 0 PPM 2- 100 PPM 3- 250 PPM 4- 500 PPM

* = SIGNIFICANTLY DIFFERENT FROM THE CONTROL GROUP AT THE 0.05 LEVEL USING 2-TAILED FISHER'S EXACT TEST.

NA = NOT APPLICABLE

A = OVARIES/OVIDUCTS FOR ANIMAL NO. 32842-09 WERE MISLABLED AS NO. 32842-10; BOTH SETS OF SLIDES WERE READ UNDER THE DATA FILE FEMALE NO. 32842-10.

TABLE 83 (F1 - SCHEDULED NECROPSY)

PROJECT NO.:WIL-380001D — INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 5

SPONSOR:BROMINATED SOLVENTS — HISTOMORPHOLOGICAL DIAGNOSIS -- SUMMARY INCIDENCE

----- FEMALE -----

GROUP:	1	2	3	4
NUMBER OF ANIMALS IN DOSE GROUP	25	25	25	25
NUMBER OF ANIMALS EXAMINED	25	25	25	25
OVARIES - CONTINUED				
-CYST, FOLLICULAR, LUTEINIZED	2	3	2	3
MINIMAL	NONE	2	1	2
MILD	2	1	1	1
-CYST, FOLLICULAR	5	5	7	10
MINIMAL	4	1	3	7
MILD	1	2	3	2
MODERATE	NONE	2	1	NONE
SEVERE	NONE	NONE	NONE	1
-HYPERPLASIA, INTERSTITIAL CELL	12	10	13	18
MINIMAL	3	NONE	NONE	NONE
MILD	9	10	13	17
MODERATE	NONE	NONE	NONE	1
BASAL GANGLIA				
TOTAL NUMBER EXAMINED	25	NA	NA	25
EXAMINED, UNREMARKABLE	25	NA	NA	25
PITUITARY				
TOTAL NUMBER EXAMINED	25	NA	NA	25
EXAMINED, UNREMARKABLE	25	NA	NA	25

1- 0 PPM 2- 100 PPM 3- 250 PPM 4- 500 PPM

NONE SIGNIFICANTLY DIFFERENT FROM THE CONTROL GROUP USING 2-TAILED FISHER'S EXACT TEST.

NA = NOT APPLICABLE

TABLE 83 (F1 - SCHEDULED NECROPSY)

PROJECT NO.:WIL-380001D INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS PAGE 6

SPONSOR:BROMINATED SOLVENTS HISTOMORPHOLOGICAL DIAGNOSIS -- SUMMARY INCIDENCE

----- FEMALE -----

GROUP:	1	2	3	4
NUMBER OF ANIMALS IN DOSE GROUP	25	25	25	25
NUMBER OF ANIMALS EXAMINED	25	25	25	25
SKIN				
TOTAL NUMBER EXAMINED	1	1	NA	1
EXAMINED, UNREMARKABLE	1	0	NA	1
NOT EXAMINED	0	1	NA	0
-INFLAMMATION, CHRONIC ACTIVE	0	1	NA	0
SEVERE	NA	1	NA	NA
SPINAL CORD				
TOTAL NUMBER EXAMINED	NA	NA	NA	1
EXAMINED, UNREMARKABLE	NA	NA	NA	1
SPLEEN				
TOTAL NUMBER EXAMINED	25	25	25	25
EXAMINED, UNREMARKABLE	0	0	0	0
-HEMATOPOIESIS, EXTRAMEDULLARY	24	25	25	25
MINIMAL	23	24	25	25
MILD	1	1	NONE	NONE
-PIGMENT, BROWN	25	25	25	25
MINIMAL	1	2	4	3
MILD	19	15	15	7
MODERATE	5	8	6	15

1- 0 PPM 2- 100 PPM 3- 250 PPM 4- 500 PPM

NONE SIGNIFICANTLY DIFFERENT FROM THE CONTROL GROUP USING 2-TAILED FISHER'S EXACT TEST.

NA = NOT APPLICABLE

TABLE 83 (F1 - SCHEDULED NECROPSY)

PROJECT NO.:WIL-380001D — INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 7

SPONSOR:BROMINATED SOLVENTS — HISTOMORPHOLOGICAL DIAGNOSIS -- SUMMARY INCIDENCE

----- FEMALE -----

GROUP:	1	2	3	4
NUMBER OF ANIMALS IN DOSE GROUP	25	25	25	25
NUMBER OF ANIMALS EXAMINED	25	25	25	25
THYMUS GLAND				
TOTAL NUMBER EXAMINED	25	NA	NA	25
EXAMINED, UNREMARKABLE	16	NA	NA	22
-HEMORRHAGE	9	NA	NA	3
MINIMAL	9	NA	NA	3
-HYPERPLASIA, EPITHELIAL	1	NA	NA	1
MINIMAL	1	NA	NA	1
-CYST	0	NA	NA	1
MINIMAL	NONE	NA	NA	1
LN, AXILLARY				
TOTAL NUMBER EXAMINED	NA	1	NA	NA
EXAMINED, UNREMARKABLE	NA	0	NA	NA
-INFLAMMATION, CHRONIC ACTIVE	NA	1	NA	NA
SEVERE	NA	1	NA	NA
UTERUS				
TOTAL NUMBER EXAMINED	25	NA	NA	25
EXAMINED, UNREMARKABLE	13	NA	NA	18
-IMPLANTATION SITE	12	NA	NA	2*
PRESENT	12	NA	NA	2
-HEMORRHAGE	0	NA	NA	2
MINIMAL	NONE	NA	NA	1
MILD	NONE	NA	NA	1

1- 0 PPM 2- 100 PPM 3- 250 PPM 4- 500 PPM

* = SIGNIFICANTLY DIFFERENT FROM THE CONTROL GROUP AT THE 0.05 LEVEL USING 2-TAILED FISHER'S EXACT TEST.

NA = NOT APPLICABLE

TABLE 83 (F1 - SCHEDULED NECROPSY)

PROJECT NO.:WIL-380001D INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS HISTOMORPHOLOGICAL DIAGNOSIS -- SUMMARY INCIDENCE

----- FEMALE -----

GROUP:	1	2	3	4
NUMBER OF ANIMALS IN DOSE GROUP	25	25	25	25
NUMBER OF ANIMALS EXAMINED	25	25	25	25
UTERUS - CONTINUED				
-DILATATION, LUMEN	0	NA	NA	3
MINIMAL	NONE	NA	NA	2
MODERATE	NONE	NA	NA	1
EAR				
TOTAL NUMBER EXAMINED	1	1	1	1
EXAMINED, UNREMARKABLE	0	0	0	0
-CHONDROPATHY, AURICULAR	1	1	1	1
SEVERE	1	1	1	1
CLITORAL GLAND				
TOTAL NUMBER EXAMINED	NA	NA	1	NA
EXAMINED, UNREMARKABLE	NA	NA	0	NA
-INFLAMMATION, CHRONIC ACTIVE	NA	NA	1	NA
SEVERE	NA	NA	1	NA

1- 0 PPM 2- 100 PPM 3- 250 PPM 4- 500 PPM

NONE SIGNIFICANTLY DIFFERENT FROM THE CONTROL GROUP USING 2-TAILED FISHER'S EXACT TEST.

NA = NOT APPLICABLE

PHSI2v4.17
02/13/2001

TABLE 84 (F1 FEMALES - SCHEDULED NECROPSY)

PROJECT NO.:WIL-380001D
SPONSOR:BROMINATED SOLVENTS

INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS
INDIVIDUAL OVARIAN PRIMORDIAL FOLLICLE AND CORPORA LUTEA COUNTS
COMBINED VALUES FROM 10 SECTIONS PER ANIMAL

	0 PPM	100 PPM	250 PPM	500 PPM
PRIMORDIAL FOLLICLES				
MEAN	105.6	NA	NA	141.8*
S.D.	44.96			50.26
N	25			25
CORPORA LUTEA				
MEAN	171.7	NA	NA	171.7
S.D.	40.89			49.18
N	25			25

NA = NOT APPLICABLE
* = Significantly different from the control group at 0.05 using Dunnett's test

TABLE 85 (F2)

PROJECT NO.:WIL-380001D INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS PAGE 1

SPONSOR:BROMINATED SOLVENTS SUMMARY OF PND 0 LITTER DATA

GROUP :	1	2	3	4
NUMBER BORN				
MEAN	14.9	15.1	13.1	8.6**
S.D.	1.97	3.35	4.12	4.51
N	22	17	16	17
SEX AT BIRTH (% MALES PER LITTER)				
MEAN	44.7	48.4	55.2	54.3
S.D.	11.72	17.63	18.24	21.47
N	22	17	16	17
LIVE LITTER SIZE (PND 0)				
MEAN	14.5	14.9	12.5	8.6**
S.D.	2.02	3.35	4.29	4.51
N	22	17	16	17

1- 0 PPM 2- 100 PPM 3- 250 PPM 4- 500 PPM

SEX COMPARED USING KRUSKAL-WALLIS, NUMBER BORN, AND LIVE LITTER SIZE COMPARED USING DUNNETT'S

** = Significantly different from the control group at 0.01

PPVIASv4.02
02/13/2001

TABLE 86 (F2)

PROJECT NO.:WIL-380001D INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS SUMMARY OF POSTNATAL SURVIVAL - % PER LITTER

GROUP :	1	2	3	4
PND 0 (RELATIVE TO NUMBER BORN)				
MEAN	97.3	98.5	95.2	100.0
S.D.	5.29	4.18	10.62	0.00
N	22	17	16	17
PND 0 TO PND 1				
MEAN	99.7	99.3	93.7	94.1
S.D.	1.18	1.85	21.77	24.25
N	22	17	16	17
PND 1 TO PND 4 (PRE-SELECTION)				
MEAN	99.7	100.0	91.4	99.5
S.D.	1.52	0.00	25.20	2.08
N	22	17	16	16
PND 4 (POST-SELECTION) TO PND 7				
MEAN	100.0	100.0	100.0	100.0
S.D.	0.00	0.00	0.00	0.00
N	22	17	15	16
PND 7 TO PND 14				
MEAN	100.0	100.0	100.0	100.0
S.D.	0.00	0.00	0.00	0.00
N	22	17	15	16

1- 0 PPM 2- 100 PPM 3- 250 PPM 4- 500 PPM

None significantly different from control group

TABLE 86 (F2)

PROJECT NO.:WIL-380001D INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS SUMMARY OF POSTNATAL SURVIVAL - % PER LITTER

GROUP :	1	2	3	4
PND 14 TO PND 21				
MEAN	100.0	99.3	100.0	100.0
S.D.	0.00	3.03	0.00	0.00
N	22	17	15	16
BIRTH TO PND 4 (PRE-SELECTION)				
MEAN	96.8	97.9	88.6	93.6
S.D.	5.56	4.34	25.90	24.21
N	22	17	16	17
PND 4 (POST-SELECTION) TO PND 21				
MEAN	100.0	99.3	100.0	100.0
S.D.	0.00	3.03	0.00	0.00
N	22	17	15	16

1- 0 PPM 2- 100 PPM 3- 250 PPM 4- 500 PPM

STATISTICS PERFORMED USING KRUSKAL-WALLIS

None significantly different from control group

PPVIASv4.02
02/13/2001

TABLE 87 (F2)

PROJECT NO.:WIL-380001D INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS SUMMARY OF PUP CLINICAL OBSERVATIONS

ALL OBSERVATION PERIODS

TOTAL NUMBER OF FINDINGS/NUMBER OF PUPS WITH FINDING

FINDING	GROUP : 1	2	3	4
NORMAL				
NO REMARKABLE OBSERVATIONS	1161/317	878/251	706/190	601/144
DISPOSITION				
FOUND DEAD	10/ 10	5/ 5	20/ 20	2/ 2
EUTHANIZED IN EXTREMIS	1/ 1	0/ 0	0/ 0	0/ 0
SCHEDULED EUTHANIZATION (PND 21)	176/176	132/132	111/111	108/108
CULLED ON SCHEDULED DAY (PND 4)	140/140	118/118	76/ 76	36/ 36
MISSING	1/ 1	2/ 2	2/ 2	0/ 0
BODY/INTEGUMENT				
SMALL IN SIZE	0/ 0	0/ 0	2/ 2	10/ 2
EDEMA	0/ 0	0/ 0	2/ 1	0/ 0
MALROTATION	0/ 0	0/ 0	0/ 0	4/ 2
UNEVEN HAIR GROWTH	0/ 0	22/ 12	0/ 0	0/ 0
LACERATION(S)	1/ 1	0/ 0	0/ 0	0/ 0

1- 0 PPM 2- 100 PPM 3- 250 PPM 4- 500 PPM

PPOBSIv4.03
02/13/2001

TABLE 88 (F2)

PROJECT NO.:WIL-380001D INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS SUMMARY OF MEAN OFFSPRING WEIGHTS (GRAMS)

(LITTER AS EXPERIMENTAL UNIT)

DOSE GROUP:		0 PPM	100 PPM	250 PPM	500 PPM
PND 1					
MALES	MEAN	7.1	6.9	7.2	7.4
	S.D.	0.61	0.86	0.71	1.35
	N	22	17	15	16
FEMALES	MEAN	6.7	6.5	6.7	7.1
	S.D.	0.56	0.83	0.80	0.90
	N	22	17	15	15
PND 4 (BEFORE SELECTION)					
MALES	MEAN	10.3	9.7	10.5	10.9
	S.D.	1.11	1.36	1.36	1.79
	N	22	17	15	16
FEMALES	MEAN	9.6	9.2	9.8	10.5
	S.D.	1.06	1.23	1.34	1.56
	N	22	17	15	15
PND 7					
MALES	MEAN	15.5	14.4	15.5	14.4
	S.D.	1.64	1.71	1.51	2.05
	N	22	17	15	16
FEMALES	MEAN	14.5	13.8	14.5	13.9
	S.D.	1.37	1.49	1.71	1.58
	N	22	17	15	15

PND = POSTNATAL DAY

None significantly different from control group

TABLE 88 (F2)

PROJECT NO.:WIL-380001D INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS SUMMARY OF MEAN OFFSPRING WEIGHTS (GRAMS)

(LITTER AS EXPERIMENTAL UNIT)

DOSE GROUP:		0 PPM	100 PPM	250 PPM	500 PPM
PND 14					
MALES	MEAN	29.2	28.1	28.4	24.5**
	S.D.	2.77	2.43	3.65	4.14
	N	22	17	15	16
FEMALES	MEAN	27.6	26.9	27.3	23.7**
	S.D.	2.29	2.11	3.87	3.70
	N	22	17	15	15
PND 21					
MALES	MEAN	49.5	46.9	47.6	40.8**
	S.D.	5.14	5.03	5.40	6.70
	N	22	17	15	16
FEMALES	MEAN	46.6	44.7	45.6	39.7**
	S.D.	4.05	3.80	5.60	6.13
	N	22	17	15	15

PND = POSTNATAL DAY

** = Significantly different from the control group at 0.01 using Dunnett's test

PPWSUSNv4.02
08/22/2000

TABLE 89 (F2)

PROJECT NO.:WIL-380001D INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS SUMMARY OF MEAN OFFSPRING WEIGHT CHANGES (GRAMS)

(LITTER AS EXPERIMENTAL UNIT)

DOSE GROUP:		0 PPM	100 PPM	250 PPM	500 PPM
PND 1 TO 4 (BEFORE SELECTION)					
MALES	MEAN	3.2	2.8	3.3	3.5
	S.D.	0.61	0.63	0.77	0.73
	N	22	17	15	16
FEMALES	MEAN	2.9	2.7	3.0	3.4
	S.D.	0.62	0.53	0.79	0.81
	N	22	17	15	15
PND 4 TO 7					
MALES	MEAN	5.2	4.7	5.0	3.5**
	S.D.	0.81	0.80	0.74	1.03
	N	22	17	15	16
FEMALES	MEAN	4.9	4.5	4.6	3.4**
	S.D.	0.64	0.65	0.82	0.97
	N	22	17	15	15
PND 7 TO 14					
MALES	MEAN	13.7	13.7	12.9	10.2**
	S.D.	1.61	1.61	2.57	2.58
	N	22	17	15	16
FEMALES	MEAN	13.0	13.1	12.8	9.9**
	S.D.	1.46	1.23	2.51	2.86
	N	22	17	15	15

PND = POSTNATAL DAY

** = Significantly different from the control group at 0.01 using Dunnett's test

TABLE 89 (F2)

PROJECT NO.:WIL-380001D INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS SUMMARY OF MEAN OFFSPRING WEIGHT CHANGES (GRAMS)

(LITTER AS EXPERIMENTAL UNIT)

DOSE GROUP:		0 PPM	100 PPM	250 PPM	500 PPM
PND 14 TO 21					
MALES	MEAN	20.3	18.8	19.2	16.3**
	S.D.	2.71	3.21	2.88	2.99
	N	22	17	15	16
FEMALES	MEAN	19.1	17.8	18.3	16.0**
	S.D.	2.10	2.61	2.47	2.80
	N	22	17	15	15

PND = POSTNATAL DAY

** = Significantly different from the control group at 0.01 using Dunnett's test

PPWSUSNv4.02
08/22/2000

TABLE 90 (F2)

PROJECT NO.:WIL-380001D INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS

SPONSOR:BROMINATED SOLVENTS

SUMMARY OF PUP NECROPSY FINDINGS

FOUND DEAD PUPS

	PUPS				LITTERS			
DOSE GROUP:	1	2	3	4	1	2	3	4
NUMBER EXAMINED VISCERALLY	10	5	20	2	7	3	6	2
SKELETON								
SKELETAL RESULTS	1	0	0	0	1	0	0	0
STOMACH								
MILK NOT PRESENT	9	4	13	1	6	2	4	1
MILK PRESENT	0	0	1	0	0	0	1	0
MALFORMATION								
MANDIBULAR MICROGNATHIA	1	0	0	0	1	0	0	0
AGLOSSIA	1	0	0	0	1	0	0	0
VARIATION								
HEMORRHAGIC RING AROUND THE IRIS	1	0	1	0	1	0	1	0
RENAL PAPILLA(E) NOT FULLY DEVELOPED (WOO AND HOAR GRADE 1)	1	0	0	0	1	0	0	0

1- 0 PPM 2- 100 PPM 3- 250 PPM 4- 500 PPM

PPNSIv4.0
02/28/2001

TABLE 91 (F2 PUPS NOT SELECTED FOR ORGAN WEIGHTS - PND 21)

PROJECT NO.:WIL-380001D — INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 1

SPONSOR:BROMINATED SOLVENTS

SUMMARY OF PUP NECROPSY FINDINGS

EUTHANIZED PUPS

	PUPS				LITTERS			
DOSE GROUP:	1	2	3	4	1	2	3	4
NUMBER EXAMINED VISCERALLY	132	98	81	77	22	17	15	15
LUNGS								
WHITE AREA(S)	1	0	0	0	1	0	0	0
KIDNEY								
DILATED PELVIS	0	2	0	0	0	2	0	0
VARIATION								
RENAL PAPILLA(E) NOT DEVELOPED AND/OR DISTENDED URETER(S)	0	1	0	0	0	1	0	0

1- 0 PPM 2- 100 PPM 3- 250 PPM 4- 500 PPM

PPNSIv4.0
09/29/2000

TABLE 92 (F2 PUPS SELECTED FOR ORGAN WEIGHTS - PND 21)

PROJECT NO.:WIL-380001U — INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 1

SPONSOR:BROMINATED SOLVENTS — GROSS NECROPSY OBSERVATIONS INCIDENCE SUMMARY

SCHEDULED NECROPSY

	MALE				FEMALE			
GROUP:	1	2	3	4	1	2	3	4
NUMBER OF ANIMALS IN DOSE GROUP	22	17	15	16	22	17	15	15
NUMBER OF ANIMALS EXAMINED	22	17	15	16	22	17	15	15
SPLEEN								
-ACCESSORY	0	0	1	0	0	0	0	0
-ENLARGED	1	0	1	0	1	0	0	0
NO SIGNIFICANT CHANGES OBSERVED - ALL EXAMINED TISSUES	21	17	13	16	21	17	15	15

1- 0 PPM 2- 100 PPM 3- 250 PPM 4- 500 PPM

PGRSIv4.02
08/22/2000

TABLE 93 (F2 PUPS SELECTED FOR ORGAN WEIGHTS - PND 21)

PROJECT NO.:WIL-380001U — INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 1

SPONSOR:BROMINATED SOLVENTS — ORGAN WEIGHTS (GRAMS) - SUMMARY OF MEANS

		----- M A L E -----			
GROUP:		0 PPM	100 PPM	250 PPM	500 PPM
BRAIN					
	MEAN	1.4728	1.4253	1.4668	1.3629**
	S.D.	0.07836	0.07679	0.05971	0.09581
	N	22	17	15	16
SPLEEN					
	MEAN	0.2189	0.1892	0.1983	0.1440**
	S.D.	0.03798	0.04791	0.05513	0.03810
	N	22	17	15	16
THYMUS GLAND					
	MEAN	0.1958	0.1904	0.2061	0.1554*
	S.D.	0.04637	0.04418	0.05166	0.04371
	N	22	17	15	16

* = Significantly different from the control group at 0.05 using Dunnett's test

** = Significantly different from the control group at 0.01 using Dunnett's test

TABLE 93 (F2 PUPS SELECTED FOR ORGAN WEIGHTS - PND 21)
INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS
ORGAN WEIGHTS (GRAMS) - SUMMARY OF MEANS

	----- F E M A L E -----			
GROUP:	0 PPM	100 PPM	250 PPM	500 PPM
BRAIN				
MEAN	1.3957	1.3903	1.3673	1.3089*
S.D.	0.06491	0.08882	0.12231	0.10040
N	22	17	15	15
SPLEEN				
MEAN	0.2087	0.1894	0.1874	0.1458**
S.D.	0.03914	0.04991	0.05727	0.03561
N	22	17	15	15
THYMUS GLAND				
MEAN	0.1895	0.1870	0.1960	0.1768
S.D.	0.03814	0.03332	0.05079	0.05542
N	22	17	15	15

* = Significantly different from the control group at 0.05 using Dunnett's test
** = Significantly different from the control group at 0.01 using Dunnett's test

TABLE 94 (F2 - PUPS SELECTED FOR ORGAN WEIGHTS - PND 21)

PROJECT NO.:WIL-380001U — INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS — PAGE 1

SPONSOR:BROMINATED SOLVENTS — ORGAN WEIGHTS RELATIVE TO FINAL BODY WEIGHTS (GRAMS/100 GRAMS)

	----- M A L E -----			
GROUP:	0 PPM	100 PPM	250 PPM	500 PPM
FINAL BODY WT(G)				
MEAN	50.	46.	48.	41.**
S.D.	5.4	6.3	5.7	7.8
N	22	17	15	16
BRAIN				
MEAN	2.999	3.117	3.111	3.420
S.D.	0.3503	0.3953	0.3523	0.7175
N	22	17	15	16
SPLEEN				
MEAN	0.440	0.404	0.412	0.346**
S.D.	0.0481	0.0662	0.0910	0.0583
N	22	17	15	16
THYMUS GLAND				
MEAN	0.394	0.408	0.427	0.372
S.D.	0.0758	0.0675	0.0700	0.0681
N	22	17	15	16

** = Significantly different from the control group at 0.01 using Dunnett's test

TABLE 94 (F2 - PUPS SELECTED FOR ORGAN WEIGHTS - PND 21)
INHALATION 2G REPRODUCTIVE TOX. STUDY OF 1-BROMOPROPANE IN RATS
ORGAN WEIGHTS RELATIVE TO FINAL BODY WEIGHTS (GRAMS/100 GRAMS)

	----- F E M A L E -----			
GROUP:	0 PPM	100 PPM	250 PPM	500 PPM
FINAL BODY WT(G)				
MEAN	46.	44.	44.	40.
S.D.	4.7	5.9	7.7	7.5
N	22	17	15	15
BRAIN				
MEAN	3.048	3.182	3.155	3.330
S.D.	0.3018	0.3625	0.4684	0.5080
N	22	17	15	15
SPLEEN				
MEAN	0.450	0.424	0.414	0.359**
S.D.	0.0588	0.0775	0.0718	0.0560
N	22	17	15	15
THYMUS GLAND				
MEAN	0.411	0.423	0.437	0.434
S.D.	0.0731	0.0563	0.0638	0.0950
N	22	17	15	15

** = Significantly different from the control group at 0.01 using Dunnett's test