A CHRONIC INHALATION STUDY
OF
METHYL BROMIDE TOXICITY IN B6C3F₁ MICE

Conducted for
The National Toxicology Program
By
Brookhaven National Laboratory
Upton, N.Y. 11973

Principal Investigator
Sonja B. Haber, Ph.D.

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ABSTRACT

This report provides a detailed account of a two year chronic inhalation study of methyl bromide toxicity in B6C3F₁ mice conducted for the National Toxicology Program. Mice were randomized into three dose groups (10, 33 and 100 ppm methyl bromide) and one control group (0 ppm) per sex and exposed 5 days/week, 6 hours/day, for a total of 103 weeks. Endpoints included body weight, clinical signs and mortality, and at 6, 15 and 24 months of exposure, animals were sacrificed for organ weights, hematology and histopathology. In addition, a subgroup of animals in each dosage group was monitored for neurobehavioral and neuropathological changes. After only 20 weeks of exposure, 48% of the males and 12% of the females in the 100 ppm group had died. Exposures were terminated in that group and the surviving mice were observed for the duration of the study. Exposure of B6C3F₁ mice to methyl bromide, even for only 20 weeks, produced significant changes in growth rate, mortality, organ weights and neurobehavioral functioning. These changes occurred in both males and females, but were more pronounced in males.

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I. INTRODUCTION

Methyl bromide is a high production volume chemical. Production figures for 1977 indicated that between 10 and 50 million pounds were either produced or imported into this country (USEPA, 1983). More recent data indicate that 46.2 million pounds alone were produced in the United States in 1981 (USEPA, 1984). An estimated 70% of the methyl bromide produced goes into pesticidal formulations (USEPA, 1984). Its wide use as a fumigant is attributable to its toxicity to many pests, ease of application, penetration of fumigated substances and rapid dissipation following application (Alexeeff and Kilgore, 1983).

Methyl bromide is also used as a methylating agent in the chemical industry. Other applications include use in fire extinguishers, as a refrigerant, and as an extraction solvent (Alexeeff and Kilgore, 1983). Methyl bromide is colorless and has little odor at potentially toxic concentrations, and some of the more severe effects are delayed. Consequently, serious exposure can occur unknowingly.

The major route of absorption of methyl bromide vapors is through the lungs (Torkelson and Rowe, 1984). Once absorbed, there is a high turnover rate due to rapid metabolism, tissue loading in poorly perfused organs, and continuous excretion (Anderson, et al., 1980). In terms of general toxicity, methyl bromide is highly toxic to mammals. It is capable of producing severe local and systemic effects, permanent disability and death (Alexeeff and Kilgore, 1983). The compound is an irritant to the eyes, skin and mucous membranes. The initial symptoms of exposure may include headache, malaise, visual disturbance, nausea, vomiting, vertigo, tremors, chest and abdominal pains and cyanosis.

The National Toxicology Program (NTP), based upon the original nomination from the California Department of Health Services, initiated a series of studies of the toxicity of methyl bromide. The emphasis of these studies centers on the characterization of toxicity in the B6C3F₁ mouse since there is already a considerable amount of toxicological data on the rat (Eustis, et. al., in preparation). This report represents the last phase of this work, the results of a two year chronic toxicity/carcinogenicity study of methyl bromide inhalation exposure in B6C3F₁ mice.

II. MATERIALS AND METHODS

A. Chemical

1. Procurement and Characterization of Methyl Bromide.

Methyl bromide was obtained from Matheson Gas Products, Joliet, IL 60434 (Lot No. E21-1012-00). Five gas cylinders were shipped to Brookhaven National Laboratory in December, 1982, all with the same lot number. All methyl bromide studies were conducted with gas from this shipment. Purity and identity analyses on material used in this study were conducted by Midwest Research Institute (Kansas City, MO). A copy of that report, which indicated that the purity of the material was estimated to be 99.8%, is attached as Appendix A1.

All bulk chemical methyl bromide was stored at ambient temperature in the original cylinders and was periodically re-analyzed. Purity analyses were performed prior to exposures in the chronic study, at 4 month intervals during the study and within 30 days of the last exposures. The gas chromatograph conditions used for these analyses are described in Appendix A2. The results of these analyses are also presented in Appendix A2. The methyl

bromide remained stable over the entire experimental period based on the results of the periodic purity analyses.

2. Generation and Measurement of Chamber Concentrations.

Methyl bromide was metered as neat gas from the head space of a cylinder to the intake airstream of the inhalation chambers. The generation system is shown schematically in Figure 1. A cylinder of methyl bromide was enclosed in a vented box and a shrouded delivery tube carried the neat gas to a distribution plenum mounted inside another vented box. The plenum had five ports, three attached to rotameters which controlled the flow to each chamber, one as a gauge for plenum pressure and one as an inlet port for the plenum.

The concentration in each exposure chamber was monitored at least once an hour using a Miran 80 Infrared Spectrophotometer. A sampling system (Figure 2) drew air continuously from each chamber to a manifold very close to the detector. At any given time, one sample was drawn through the detector, while the other samples were being routed through the manifold. The detector switched from chamber to chamber at 10 minute intervals, cycling through the four chambers sequentially from the control to the 100 ppm chamber. After sampling the chambers, the system sampled air from the chamber room and then from the scrubbed exhaust air. Concentrations were printed out at two minute intervals, resulting in approximately 5 values to average for each sampling port. As additional confirmation, the chambers were simultaneously monitored by a gas chromatograph every two weeks. A backup Miran 1A detector was available to monitor chambers, the room and the effluent air if the Miran 80 failed.

Average daily and monthly chamber concentrations are presented in Appendix A3. A summary of the chamber concentrations for the entire two year

SHEET NO. _____ OF _____
JOB NO. _____
SUBJECT _____
DATE _____
CHKD. BY _____
DEPT. OR PROJECT _____

FIGURE 1- METHYL BROMIDE GENERATION SYSTEM

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study are presented in Table 1.

Uniformity of gas concentration in each exposure chamber was measured periodically during this study. Distribution studies were conducted prior to the first exposures, during the first week of exposures and then every three months during the study. The results are presented in Appendix A4.

Table 1
SUMMARY OF MEAN CHAMBER CONCENTRATIONS

Chamber	Mean	SD	%RSD	n	Range
10 ppm	10.1	0.1	1.3	25	9.9-10.5
33 ppm	33.2	0.2	0.6	25	32.7-33.7
100 ppm	100.5	0.5	0.5	6	100.0-101.4

B. Animals

Four-week-old male and female B6C3F₁ mice were obtained from the NCI Frederick Cancer Research Facility, Frederick, MD, on September 12, 1984. They were placed into animal rooms behind the regulated barrier in the Inhalation Toxicology Facility for their quarantine period. At the start of the study, after ten days in quarantine (9/12/84 - 9/22/84), the animals were 5 1/2 weeks of age. Animals were weighed and randomized during the quarantine period on September 18th and 19th, 1984. Animals were sorted by weight and those at the extremes were eliminated from selection where possible. Females weighing between 14 and 18 grams and males weighing between 9 and 24 grams were included in the study. The large variation in male weights could not be

avoided, since the number of animals shipped was not sufficient to discard any additional mice.

Animals within each weight class for each sex were randomized to cages with the use of a random number table and the cages were then randomized to groups by a second set of random numbers. After assignment to cages, the animals were uniquely and consecutively numbered within sex and identified by toe clipping. Animals in the neurobehavior groups were uniquely identified by metal tags inserted in the right ear. The toe clipping and ear tagging procedures were carried out on September 20, 1984. A copy of the animal identification scheme is included as Appendix B1.

Early deaths in the two year chronic methyl bromide study occurred prior to or immediately following the first day of exposure, September 26, 1984. The exact causes of these deaths were unknown, but were probably due to the light body weights of some of the animals used, as well as problems with new caging and feeders. The majority of deaths, 6 out of a total of 9, were animals designated for the control group. Since sentinel animals were housed in the control chamber and used only for gross examination and viral serology, it was decided, with verbal approval from the Project Officer, to utilize some of those sentinels to replace the animals that had died. These animals were still bled for viral serology, but were also sacrificed and examined as part of the endpoint group to which they were assigned. The animals so designated are listed in a memo included in Appendix B1.

Serologic analyses were performed at 6 month intervals during the study on sentinel animals. The results of these analyses are presented in Appendix B2.

C. Animal Maintenance

All animals were housed individually in stainless steel hanging wire cages, 30 cages per pack, which resided in 1.4 m³ Hinnert-type inhalation chambers constructed of stainless steel and glass. Animals were maintained in the chambers at all times except during cleaning, feeding, weighing and clinical observation. Food (Zeigler Bros., NIH-07 diet, see Appendix C1) was available ad libitum during non-exposure hours. Water, supplied by an automatic watering system, was provided ad libitum at all times (see Appendix C2 for analyses during study period).

The temperatures of the chambers in which the animals were housed throughout the study were maintained at 75± 3°F and the chamber room at 72± 3°F. These recordings were made with Wechsler Tempscribe Instruments located in the control chamber and chamber room throughout the study. In addition, the mean temperature (°C) and percent of time each chamber was in the normal temperature range for each month of the study are presented in Appendix C3. These data were summarized from daily readings collected from the Brookhaven Inhalation Toxicology Facility's computerized environmental control system.

Humidity was recorded in the control chamber and chamber room with Wechsler Tempscribe Instruments throughout the study. Relative humidity was maintained at 40-70% for at least 90% of the time. The mean % relative humidity and range for each month during the study are detailed in Appendix C4.

Table 2 details the experimental design and materials and methods in the two year chronic inhalation studies of methyl bromide.

Table 2

EXPERIMENTAL DESIGN AND MATERIALS AND METHODS IN THE TWO YEAR CHRONIC
INHALATION STUDIES OF METHYL BROMIDE

Experimental Design

Testing Laboratory	Brookhaven National Laboratory (Upton, NY)
Size of Test Groups	10 males and 10 females for the 6 and 15 month interim sacrifices; 50 males and 50 females for the terminal sacrifice; 16 males and 16 females for neurobehavioral studies.
Doses	Target: 0, 10, 33 or 100 ppm methyl bromide by inhalation.
Date of First Exposure	09/26/84
Date of Last Exposure	09/16/86
Duration of Exposures	6 hours/day, 5 days/week for 103 weeks.
Type and Frequency of Observation	Observed 2x d during the week, 1x d on weekends during the 1st year and 2x d 7d/wk during the 2nd year; clinically examined 1x/wk, and weighed 1x/wk for 1st 13 wks, then 1x/4 wks for 18 mos, then 1x/2 wks until sacrifice.
Necropsy and Histologic Examination	Complete necropsy and histological exam performed on all animals scheduled for sacrifice.

Animals and Maintenance

Strain and Species	B6C3F ₁ mice
Animal Source	Frederick Cancer Research Center (Frederick, MD)
Time Held Before Test	10 d
Age When Placed on Study	6 wk
Age When Killed	110-111 wk for terminal sacrifice
Necropsy Dates	6 month interim sacrifice: 03/27/85 - 03/28/85 15 month interim sacrifice: 01/02/86 - 01/03/86 24 month terminal sacrifice: 09/22/86 - 09/26/86
Method of Animal Distribution	Assigned to groups and cages according to computer-generated tables of random numbers.

Table 2 (Cont.)

Animal Identification	Toe clipping except for neurobehavior animals who were ear tagged.
Feed	NIH 07 Rat and Mouse Ration (Zeigler Bros., Gardners, PA); available <u>ad libitum</u> except during exposure.
Bedding	Cage board supplied by Shephard Specialty Papers, Inc. (Kalamazoo, MI) used only on weekends.
Water	Automatic watering system.
Cages	Stainless steel wire (Hazelton Systems, Aberdeen,MD)
Chambers	1.4m ³ stainless steel chambers as originally designed by Hinners (Manufactured by Hazelton Systems, Aberdeen, MD).
Animals per Cage	One
Other Chemicals on Test in Same Room	None
Animal Room Environment	Chamber - 75± 3°F; 40-70% humidity. Chamber Room - 72± 3°F; 40-70% humidity. Fluorescent Light - 12 hours/day.

Table 3

EXACT EXPOSURE DATES AND INCLUSIVE SACRIFICE DATES

Endpoint	Sex	No. per Group	First Exposure	Last Exposure	Assessment
6-month Interim Sacrifice	M F	10 10	09/26/84	03/26/85 - 03/27/85	03/27/85 - 03/28/85
15-month Interim Sacrifice	M F	10 10	09/26/84	01/01/86 - 01/02/86	01/02/86 - 01/03/86
Terminal Sacrifice	M F	50 50	09/26/84	09/16/86	09/22/86 - 09/26/86
Neurobehavior Ia	M F	8 8	09/26/84	09/12/86	09/22/84 - 09/23/84 12/15/84 - 12/16/84 03/09/85 - 03/10/85 06/01/85 - 06/02/85 08/24/85 - 08/25/85 12/14/85 - 12/15/85 03/22/86 - 03/23/86 06/21/86 - 06/22/86 09/13/86 - 09/14/86
Neurobehavior II ^b	M F	8 8	10/01/84	09/12/86	09/29/84 - 09/30/84 12/22/84 - 12/23/84 03/16/85 - 03/17/85 06/08/85 - 06/09/85 08/31/85 - 09/01/85 12/21/85 - 12/22/85 03/22/86 - 03/23/86 06/21/86 - 06/22/86 09/13/86 - 09/14/86

^a Two mice of each sex from each dose group assessed for behavioral toxicity were selected at random, sacrificed and prepared for neuropathological evaluation on 03/13-15/85, 12/16-18/85 and 09/15-17/86. Animals in the 100 ppm group and their control counterparts were sacrificed on 02/14-15/85. The remaining animals were sacrificed without further evaluation on 09/15-17/86.

^b Two mice of each sex from each dose group assessed for behavioral toxicity were selected at random, sacrificed and prepared for neuropathological evaluation on 03/20-21/85, 12/23-24/85 and 09/15-17/86. Animals in the 100 ppm group and their control counterparts were sacrificed on 02/14-15/85. The remaining animals were sacrificed without further evaluation on 09/15-17/86.

D. Experimental Design

Two year studies were conducted to assess the chronic toxicity of inhaled methyl bromide in B6C3F₁ mice. The indices of toxicity measured were growth rate, mortality, organ weights, hematology, histopathology and a neuro-behavioral and neuropathological assessment. The specific protocol and amendments to that protocol are included as Appendix D1.

Groups of 86 mice of each sex were exposed via whole body inhalation to air containing methyl bromide at target concentrations of 0, 10, 33 and 100 ppm for 6 hours per day, 5 days per week for 103 weeks. The exact exposure and inclusive sacrifice dates for all groups in the study are presented in Table 3.

Exposures in the 100 ppm chamber were terminated on February 13, 1985 (week 20 of exposure) due to the significant mortality in both the males and females in that chamber. Four males and four females from the 100 ppm chamber and three males and three females from the control chamber were sacrificed for neuropathological evaluation. The remaining mice in the 100 ppm chamber were exposed to air and observed for the duration of the two year exposures. As a result of the unexpected mortality, no male mice in the 100 ppm group were sacrificed at 6 or 15 months. Female mice in the 100 ppm group were sacrificed at 15 months.

Animals used for necropsy, organ weights, hematology and histopathology were sacrificed from September 22 - 26, 1986. Animals were anesthetized with CO₂, bled via the retro-orbital sinus for hematology and subjected to a complete necropsy. Weights were taken of the brain, heart, right kidney, liver, lung, spleen, right testis and thymus. All hematology data, except for reticulocytes and differential counts, were obtained from a Coulter Electronic Counter, Model S-Plus IV.

Neurobehavioral assessments were made every 3 months throughout the study. Quantitative behavioral testing included protocols for evaluating locomotor activity, exploratory behavior, startle response, grip strength, analgesia response and foot splay. Neuropathological assessment consisted of gross neuromorphology and neuropathological evaluation of selected tissues. Animals were sacrificed at 6, 15 and 24 months, except for those done prior to 6 months at the termination of the 100 ppm exposures. The neuropathological findings will be reported in an addendum to this report.

E. Clinical and Pathological Examination

All animals were observed twice a day during the week and once a day on weekends for moribundity and mortality during the first year of the study. Due to the unexpected early mortality, animals in the 100 ppm chamber were observed twice a day, seven days per week commencing December 15, 1984 (11 weeks of exposure). These observations continued until March 4, 1985 (23 weeks of exposure) when because of termination of exposures in the 100 ppm chamber, 3 weeks earlier, there was decreased mortality in these animals. The twice a day, 5 days a week and once a day on weekends observation regimen was resumed around all groups in the study. The second year of the study, all animals were observed twice a day, 7 days a week, for mortality and moribundity.

All animals were observed once a week for clinical observations. Body weights were recorded once a week for the first 13 weeks and once a month thereafter. Animals were weighed every two weeks for the final thirteen weeks of the chronic test. Scheduling of weighings ensured that the animals were weighed at the time exposures ceased and again at necropsy.

Moribund animals were sacrificed in the same manner as animals that survived until the end of the study. A necropsy was performed on all animals, including those found dead, as soon as possible. In some cases, autolysis prevented good preservation of tissues and organs.

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

Gross lesions	Tissue masses or suspect tumors
Skin	and regional lymph nodes
Mandibular and mesenteric	Ileum
lymph nodes	Colon
Bronchial and Mediastinal	Cecum
lymph nodes	Rectum
Mammary glands	Liver
Salivary glands	Gall bladder (mice)
Thigh muscle	Pancreas
Sciatic nerve	Spleen
Sternebrae, femur, or vertebrae	Kidneys
including marrow	Adrenals
Costochondral junction, rib	Urinary bladder
Thymus	Seminal vesicles
Oral cavity, larynx and pharynx	Prostate
Trachea	Testes, epididymis, vaginal tunics of
Lungs and Bronchi	the testis and scrotal sac

Heart and Aorta	Ovaries
Thyroid	Uterus
Parathyroids	Nasal cavity and nasal turbinates
Esophagus	Brain
Stomach	Pituitary
Duodenum	Spinal Cord
Jejunum	Eyes
Tongue	Preputial or clitoral glands
	Zymbals' glands (auditory sebaceous glands)

All animals in the two year chronic methyl bromide study including all unscheduled deaths, 6 month and 15 month interim sacrifice animals and those surviving until the terminal sacrifice, were examined for histopathology. Only surviving neurobehavior animals, or those designated for neuropathological evaluation were not included for histopathology.

III. RESULTS

Note: The number of animals in each group for the terminal sacrifice of the two year chronic methyl bromide study was originally designated at 50. Due to the unexpected early mortality in the 100 ppm chamber, 10 males and 10 females in that chamber, designated for the 6 month interim sacrifice and 10 males designated for the 15 month interim sacrifice were not terminated until the final sacrifice. These additional animals were included in the data presented for the terminal sacrifice. Therefore, the males remaining are survivors of a group of 70 animals and the females represent those remaining from an initial group of 60.

A. Clinical Observations

Table 4 summarizes the chemically-induced clinical observations that occurred after the 15 month interim sacrifice until the termination of the study. Except for the 3 animals in the 33 ppm group, all clinical signs occurred in the 100 ppm animals even though exposures were terminated in that chamber in February, 1985. These clinical observations were identical to those reported in the 6 and 15 month interim sacrifice reports and included tremors, abnormal posture (curvature of the spine) and limb paralysis. The most consistent observation was that once those signs occurred, they persisted and the animals generally did not recover.

Table 4

Methyl Bromide Chronic Study
Chemically Induced Clinical Signs
01/03/86 - 09/26/86

Animal No.	Date of Onset	Last Observation	Disposition Code	Clinical Signs
<u>33 PPM</u>				
Males: 40625	05/14/86	09/24/86	TSAC	Hypoactivity left rear leg
Females: 40695	08/06/86	08/26/86	MSAC	Abnormal posture
40704	08/16/86	08/27/86	MSAC	Tachypnea
<u>100 ppm</u>				
Males: 40754	09/05/85	02/03/86	MSAC	Abnormal posture Tremors
40757	04/10/86 04/24/86	09/25/86 09/25/86	TSAC	Tremors Abnormal posture
40758	07/24/86	09/05/86	TSAC	Tremors
40762	03/21/85 04/24/85	08/13/86 08/13/86	MSAC	Abnormal posture Tremors
40764	08/08/85 04/12/86	05/14/86 05/13/86	MSAC	Abnormal posture Tremors Tachypnea
40766	12/27/85 03/21/85 03/28/85	01/23/86 01/23/86 01/23/86	FD	Tremors Emaciated Abnormal posture
40767	07/24/86	09/24/86	TSAC	Tremors
40779	09/05/85 01/23/86	03/24/86 03/24/86	MSAC	Abnormal posture Tremors
40782	10/31/85 12/17/85	03/26/86 03/26/86	MSAC	Abnormal posture Tremors
40787	03/07/85	02/10/86	MSAC	Abnormal posture Tremors
40788	05/15/86	09/25/86	TSAC	Abnormal posture
40791	08/08/85 12/27/85	01/20/86 01/20/86	MSAC	Abnormal posture Tremors
40798	10/03/85 02/20/86	02/25/86 02/25/86	MSAC	Abnormal posture Tremors

FD = Found Dead

MSAC = Moribund Sacrifice

TSAC = Terminal Sacrifice

Table 4
(cont'd)

Methyl Bromide Chronic Study
Chemically Induced Clinical Signs
01/03/86 - 09/26/86
(Cont'd)

Animal No.	Date of Onset	Last Observation	Disposition Code	Clinical Signs
<u>100 PPM</u> Males:				
40801	10/31/85 04/17/86	09/22/86 09/22/86	TSAC	Abnormal posture Tremors
40810	04/17/86 05/15/86	09/26/86 09/26/86	TSAC	Tremors Abnormal posture
40816	11/27/85 04/17/86	09/23/86 09/23/86	TSAC	Abnormal posture Tremors
Females:				
40856	06/26/86	09/23/86	TSAC	Abnormal posture
40860	08/07/86 08/21/86	09/23/86 09/23/86	TSAC	Abnormal posture Tremors
40861	09/05/85 03/20/86	09/25/86 09/25/86	TSAC	Abnormal posture Tremors
40863	11/27/85	09/26/86	TSAC	Abnormal posture
40864	11/27/85	09/24/86	TSAC	Abnormal posture
40869	08/21/86	09/22/86	TSAC	Abnormal posture
40875	05/15/86	09/23/86	TSAC	Tremors
40885	08/07/86	09/24/86	TSAC	Abnormal posture
40886	06/12/86 08/07/86	08/14/86 08/14/86	MSAC	Abnormal posture Hind leg paralysis
40888	06/26/86	09/25/86	TSAC	Abnormal posture
40889	09/05/85 05/15/86	09/25/86 09/25/86	TSAC	Abnormal posture Tremors
40890	08/26/86	09/25/86	TSAC	Abnormal posture
40891	07/11/85	03/26/86	MSAC	Abnormal posture
40900	10/31/85 05/15/86	09/25/86 09/25/86	TSAC	Abnormal posture Tremors

B. Survival

The survival rates in the two year chronic methyl bromide study prior to the final sacrifice are presented in Table 5. Only two of these deaths were accidental: a control male received a traumatic laceration of a blood vessel in the region of the cervical spinal cord resulting in a hematoma and then death; a 33 ppm male escaped onto the floor and fell into a pit beneath the chambers resulting in contamination and was subsequently caught and sacrificed. The final survival rates for all groups except the 100 ppm animals were quite close. Males had a 74-80% survival rate, while females varied from 72-90%. In the 100 ppm animals, males had only a 23% survival rate and females had a 67% rate, both clearly lower than any of the other groups.

The early mortality in the 100 ppm chamber is clearly evident in Tables 6 and 7. The mean body weights and survival rates of mice in the two year chronic methyl bromide study are presented by week in Tables 6 and 7. By the 13th week of exposure, there was a 16% mortality rate (11/70) among 100 ppm males. Exposures were terminated in this chamber at week 20, with a greater than 40% mortality in the males and close to a 9% rate in the females. The rate of mortality after week 20 in the 100 ppm chamber slowed, but the animals which had already been affected did not recover.

C. Body Weights

Mice in the 0 and 10 ppm dosage groups were weighed on September 24, 1984, two days prior to their first exposure. Mice in the 33 and 100 ppm groups were weighed on September 25, 1984, the day before their first methyl bromide exposure. Mice in the first neurobehavior group were also weighed at these times. The second neurobehavior group was not exposed until the

Table 5

Survival Rates in the Two Year Chronic Methyl Bromide Study
Prior to the Final Sacrifice

	GROUP	MALES	FEMALES
Control	Terminal Sac	40/50	36/50
10 ppm	Terminal Sac	37/50	41/50
33 ppm	Terminal Sac	40/50	45/50
100 ppm	Interim Sac	5/20 ^a	7/10 ^b
	Terminal Sac	11/50	33/50

^aIncludes 6 and 15 month interim sacrifice.

^bIncludes 6 month interim sacrifice.

Table 6

MEAN BODY WEIGHTS AND SURVIVAL OF MICE IN THE
TWO-YEAR INHALATION STUDIES OF METHYL BROMIDE

MALES

Weeks on Study	Control		10 PPM		33 PPM		100 PPM	
	Av. Wt. (gms)	No. of survivors	Av. Wt. (gms)	No. of survivors	Av. Wt. (gms)	No. of survivors	Av. Wt. (gms)	No. of survivors
0	21.4	50	20.5	50	21.8	50	21.3	70
1	23.1	50	22.8	49	23.6	50	24.1	69
2	24.5	50	24.2	49	25.0	50	25.0	69
3	25.8	50	25.6	49	26.2	50	25.8	69
4	26.8	50	26.4	49	27.2	50	26.6	69
5	27.9	50	27.5	49	28.2	50	27.5	69
6	28.6	50	28.0	49	28.9	50	27.9	69
7	29.8	50	28.7	49	29.4	50	28.3	69
8	30.2	50	29.5	49	30.0	50	29.1	69
9	30.4	50	30.3	49	31.0	50	29.9	69
10	31.2	50	30.9	49	31.2	50	30.1	68
11	31.5	50	31.2	49	31.8	50	29.8	67
12	32.2	50	31.4	49	32.6	50	28.7	63
13	32.3	50	33.5	49	33.7	50	28.7	59
17	34.9	50	34.9	49	35.1	50	31.2	59
21	38.1	50	36.5	48	38.1	50	29.5	38
25	36.4	50	35.7	48	36.9	50	27.1	38
29	40.0	50	39.7	48	41.5	49	31.0	37
33	42.3	49	42.1	48	43.2	49	30.5	37
37	43.4	49	43.6	48	44.2	49	30.6	36
41	45.7	49	45.9	48	46.2	49	31.0	35
45	46.0	49	46.3	48	46.3	49	30.2	35
49	47.0	49	46.3	48	47.0	49	30.9	35
53	47.4	49	47.0	47	47.1	49	30.3	34
57	47.0	49	46.8	47	47.4	49	29.8	32
61	47.6	49	46.6	46	47.0	49	30.5	31
65	48.4	49	46.7	45	47.1	49	30.3	31
69	47.1	49	47.0	45	47.2	48	30.0	29
73	48.6	47	47.3	45	47.1	48	31.1	27
77	47.9	47	47.6	45	47.2	47	30.4	26
81	47.9	47	46.9	44	46.6	47	31.4	21
85	47.0	47	45.6	44	46.1	46	31.1	20
89	48.2	45	46.3	44	47.5	43	31.7	20
91	47.9	45	47.1	43	46.7	43	31.6	20
93	48.2	45	46.8	42	47.0	43	31.9	19
95	48.1	44	46.6	42	47.1	41	31.9	19
97	48.1	44	46.1	42	46.9	41	31.3	19
99	47.8	44	46.4	41	46.8	40	32.0	18
101	47.3	43	46.4	38	46.9	40	32.7	18
103	46.4	42	47.3	37	46.1	40	31.6	17
104	45.4	40	45.7	37	44.6	40	30.2	16

Table 7

MEAN BODY WEIGHTS AND SURVIVAL OF MICE IN THE
TWO-YEAR INHALATION STUDIES OF METHYL BROMIDE

FEMALES

Weeks on Study	Control		10 PPM		33 PPM		100 PPM	
	Av. Wt. (gms)	No. of survivors	Av. Wt. (gms)	No. of survivors	Av. Wt. (gms)	No. of survivors	Av. Wt. (gms)	No. of survivors
0	17.1	50	16.7	50	17.6	50	17.0	60
1	18.2	50	18.2	50	18.4	50	18.5	60
2	19.2	50	19.3	50	19.1	50	19.0	60
3	20.5	50	20.4	50	20.5	50	19.7	60
4	21.4	50	21.5	50	21.5	50	20.9	60
5	22.2	50	22.1	50	22.3	50	21.7	60
6	22.9	50	22.8	50	22.6	50	21.9	59
7	24.1	50	23.1	50	22.9	50	22.3	59
8	23.7	50	23.7	50	23.3	50	23.5	59
9	23.9	49	24.0	50	23.8	50	23.8	59
10	24.8	49	24.3	50	24.3	50	23.8	59
11	25.3	49	25.1	50	25.0	50	23.9	59
12	25.6	49	25.4	50	25.5	50	24.0	59
13	26.0	49	26.5	50	26.1	50	23.9	59
17	27.0	49	26.2	50	26.3	50	25.2	58
21	30.2	49	28.2	50	28.7	50	25.4	54
25	27.9	49	27.2	50	27.7	50	25.6	54
29	32.2	49	31.0	50	31.5	50	29.1	54
33	34.5	49	33.1	49	32.6	50	29.4	54
37	36.4	49	34.5	49	34.3	50	30.5	53
41	38.0	49	36.9	49	35.2	50	32.0	53
45	39.7	49	37.7	49	36.9	50	32.8	52
49	40.4	49	38.0	49	37.7	50	33.4	52
53	41.8	49	39.4	49	37.7	50	33.0	52
57	41.3	49	39.1	49	38.0	50	33.0	51
61	42.0	47	40.3	49	39.1	50	34.1	50
65	42.7	46	40.1	48	38.4	50	34.7	50
69	42.8	46	41.7	48	39.8	50	33.2	49
73	43.2	45	42.3	47	39.3	50	33.1	48
77	43.6	44	41.9	47	40.1	50	33.7	48
81	43.7	44	42.1	47	39.6	50	32.6	47
85	43.4	44	41.8	46	39.9	49	32.9	46
89	44.5	43	43.6	45	41.2	49	32.7	44
91	44.3	42	44.1	44	41.1	49	32.7	44
93	45.6	42	44.3	43	42.1	48	32.1	43
95	45.3	42	45.0	43	42.8	48	32.7	41
97	45.2	40	43.9	43	41.5	48	31.9	41
99	45.3	40	44.0	43	41.5	47	32.2	40
101	45.6	40	42.7	41	41.4	46	32.7	40
103	45.4	37	42.9	41	41.8	45	31.6	40
104	44.3	36	41.0	41	40.8	45	30.7	40

following week and was weighed just prior to their first exposure. All groups were then weighed weekly for the first 13 weeks, every 4 weeks after that and every 2 weeks for the last 13 weeks of the study. Animals in the 0 ppm group were always weighed on Mondays, 10 ppm animals were weighed on Tuesdays, 33 ppm animals on Wednesdays and animals in the 100 ppm group were weighed on Thursdays. Body weights for the first 4 months of the study were collected on the Brookhaven Inhalation Toxicology Facility's computerized weigh station. By the fifth month of the study, body weight data was collected on the Toxicology Data Management System (TDMS) with the first 4 months of data manually entered on TDMS as well.

Tables 6 and 7, previously discussed, depict the mean body weights and survival rates of mice in the two year inhalation studies of methyl bromide. Growth curves for all animals over the 104 weeks of the study are presented in Figures 3 and 4. Significant differences from control mice appear in the 100 ppm males and females by week 11. These differences persisted throughout the study, even after exposures were terminated in the 100 ppm group at week 20. On week 25, animals were weighed on the Inhalation Toxicology Facility's weigh station due to a malfunction in the TDMS equipment (see Appendix E1). On Figures 3 and 4, a noticeable drop in body weight, across all groups, occurs at week 25. Both balances used in weighing were calibrated using the same weights and there is no apparent explanation for this aberration.

Sacrifice body weights at week 104 are also presented in Tables 8 and 9. Consistent with the growth curves, male and female mice in the 100 ppm group weighed significantly less than their counterparts in the 0, 10 and 33 ppm groups. These differences were significant by post-hoc comparisons from an analysis of variance.

FIGURE 3 - MEAN BODY WEIGHTS - MALES

FIGURE 4 - MEAN BODY WEIGHTS - FEMALES

33
gms

40

35

30

25

20

15

0

10

20

30

40

50

60

70

80

90

100

weeks

- 0 ppm
- 10 ppm
- x 33 ppm
- * 100 ppm

D. Organ Weights

Organ weights are summarized in Tables 8 and 9. As previously discussed, these tables also include sacrifice body weights which were significantly lower for 100 ppm males and females compared to all other groups.

In male mice exposed to 100 ppm methyl bromide, heart, kidney, liver, lung and thymus weights were all significantly depressed when compared to all of the other dose groups. Among females in the 100 ppm group, brain and thymus weights were significantly lower than those in other groups. In addition, 33 ppm females had significantly lower thymus weights than controls. These data were analyzed using independent analyses of variance for each parameter with post-hoc pairwise comparisons to test the differences between groups. Individual animal organ weight data are presented in Appendix F1.

E. Organ Weight/Body Weight Ratios

After adjusting for body weight differences, males in the 100 ppm group had significantly higher brain-to-body weight, heart-to-body weight and kidney-to-body weight ratios than males in any of the other dosage groups. Males in the 100 ppm group also had significantly lower thymus-to-body weight ratios than those of the other groups. These results are presented in Table 10, and were analyzed in the same way as the organ weight data.

Among females in the 100 ppm group, significantly higher brain-to-body weight, heart-to-body weight and kidney-to-body weight ratios were observed when compared to other groups. As in the males, 100 ppm females also exhibited significantly lower thymus-to-body weight ratios in comparison to controls. These results are presented in Table 11. Males and females in the 100 ppm group exhibited the same differences in organ weight to body weight ratios.

Table 8

Terminal Sacrifice
Methyl Bromide Chronic Mouse Study
Organ Weight Data (gms)

Group	Body	Brain	Heart	R. Kidney	Liver	Lung	Spleen	R. Testis	Thymus
<u>Males:</u>									
<u>0 PPM</u>									
$\bar{X}$	45.36	0.474	0.261	0.433	2.873	0.275	0.121	0.119	0.058
S.D.	6.626	0.023	0.032	0.075	1.424	0.076	0.055	0.038	0.036
n	40	40	40	40	40	39	40	40	36
<u>10 PPM</u>									
$\bar{X}$	45.68	0.477	0.251	0.445	2.944	0.293	0.241	0.118	0.059
S.D.	5.891	0.025	0.034	0.047	1.123	0.067	0.561	0.024	0.060
n	37	37	37	37	37	36	37	37	34
<u>33 PPM</u>									
$\bar{X}$	44.58	0.477	0.246	0.431	2.722	0.294	0.173	0.117	0.057
S.D.	6.332	0.026	0.037	0.057	1.307	0.073	0.276	0.021	0.029
n	40	40	40	40	40	40	40	40	38
<u>100 PPM</u>									
$\bar{X}$	30.24*	0.458	0.207*	0.346*	1.852*	0.216*	0.094	0.108	0.021*
S.D.	4.124	0.031	0.042	0.045	0.778	0.039	0.095	0.016	0.011
n	16	16	16	15	16	16	16	14	12
<p>*p<.001 (0,10,33 ppm) *p<.01 (0,10,33 ppm) *p<.001 (0,10,33 ppm) *p<.05 (0,10ppm) *p<.05 (0,10,33 ppm) *p<.05 (0,10,33 ppm)</p>									

Terminal Sacrifice
Methyl Bromide Chronic Mouse Study
Organ Weight Data (gms)

Group	Body	Brain	Heart	R. Kidney	Liver	Lung	Spleen	R. Testis	Thymus
<u>Females</u>									
<u>0 PPM</u>									
$\bar{X}$	44.31	0.494	0.211	0.305	1.964	0.258	0.263		0.065
S.D.	7.236	0.019	0.026	0.041	0.339	0.040	0.253		0.037
n	36	36	36	36	36	36	36		36
<u>10 PPM</u>									
$\bar{X}$	41.03	0.490	0.217	0.306	2.203	0.314	0.228		0.050
S.D.	7.601	0.022	0.043	0.063	1.099	0.314	0.216		0.025
n	41	41	41	41	41	41	41		37
<u>33 PPM</u>									
$\bar{X}$	40.76	0.487	0.207	0.299	2.104	0.269	0.325		0.046*
S.D.	7.245	0.024	0.026	0.104	1.563	0.112	0.585		0.023
n	45	45	45	45	45	45	45		44
<u>100 PPM</u>									
$\bar{X}$	30.70*	0.471*	0.204	0.271	1.698	0.237	0.163		0.032**
S.D.	4.611	0.025	0.036	0.039	0.433	0.054	0.129		0.019
n	40	40	40	40	40	40	40		36

*p<.001 *p<.01
(0,10,33 ppm) (0,10,33 ppm)

*p<.05
(0 ppm)
**p<.05
(0,10ppm)

Table 10

Terminal Sacrifice
Methyl Bromide Chronic Mouse Study
Organ Weight/Body Weight Ratios (x 1000)

Group	Brain	Heart	R. Kidney	Liver	Lung	Spleen	R. Testis	Thymus
<u>Males:</u>								
<u>0 PPM</u>								
$\bar{X}$	10.68	5.90	9.67	67.88	6.29	2.87	2.66	1.21
S.D.	1.641	1.166	1.707	47.205	2.495	1.922	0.992	0.671
n	40	40	40	40	39	40	40	36
<u>10 PPM</u>								
$\bar{X}$	10.60	5.60	9.87	66.64	6.54	5.25	2.60	1.21
S.D.	1.396	1.181	1.515	32.851	1.698	11.068	0.529	1.142
n	37	37	37	37	36	37	37	34
<u>33 PPM</u>								
$\bar{X}$	10.92	5.64	9.78	64.16	6.80	4.33	2.64	1.26
S.D.	1.669	1.236	1.308	39.225	2.363	8.416	0.416	0.562
n	40	40	40	40	40	40	40	38
<u>100 PPM</u>								
$\bar{X}$	15.35*	6.86*	11.38*	62.65	7.21	3.00	3.54*	0.70
S.D.	1.819	1.145	0.996	32.466	1.307	2.587	0.634	0.371
n	16	16	15	16	16	16	14	12

*p<.001 *p<.05 *p<.01
(0,10,33 ppm) (0,10,33 ppm) (0,10,33 ppm)

*p<.001
(0,10,33 ppm)

Terminal Sacrifice
Methyl Bromide Chronic Mouse Study
Organ Weight/Body Weight Ratios (x 1000)

Group	Brain	Heart	R. Kidney	Liver	Lung	Spleen	R. Testis	Thymus
<u>Females:</u>								
<u>0 PPM</u>								
$\bar{X}$	11.45	4.85	7.01	45.21	6.01	6.18		1.43
S.D.	2.076	0.857	1.206	9.393	1.469	6.812		0.675
n	36	36	36	36	36	36		36
<u>10 PPM</u>								
$\bar{X}$	11.45	5.50	7.86	56.62	8.07	5.77		1.18
S.D.	2.852	1.680	3.381	35.242	8.361	5.616		0.592
n	41	41	41	41	41	41		37
<u>33 PPM</u>								
$\bar{X}$	12.31	5.23	7.45	51.92	6.90	8.06		1.10
S.D.	2.167	1.118	2.497	36.937	3.714	14.586		0.479
n	45	45	45	45	45	45		44
<u>100 PPM</u>								
$\bar{X}$	15.59*	6.81*	9.00*	55.61	7.82	5.25		1.03*
S.D.	1.873	1.698	1.611	13.611	1.882	4.065		0.561
n	40	40	40	40	40	40		36

*p<.001 *p<.001 *p<.05
(0,10,33 (0,10,33 (0,33
ppm) ppm) ppm)

*p<.05
(0 ppm)

F. Hematology

The hematology data are presented in Table 12. The only statistically significant differences obtained were the higher eosinophil counts for males and females in the 100 ppm group and the lower MCHC values for the 100 ppm males. Examination of the individual hematological data reveals that these differences were due to two or three animals with unusually discrepant values. The individual hematological data are presented in Appendix G1.

Of some concern in analyzing the white blood cell counts were unusually high values across several animals. The animals of interest were in different experimental groups and therefore the values did not statistically affect the results, except to increase the variability within these groups. Manual WBC counts were performed on these animals and the results were considerably lower than those obtained on the Coulter instrument (See Appendix G2). This may be an inherent problem in the instrumentation and bears consideration in future work.

G. Neurobehavioral and Neuropathological Assessment

Sixteen males and females from each of the 4 dosage groups 0, 10, 33 and 100 ppm were behaviorally tested. At 6, 15 and 24 months of exposure, 4 males and 4 females from each of these groups were examined for neuropathological evaluation. Due to the early mortality and termination of exposure in the 100 ppm chamber, animals from the neurobehavioral groups in that chamber were selected for neuropathological evaluation at week 20. As previously mentioned, the neuropathological report will be submitted as an addendum to this report. Only the neurobehavioral data will be discussed here.

Quantitative behavioral testing revealed significant differences in the

Table 12

Terminal Sacrifice
Methyl Bromide Chronic Mouse Study
Hematology Data

		Parameters												
Group:	Animal No.	RBC ₃ (per mm ³ x10 ⁶)	WBC ₃ (per mm ³ x10 ³)	HGB (gm %)	HCT (%)	MCV	MCH	MCHC	Platelets (per mm ³ x10 ³)	Retics (%)	Neutrophils (%)	Lymphocytes (%)	Monocytes (%)	Eosinophils (%)
Males														
Controls	X	10.2	7.1	15.6	46.7	45.9	15.3	33.3	1466.8	1.7	28.3	63.7	6.8	1.1
	S.D.	1.77	2.13	2.22	6.91	2.09	0.77	0.46	267.20	0.89	14.89	14.09	3.54	0.99
	n	39	39	39	39	39	39	39	37	40	40	40	40	40
10 PPM	X	10.1	7.0	15.2	45.7	45.7	15.2	33.3	1412.7	2.4	27.1	63.6	7.3	0.9
	S.D.	2.12	1.82	2.34	7.31	2.64	1.00	0.46	449.41	2.44	8.61	11.76	3.13	0.78
	n	37	37	37	37	37	37	37	37	37	37	37	37	37
33 PPM	X	10.1	6.9	15.3	46.0	45.7	15.3	33.4	1545.9	1.7	31.2	59.9	7.5	1.0
	S.D.	1.77	3.33	1.90	6.16	2.25	0.85	0.39	389.38	0.65	16.09	17.93	4.52	0.83
	n	40	40	40	40	40	40	40	39	40	40	40	40	40
100 PPM	X	10.3	7.1	15.4	46.9	47.4	15.4	32.6*	1351.5	3.7	36.2	55.1	6.4	2.3*
	S.D.	3.05	4.43	3.82	10.88	6.95	2.00	1.64	379.38	8.83	18.30	17.21	3.58	2.32
	n	14	14	14	14	14	14	14	13	15	15	15	15	15
*p<.01 (0, 10, 33 ppm)														
Females														
Controls	X	9.5	4.7	14.9	44.4	47.2	15.8	33.6	1059.2	1.8	27.0	63.0	8.2	1.3
	S.D.	0.98	2.48	1.46	3.69	2.59	1.09	1.48	184.32	0.96	11.17	12.58	3.50	1.11
	n	36	36	36	36	36	36	36	36	36	36	36	36	36
10 PPM	X	9.7	5.0	15.1	44.7	46.8	15.8	33.9	1063.8	2.1	28.2	62.2	7.9	1.14
	S.D.	1.87	3.39	2.04	6.34	3.95	1.36	0.58	360.81	1.82	9.98	13.51	6.00	0.82
	n	40	40	40	40	40	40	40	39	40	40	40	40	40
33 PPM	X	9.6	5.0	15.0	45.2	47.5	15.7	33.1	1063.8	2.1	27.4	62.5	7.3	1.6
	S.D.	1.27	4.20	2.52	4.71	3.97	2.01	4.17	256.06	1.90	11.15	13.54	4.33	1.68
	n	45	44	45	45	45	45	45	45	45	45	45	45	45
100 PPM	X	9.9	5.4	15.2	45.3	46.0	15.4	33.5	1170.3	1.6	29.9	59.3	7.0	2.1*
	S.D.	0.75	2.48	0.85	2.53	1.34	0.65	0.84	222.78	0.62	11.04	14.57	3.69	1.92
	n	38	38	38	38	38	38	38	38	39	39	39	39	39
*p<.05 (10 ppm)														

behavior of the 100 ppm males at 3 months into exposure, one month prior to the termination of exposures. In general, the animals were slower in their activity and manifested a heightened sensitivity in the startle response compared to males in the other dosage groups. In addition, the hindlimb grip scores of 100 ppm males were higher than that of the other groups and their hot plate latency was higher as well. These data are summarized in Tables 13 through 21. Due to the excessive mortality in this group, no animals remained for further behavioral testing after the three month testing period.

Among females in the 100 ppm group, the same behavioral pattern as that exhibited by the males was evident at the three month testing period. Females in the 100 ppm group had a heightened sensitivity in the startle response apparatus and a higher hindlimb grip than their counterparts in the other dosage groups. At 6 months of exposure, the 100 ppm females had significantly lower activity scores than females in the other groups, but their higher startle responses had disappeared. After 9 months of exposure, no behavioral differences were apparent, but at the 12 month testing period, the lower activity and heightened startle response reappeared in the 100 ppm females. No significant differences in quantitative behavior testing occurred after the 12 month testing period. These data are summarized in tables 22 through 30. All data were analyzed using independent analyses of variance and post-hoc pairwise t-test comparisons. Individual behavioral data are presented in Appendix H1.

H. Histopathology

Histopathology for this study was performed by Experimental Pathology Laboratories, Inc. The histopathology results will be presented in an addendum to this report.

Table 13

PRE-EXPOSURE BEHAVIORAL MEASUREMENTS - MALES

Group	Control			10 PPM			33 PPM			100 PPM		
<u>Measurement</u>	<u>$\bar{X}$</u>	<u>S.D.</u>	<u>n</u>	<u>$\bar{X}$</u>	<u>S.D.</u>	<u>n</u>	<u>$\bar{X}$</u>	<u>S.D.</u>	<u>n</u>	<u>$\bar{X}$</u>	<u>S.D.</u>	<u>n</u>
Activity Latency (sec)	16.3	9.4	16	17.0	13.3	16	12.6	9.7	16	13.9	5.2	16
Novel Side time (sec)	97.8	10.7	16	102.1	17.6	16	102.1	14.5	16	100.4	14.2	16
Novel Side Crossing (freq.)	9.2	2.6	16	7.6	2.4	16	9.1	3.3	16	9.1	2.7	16
Locomotor Activity (instr. units)	183.8	23.5	16	187.8	15.4	16	179.1	19.0	15	186.5	21.7	16
Startle Response Amp. (instr. units)	216.1	56.1	16	196.6	34.2	16	215.8	54.7	16	213.5	52.5	16
Startle Response Latency (msec)	336.7	92.2	16	372.8	59.9	16	355.2	93.9	16	353.3	65.6	16
Forelimb Grip (gms)	66.0	26.3	16	61.5	20.5	16	62.3	22.0	16	64.7	22.4	16
Hindlimb Grip (gms)	29.4	19.2	16	35.7	18.7	15	30.4	18.1	16	34.7	19.1	15
Hot Plate Latency (sec)	8.0	2.0	16	8.4	3.9	16	7.4	2.3	15	7.9	2.5	16
Footsplay (cms)	5.6	0.4	16	5.2	0.4	15	5.0*	0.6	16	5.2	0.6	16
Body Weight (gms)	21.1	1.5	16	21.3	1.4	16	21.3	1.6	16	21.2	1.9	16

*p<.05 (0 ppm)

Table 14

3-MONTH EXPOSURE BEHAVIORAL MEASUREMENTS - MALES

Group	Control			10 PPM			33 PPM			100 PPM		
<u>Measurement</u>	<u>$\bar{X}$</u>	<u>S.D.</u>	<u>n</u>	<u>$\bar{X}$</u>	<u>S.D.</u>	<u>n</u>	<u>$\bar{X}$</u>	<u>S.D.</u>	<u>n</u>	<u>$\bar{X}$</u>	<u>S.D.</u>	<u>n</u>
Activity Latency (sec)	18.3	8.9	16	17.6	11.2	16	26.8	15.9	16	86.0*	78.1	13
Novel Side Time (sec)	107.3	16.8	16	116.1	19.6	16	111.7	20.0	16	59.8*	51.5	13
Novel Side Crossing (freq.)	7.8	3.1	16	7.2	2.7	16	6.9	2.7	16	2.6*	2.4	13
Locomotor Activity (instr. units)	189.3	14.3	15	177.6	20.9	16	173.7	44.7	16	111.5*	60.6	13
Startle Response Amp. (instr. units)	190.2	41.1	16	227.4	73.7	16	223.8	48.6	16	307.0**	90.4	13
Startle Response Latency (msec)	395.1	62.1	16	357.7	90.2	16	332.3	90.1	16	266.5***	60.5	13
Forelimb Grip (gms)	97.3	32.6	16	92.2	21.7	16	98.4	23.3	16	113.1	16.3	13
Hindlimb Grip (gms)	57.3	17.6	16	52.9	20.0	16	54.6	17.4	16	74.5****	20.6	13
Hot Plate Latency (sec)	9.5	2.1	16	10.3	4.3	16	9.6	4.5	16	15.5**	7.7	12
Footsplay (cms)	5.4	0.4	16	5.4	0.5	15	5.4	0.5	15	-		
Body Weight (gms)	30.0	2.0	16	31.8	2.3	16	31.4	2.1	16	28.6*****	2.4	13

* $p < .001$ (0,10,33 ppm)** $p < .05$ (0,10,33 ppm)*** $p < .05$ (0,10 ppm)**** $p < .05$ (10,33 ppm)***** $p < .01$ (10,33 ppm)

Table 15

6-MONTH EXPOSURE BEHAVIORAL MEASUREMENTS - MALES

Group	Control			10 PPM			33 PPM		
<u>Measurement</u>	<u>$\bar{X}$</u>	<u>S.D.</u>	<u>n</u>	<u>$\bar{X}$</u>	<u>S.D.</u>	<u>n</u>	<u>$\bar{X}$</u>	<u>S.D.</u>	<u>n</u>
Activity Latency (sec)	16.6	13.7	13	24.1	27.3	16	26.9	31.6	16
Novel Side Time (sec)	108.0	20.2	13	111.8	26.3	16	106.9	24.6	16
Novel Side Crossing (freq.)	6.6	1.7	13	6.1	2.1	16	5.1	2.1	16
Locomotor Activity (instr. units)	183.8	15.6	13	155.0*	43.1	16	157.6	16.7	16
Startle Response Amp. (inst. Units)	198.9	31.6	13	209.4	39.3	16	194.4	30.9	16
Startle Response Latency (msec)	380.1	53.5	13	356.9	69.2	16	391.1	66.5	16
Forelimb Grip (gms)	102.0	20.1	13	102.4	15.8	16	103.3	21.6	16
Hindlimb Grip (gms)	68.7	19.0	13	64.9	19.4	16	63.7	21.2	16
Hot Plate Latency (sec)	9.5	3.7	13	9.7	3.8	16	9.9	3.8	16
Footsplay (cms)	5.9	0.4	13	5.6	0.7	16	5.8	0.7	16
Body Weight (gms)	35.3	3.3	13	35.6	2.5	16	35.1	2.8	16

*p<.05 (0 ppm)

Table 16

9-MONTH EXPOSURE BEHAVIORAL MEASUREMENTS - MALES

Group	Control			10 PPM			33 PPM		
<u>Measurement</u>	<u>$\bar{X}$</u>	<u>S.D.</u>	<u>n</u>	<u>$\bar{X}$</u>	<u>S.D.</u>	<u>n</u>	<u>$\bar{X}$</u>	<u>S.D.</u>	<u>n</u>
Activity Latency (sec)	26.1	31.9	10	25.6	29.2	12	14.3	8.0	12
Novel Side Time (sec)	116.1	38.0	10	100.8	22.5	12	111.9	31.5	12
Novel Side Crossing (freq.)	4.1	2.0	10	5.7	2.2	12	5.3	2.4	12
Locomotor Activity (instr. units)	146.8	22.3	10	154.9	20.7	11	143.7	25.0	12
Startle Response Amp. (inst. Units)	162.1	43.2	10	224.7	116.3	12	171.7	53.4	12
Startle Response Latency (msec)	415.9	54.1	10	332.6	100.0	12	404.7	70.0	12
Forelimb Grip (gms)	99.7	20.5	10	97.8	14.5	12	94.7	18.0	12
Hindlimb Grip (gms)	77.5	23.0	10	79.7	11.0	12	73.6	17.0	12
Hot Plate Latency (sec)	7.3	3.6	10	7.5	1.9	12	6.7	2.4	12
Footsplay (cm)	5.6	0.5	10	5.5	0.6	12	5.7	0.5	12
Body Weight (gms)	40.8	4.1	10	42.2	4.1	12	39.9	2.7	12

Table 17

12-MONTH EXPOSURE BEHAVIORAL MEASUREMENTS - MALES

Group	Control			10 PPM			33 PPM		
<u>Measurement</u>	<u>$\bar{X}$</u>	<u>S.D.</u>	<u>n</u>	<u>$\bar{X}$</u>	<u>S.D.</u>	<u>n</u>	<u>$\bar{X}$</u>	<u>S.D.</u>	<u>n</u>
Activity Latency (sec)	9.8	9.1	10	23.5	17.7	12	26.4	20.5	12
Novel Side Time (sec)	131.8	26.7	10	107.3	18.5	12	108.5	27.6	12
Novel Side Crossing (freq.)	5.5	2.9	10	4.2	1.3	12	4.5	2.4	12
Locomotor Activity (instr. units)	164.1	35.5	10	154.3	22.5	12	150.6	31.8	12
Startle Response Amplitude (instr units)	181.6	48.3	10	199.6	52.2	12	240.4	97.5	12
Startle Response Latency (msec)	398.2	74.8	10	369.1	71.4	12	328.6	110.0	12
Forelimb Grip (gms)	92.3	16.0	10	94.2	20.2	12	84.1	20.6	12
Hindlimb Grip (gms)	99.7	7.0	10	91.0	13.1	12	79.0*	18.5	12
Hot Plate Latency (sec)	6.6	2.6	10	6.8	3.5	12	6.8	2.7	12
Footsplay (cm)	5.4	0.5	10	5.8	0.7	12	5.9	0.6	12
Body Weight (gms)	44.3	4.1	10	44.2	3.6	12	43.5	2.6	12

*p<.01 (0 ppm)

Table 18

15-MONTH EXPOSURE BEHAVIORAL MEASUREMENTS - MALES

Group	Control			10 PPM			33 PPM		
<u>Measurement</u>	<u>$\bar{X}$</u>	<u>S.D.</u>	<u>n</u>	<u>$\bar{X}$</u>	<u>S.D.</u>	<u>n</u>	<u>$\bar{X}$</u>	<u>S.D.</u>	<u>n</u>
Activity Latency (sec)	15.4	6.9	9	22.8	20.3	12	15.9	8.4	12
Novel Side Time (sec)	117.2	28.9	10	111.5	37.5	12	106.5	27.9	12
Novel Side Crossing (freq.)	5.4	2.3	10	4.3	1.5	12	4.9	2.1	12
Locomotor Activity (instr. units)	154.8	23.8	10	128.3	39.0	12	132.5	37.1	12
Startle Response Amp. (instr. units)	152.8	46.3	10	207.5	10.1	12	228.1	73.3	12
Startle Response Latency (msec)	438.4	50.8	10	364.2	127.5	12	344.0	104.5	12
Forelimb Grip (gms)	83.8	18.4	10	97.5	17.3	12	91.7	23.2	12
Hindlimb Grip (gms)	67.0	26.2	10	71.0	19.3	12	63.3	22.0	12
Hot Plate Latency (sec)	6.1	3.0	10	7.7	2.7	12	6.6	2.4	12
Footsplay (cm)	5.9	0.6	10	5.8	0.6	12	6.0	0.6	11
Body Weight (gms)	46.1	4.7	10	46.5	4.4	12	44.9	3.4	12

Table 19

18-MONTH EXPOSURE BEHAVIORAL MEASUREMENTS - MALES

Group	Control			10 PPM			33 PPM		
<u>Measurement</u>	<u>$\bar{X}$</u>	<u>S.D.</u>	<u>n</u>	<u>$\bar{X}$</u>	<u>S.D.</u>	<u>n</u>	<u>$\bar{X}$</u>	<u>S.D.</u>	<u>n</u>
Activity Latency (sec)	14.8	8.1	6	23.1	21.9	8	23.1	20.0	7
Novel Side Time (sec)	125.2	27.1	6	101.8	26.9	8	120.6	34.9	7
Novel Side Crossing (freq.)	5.8	2.4	6	4.9	2.2	8	4.1	1.7	7
Locomotor Activity (instr. units)	140.5	18.3	6	147.1	22.1	8	128.9	49.3	7
Startle Response Amp. (instr. units)	195.9	58.5	6	153.4	37.4	8	175.2	77.4	7
Startle Response Latency (msec)	388.7	68.2	6	421.6	59.7	8	393.2	107.1	7
Forelimb Grip (gms)	96.7	23.7	6	91.9	12.4	8	93.3	25.7	7
Hindlimb Grip (gms)	77.5	13.1	6	75.4	14.8	8	76.4	15.3	7
Hot Plate Latency (sec)	8.9	4.3	6	8.3	2.5	8	7.7	2.6	7
Footsplay (cm)	6.0	0.9	6	6.3	0.3	8	6.2	0.6	7
Body Weight (gms)	45.4	7.4	6	48.0	4.2	8	44.8	3.8	7

Table 20

21-MONTH EXPOSURE BEHAVIORAL MEASUREMENTS - MALES

Group	Control			10 PPM			33 PPM		
<u>Measurement</u>	<u>$\bar{X}$</u>	<u>S.D.</u>	<u>n</u>	<u>$\bar{X}$</u>	<u>S.D.</u>	<u>n</u>	<u>$\bar{X}$</u>	<u>S.D.</u>	<u>n</u>
Activity Latency (sec)	15.5	8.8	6	20.9	15.6	8	13.5	4.6	6
Novel Side Time (sec)	125.2	19.4	6	120.9	27.1	8	133.2	28.5	6
Novel Side Crossing (freq.)	4.7	2.1	6	4.3	1.9	8	4.7	2.7	6
Locomotor Activity (instr. units)	129.2	27.3	6	139.4	27.4	8	146.2	21.8	6
Startle Response Amp. (instr. units)	158.4	49.7	6	216.7	94.3	8	200.7	81.2	6
Startle Response Latency (msec)	430.2	58.5	6	351.5	149.0	8	348.0	112.3	6
Forelimb Grip (gms)	93.1	19.3	6	104.5	23.3	7	96.7	26.8	6
Hindlimb Grip (gms)	86.7	22.8	6	81.1	22.0	8	75.0	21.0	6
Hot Plate Latency (sec)	7.3	2.8	6	7.6	3.3	8	7.2	2.5	6
Footsplay (cm)	6.2	0.5	6	5.6	0.6	7	6.3	0.7	6
Body Weight (gms)	46.8	6.9	6	47.6	5.5	8	45.1	5.4	6

Table 21

24-MONTH EXPOSURE BEHAVIORAL MEASUREMENTS - MALES

Group	Control			10 PPM			33 PPM		
<u>Measurement</u>	<u>$\bar{X}$</u>	<u>S.D.</u>	<u>n</u>	<u>$\bar{X}$</u>	<u>S.D.</u>	<u>n</u>	<u>$\bar{X}$</u>	<u>S.D.</u>	<u>n</u>
Activity Latency (sec)	18.3	11.7	6	30.0	18.3	8	20.8	12.3	6
Novel Side Time (sec)	116.5	19.0	6	120.9	28.3	8	123.8	31.6	6
Novel Side Crossing (freq.)	5.5	2.1	6	2.9	1.7	8	3.7	1.8	6
Locomotor Activity (instr. units)	134.3	19.5	6	135.1	15.2	8	124.0	24.6	6
Startle Response Amp. (inst. Units)	171.1	43.7	6	185.0	65.1	8	162.6	91.0	6
Startle Response Latency (msec)	411.5	50.7	6	376.6	117.8	8	393.6	159.2	6
Forelimb Grip (gms)	100.3	14.0	6	85.6	20.3	8	95.0	12.5	6
Hindlimb Grip (gms)	75.9	14.5	6	77.1	25.2	8	89.5	26.1	6
Hot Plate Latency (sec)	10.6	5.6	6	6.8	2.0	8	6.8	2.8	6
Footsplay (cms)	5.6	0.5	6	5.8	0.6	8	6.2	0.4	6
Body Weight (gms)	45.5	5.4	6	47.6	5.3	8	44.0	6.5	6

Table 22

PRE-EXPOSURE BEHAVIORAL MEASUREMENTS - FEMALES

Group	Control			10 PPM			33 PPM			100 PPM		
<u>Measurement</u>	<u>$\bar{X}$</u>	<u>S.D.</u>	<u>n</u>	<u>$\bar{X}$</u>	<u>S.D.</u>	<u>n</u>	<u>$\bar{X}$</u>	<u>S.D.</u>	<u>n</u>	<u>$\bar{X}$</u>	<u>S.D.</u>	<u>n</u>
Activity Latency (sec)	20.3	17.1	15	21.7	17.3	16	18.7	15.4	16	18.7	11.1	16
Novel Side Time (sec)	95.9	15.3	15	102.8	18.4	16	97.3	12.9	16	99.7	12.8	16
Novel Side Crossing (freq.)	8.9	2.7	15	8.7	2.3	16	7.8	3.1	16	9.2	2.6	16
Locomotor Activity (instr. units)	187.0	20.0	15	192.7	15.3	16	192.3	17.4	16	190.6	21.0	16
Startle Response Amp. (instr. units)	205.4	56.7	15	179.4	27.0	16	182.0	30.6	16	235.5*	82.6	16
Startle Response Latency (msec)	353.9	60.3	15	407.6	55.5	16	392.7	50.5	16	341.6**	84.6	16
Forelimb Grip (gms)	63.6	15.9	15	64.2	20.7	16	63.4	27.3	16	60.3	20.6	16
Hindlimb Grip (gms)	24.2	9.4	15	27.9	14.8	16	28.8	13.6	16	26.7	11.4	16
Hot Plate Latency (sec)	7.9	2.0	15	7.1	1.6	16	7.3	2.5	16	7.1	1.7	16
Footsplay (cms)	4.8	0.6	12	5.0	0.7	16	5.0	0.6	15	4.8	0.5	16
Body Weight (gms)	16.5	1.7	15	17.3	1.3	16	16.6	1.2	16	17.0	1.6	16

*p<.05 (10,33 ppm)

**p<.05 (10 ppm)

Table 23

3-MONTH EXPOSURE BEHAVIORAL MEASUREMENTS - FEMALES

Group	Control			10 PPM			33 PPM			100 PPM		
<u>Measurement</u>	<u>$\bar{X}$</u>	<u>S.D.</u>	<u>n</u>	<u>$\bar{X}$</u>	<u>S.D.</u>	<u>n</u>	<u>$\bar{X}$</u>	<u>S.D.</u>	<u>n</u>	<u>$\bar{X}$</u>	<u>S.D.</u>	<u>n</u>
Activity Latency (sec)	29.7	27.4	15	16.8	11.7	16	23.7	20.0	15	22.5	12.8	15
Novel Side Time (sec)	100.5	22.7	15	115.3	15.7	16	112.4	21.0	16	119.3*	13.0	15
Novel Side Crossing (freq.)	7.3	2.5	15	7.6	3.0	16	8.2	2.4	16	7.3	1.9	15
Locomotor Activity (instr. units)	184.7	25.2	15	186.5	18.6	16	187.3	22.7	16	173.1	24.0	15
Startle Response Amp. (instr. units)	200.7	27.4	15	199.4	43.5	16	210.0	48.0	16	333.2**	77.5	15
Startle Response Latency (msec)	372.5	63.2	15	373.0	60.9	16	365.4	70.6	16	230.2**	75.8	15
Forelimb Grip (gms)	90.7	29.3	15	91.4	14.3	16	95.6	19.4	16	100.3	14.3	15
Hindlimb Grip (gms)	60.2	18.4	15	57.3	14.5	16	58.2	13.7	16	79.5***	18.2	15
Hot Plate Latency (sec)	7.9	2.4	15	8.1	2.9	16	8.1	3.3	16	11.1	4.7	15
Footsplay (cms)	5.2	0.6	15	5.5	0.8	16	5.0	0.4	16	5.5	0.7	2
Body Weight (gms)	26.7	1.2	15	27.0	1.5	16	25.6	1.9	16	25.3****	1.9	15

* $p < .05$ (0 ppm)** $p < .001$ (0,10,33 ppm)*** $p < .05$ (0,10,33 ppm)**** $p < .05$ (10 ppm)

Table 24

6-MONTH EXPOSURE BEHAVIORAL MEASUREMENTS - FEMALES

Group	Control			10 PPM			33 PPM			100 PPM		
<u>Measurement</u>	<u>$\bar{X}$</u>	<u>S.D.</u>	<u>n</u>	<u>$\bar{X}$</u>	<u>S.D.</u>	<u>n</u>	<u>$\bar{X}$</u>	<u>S.D.</u>	<u>n</u>	<u>$\bar{X}$</u>	<u>S.D.</u>	<u>n</u>
Activity Latency (sec)	16.4	14.1	12	21.4	19.5	16	18.2	16.8	16	14.2	10.5	10
Novel Side Time (sec)	109.5	18.5	12	111.1	21.6	16	118.3	23.2	16	143.0*	31.2	10
Novel Side Crossing (freq.)	9.5	3.9	12	6.0**	2.9	16	6.8	2.5	16	4.3***	2.3	10
Locomotor Activity (instr. units)	187.1	12.2	12	167.7	19.3	15	165.7	33.8	16	134.8****	29.9	10
Startle Response Amp. (instr. units)	214.3	34.2	12	188.5	32.9	16	185.7	47.8	16	219.6	96.1	10
Startle Response Latency (msec)	354.7	61.5	12	382.7	53.5	16	412.1	57.4	16	360.5	101.6	10
Forelimb Grip (gms)	103.5	17.6	12	101.7	18.0	16	101.0	17.2	16	106.7	11.2	10
Hindlimb Grip (gms)	72.4	24.4	12	74.4	14.1	16	76.3	17.6	16	88.7	15.8	10
Hot Plate Latency (sec)	6.7	1.7	12	7.8	2.7	16	7.1	3.2	16	9.4	2.9	10
Footsplay (cms)	5.3	0.6	12	5.4	0.6	16	5.4	0.4	16	-		
Body Weight (gms)	28.4	2.2	12	29.1	2.7	16	27.1	2.4	16	27.4	2.1	10

* $p < .01$ (0,10 ppm)** $p < .05$ (0 ppm)*** $p < .001$ (0 ppm)**** $p < .05$ (0,10,33 ppm)

Table 25

9-MONTH EXPOSURE BEHAVIORAL MEASUREMENTS - FEMALES

Group	Control			10 PPM			33 PPM			100 PPM		
<u>Measurement</u>	<u>$\bar{X}$</u>	<u>S.D.</u>	<u>n</u>	<u>$\bar{X}$</u>	<u>S.D.</u>	<u>n</u>	<u>$\bar{X}$</u>	<u>S.D.</u>	<u>n</u>	<u>$\bar{X}$</u>	<u>S.D.</u>	<u>n</u>
Activity Latency (sec)	15.1	9.0	9	23.0	35.0	11	11.5	5.3	12	15.7	6.4	10
Novel Side Time (sec)	121.6	19.1	9	118.4	33.1	11	125.0	25.0	11	133.6	18.9	10
Novel Side Crossing (freq.)	6.1	3.4	9	5.4	2.8	11	6.4	2.1	11	3.7	2.0	10
Locomotor Activity (instr. units)	172.0	18.0	9	160.4	23.0	11	159.4	18.5	11	154.0	31.6	10
Startle Response Amplitude (instr. units)	202.1	59.3	9	221.7	46.6	12	191.0	53.3	12	242.2	47.7	10
Startle Response Latency (msec)	342.3	98.4	9	340.0	98.2	12	372.0	87.6	12	300.9	69.8	10
Forelimb Grip (gms)	90.8	20.2	9	86.5	17.9	12	96.5	22.8	11	102.5	12.2	10
Hindlimb Grip (gms)	73.3	22.5	9	75.4	20.4	12	86.1	20.3	11	90.7	7.5	10
Hot Plate Latency (sec)	9.2	2.6	9	9.5	3.5	12	8.3	3.4	11	7.6	4.2	10
Footsplay (cm)	5.5	0.8	9	5.3	0.4	12	5.3	0.9	12	--	--	--
Body Weight (gms)	34.2	3.5	9	35.7*	4.6	12	31.5	3.4	12	30.6	2.1	10

*p<.05 (33,100 ppm)

Table 26

12-MONTH EXPOSURE BEHAVIORAL MEASUREMENTS - FEMALES

Group	Control			10 PPM			33 PPM			100 PPM		
<u>Measurement</u>	<u>$\bar{X}$</u>	<u>S.D.</u>	<u>n</u>	<u>$\bar{X}$</u>	<u>S.D.</u>	<u>n</u>	<u>$\bar{X}$</u>	<u>S.D.</u>	<u>n</u>	<u>$\bar{X}$</u>	<u>S.D.</u>	<u>n</u>
Activity Latency (sec)	9.2	4.9	9	12.4	10.5	12	18.8	21.0	12	28.8	53.8	10
Novel Side Time (sec)	124.4	22.1	9	128.6	38.6	12	120.0	15.6	12	127.8	58.3	10
Novel Side Crossing (freq.)	6.2	1.3	9	3.6*	1.6	12	6.0	2.9	12	2.6**	1.7	10
Locomotor Activity (instr. units)	166.4	19.0	9	139.9	23.1	12	151.8	18.1	12	125.1*	51.6	10
Startle Response Amplitude (instr. units)	209.9	64.2	9	208.7	41.7	12	189.1	74.3	12	276.0***	77.1	10
Startle Response Latency (msec)	357.2	97.1	9	353.0	101.9	12	388.2	97.7	12	299.5	114.4	10
Forelimb Grip (gms)	94.8	15.7	9	96.4	16.4	12	89.9	22.4	12	109.3	13.6	10
Hindlimb Grip (gms)	96.9	12.2	9	92.3	13.9	12	94.3	14.3	12	94.0	14.6	10
Hot Plate Latency (sec)	9.1	3.4	9	8.1	2.9	12	7.9	2.7	12	7.7	1.2	10
Footsplay (cm)	5.1	0.4	9	5.1	0.5	11	4.9	0.4	12	4.1	0.0	1
Body Weight (gms)	37.0	2.5	9	39.5****	5.8	12	32.4	5.1	12	31.8	3.6	10

*p<.05 (0 ppm)

**p<.01 (0 ppm)

***p<.05 (33 ppm)

***p<.01 (33,100 ppm)

15-MONTH EXPOSURE BEHAVIORAL MEASUREMENTS - FEMALES

Group	Control			10 PPM			33 PPM			100 PPM		
Measurement	<u>X̄</u>	<u>S.D.</u>	<u>n</u>	<u>X̄</u>	<u>S.D.</u>	<u>n</u>	<u>X̄</u>	<u>S.D.</u>	<u>n</u>	<u>X̄</u>	<u>S.D.</u>	<u>n</u>
Activity Latency (sec)	11.3	4.5	9	10.4	8.1	10	17.0	20.0	12	25.4	16.6	10
Novel Side Time (sec)	120.2	35.2	9	136.3	33.8	10	115.6	36.4	12	136.4	28.1	10
Novel Side Crossing (freq.)	5.0	2.0	9	2.5	1.3	10	5.1	3.0	12	3.0	2.1	10
Locomotor Activity (instr. units)	148.9	24.4	9	124.5	24.5	10	142.6	23.9	12	129.4	28.1	10
Startle Response Amplitude (instr. units)	182.9	53.6	9	203.6	41.7	11	158.8	60.3	12	180.9	78.6	10
Startle Response Latency (msec)	371.0	117.4	9	349.2	97.7	11	420.6	61.8	12	372.7	89.9	10
Forelimb Grip (gms)	101.8	17.1	9	93.9	18.4	11	101.0	24.2	12	107.0	22.5	10
Hindlimb Grip (gms)	73.7	14.6	9	67.9	23.7	11	79.0	10.8	12	73.8	15.9	10
Hot Plate Latency (sec)	7.2	2.2	9	8.7	2.7	11	7.0	3.3	12	8.1	3.2	10
Footsplay (cm)	5.0	0.6	9	5.2	0.4	11	5.3	0.4	12	5.3	1.1	3
Body Weight (gms)	38.8*	3.9	9	41.2**	6.3	11	32.1	4.3	12	31.3	3.2	10

*p<.05 (33,100 ppm)

**p<.001 (33,100 ppm)

Table 28

18-MONTH EXPOSURE BEHAVIORAL MEASUREMENTS - FEMALES

Group	Control			10 PPM			33 PPM			100 PPM		
Measurement	<u>$\bar{X}$</u>	<u>S.D.</u>	<u>n</u>	<u>$\bar{X}$</u>	<u>S.D.</u>	<u>n</u>	<u>$\bar{X}$</u>	<u>S.D.</u>	<u>n</u>	<u>$\bar{X}$</u>	<u>S.D.</u>	<u>n</u>
Activity Latency (sec)	11.2	6.6	6	14.0	11.3	7	8.8	8.4	8	18.3	12.8	6
Novel Side Time (sec)	129.3	29.2	6	118.1	37.5	7	119.4	29.2	8	118.3	39.3	6
Novel Side Crossing (freq.)	6.0	3.1	6	5.3	2.4	7	6.5	2.6	8	3.2	1.6	6
Locomotor Activity (instr. units)	166.0	26.2	6	139.6	19.3	7	169.9	12.4	7	148.8	44.7	6
Hartle Response Amplitude (instr. units)	141.8	39.2	6	154.5	60.3	7	122.4	60.3	8	138.2	77.3	6
Hartle Response Latency (msec)	438.3	29.2	6	419.0	83.3	7	434.2	97.8	8	415.7	122.9	6
Forelimb Grip (gms)	91.4	11.6	6	98.3	10.6	7	107.7	15.3	8	101.9	16.7	6
Hindlimb Grip (gms)	76.4	21.4	6	77.9	20.0	7	85.6	13.1	8	85.3	22.8	6
Hot Plate Latency (sec)	11.8	5.4	6	8.2	2.5	7	8.9	3.5	8	8.7	3.8	6
Footsplay (cm)	5.3	0.3	6	5.4	0.5	7	5.4	0.4	8	4.4	1.4	4
Body Weight (gms)	38.6	1.9	6	43.8*	5.2	7	34.1	3.7	8	32.8	4.9	6

*p<.001 (33,100 ppm)

Table 29

21-MONTH EXPOSURE BEHAVIORAL MEASUREMENTS - FEMALES

Group	Control			10 PPM			33 PPM			100 PPM		
<u>Measurement</u>	<u>$\bar{X}$</u>	<u>S.D.</u>	<u>n</u>	<u>$\bar{X}$</u>	<u>S.D.</u>	<u>n</u>	<u>$\bar{X}$</u>	<u>S.D.</u>	<u>n</u>	<u>$\bar{X}$</u>	<u>S.D.</u>	<u>n</u>
Activity Latency (sec)	14.7	6.2	6	13.4	8.4	7	11.7	6.9	6	29.0	23.0	6
Novel Side Time (sec)	134.8	30.7	6	118.4	31.1	7	141.8	17.6	6	118.5	38.8	6
Novel Side Crossing (freq.)	4.0	1.5	6	3.0	0.8	7	5.0	2.3	6	2.3	2.0	6
Locomotor Activity (instr. units)	136.7	29.5	6	117.4	17.0	7	138.0	14.9	6	113.8	32.6	6
Startle Response Amplitude (instr. units)	164.5	83.7	6	197.2	34.8	7	143.7	82.5	6	283.7	220.3	6
Startle Response Latency (msec)	406.4	135.4	6	356.7	76.6	7	424.5	78.9	6	310.5	127.1	6
Forelimb Grip (gms)	98.9	16.5	6	109.0	13.9	7	99.7	18.4	6	103.3	21.4	6
Hindlimb Grip (gms)	77.5	12.5	6	84.5	13.0	7	78.4	15.4	6	93.1	29.1	6
Hot Plate Latency (sec)	8.1	4.4	6	9.2	2.8	7	7.3	3.2	6	8.4	3.4	6
Footsplay (cm)	5.4	0.6	6	5.4	0.4	6	5.0	0.6	6	--	--	--
Body Weight (gms)	38.7	2.7	6	43.9	6.5	7	35.7	4.1	6	33.5*	6.0	6

*p<.01 (10 ppm)

Table 30

24-MONTH EXPOSURE BEHAVIORAL MEASUREMENTS - FEMALES

Group	Control			10 PPM			33 PPM			100 PPM		
<u>Measurement</u>	<u>$\bar{X}$</u>	<u>S.D.</u>	<u>n</u>	<u>$\bar{X}$</u>	<u>S.D.</u>	<u>n</u>	<u>$\bar{X}$</u>	<u>S.D.</u>	<u>n</u>	<u>$\bar{X}$</u>	<u>S.D.</u>	<u>n</u>
Activity Latency (sec)	11.8	4.1	6	25.1	17.9	7	8.2	2.8	6	18.3	18.4	6
Novel Side Time (sec)	140.0	20.3	6	136.0	27.2	7	110.0	33.1	6	115.3	28.3	6
Novel Side Crossing (freq.)	3.7	2.1	6	3.4	2.4	7	5.5	1.6	6	4.5	1.2	6
Locomotor Activity (instr. units)	129.3	15.1	6	124.7	39.6	7	150.0	2.8	6	116.8	16.6	6
Startle Response Amp. (instr. units)	148.7	54.6	6	190.3	70.5	7	206.5	93.8	6	283.2	192.6	6
Startle Response Latency (msec)	438.5	56.3	6	347.2	117.6	7	365.2	94.5	6	258.9	159.0	6
Forelimb Grip (gms)	102.5	6.4	6	91.2	9.0	7	100.0	12.5	6	110.0*	12.4	6
Hindlimb Grip (gms)	87.8	20.5	6	80.2	13.0	7	89.7	21.7	6	87.0	33.2	6
Hot Plate Latency (sec)	8.0	1.4	6	7.5	1.3	7	6.2	1.5	6	8.3	4.2	6
Footsplay (cms)	4.6	0.9	6	4.9	0.6	7	5.0	0.4	6	4.5	0.0	1
Body Weight (gms)	39.6	2.1	6	46.3**	7.4	7	37.1	3.5	6	33.2	6.7	6

*p<.05 (10 ppm)

**p<.05 (33,100 ppm)

IV. DISCUSSION

In summary, exposure of B6C3F₁ mice to methyl bromide for 103 weeks produced significant changes in growth rate, mortality, organ weights and neurobehavioral functioning. These changes occurred in both males and females, but were more pronounced in males.

Without the histopathology and neuropathology data, it is difficult to discuss some of the changes which were observed. However, across all methyl bromide studies the nature of the dose response curve has been quite interesting. The unexpected and early mortality observed in this study is yet another indication of the steepness of the methyl bromide dose response curve. The B6C3F₁ mouse is an obviously sensitive species to this compound, as demonstrated by the results obtained in the subchronic, 6 week repeated dose, and now chronic studies.

The neurobehavioral changes which occurred in the 100 ppm animals are very interesting. Even in animals not easily identifiable as sick, certain behavioral patterns did emerge. The increase in hindlimb grip strength, for example, was probably due to a rigidity in the nerves of the peripheral nervous system of the animal. This rigidity never disappeared and was largely the reason why 100 ppm females could not be tested on the footsplay measurement after 3-6 months of exposure. The heightened sensitivity in the startle response apparatus was probably indicative of other neurological changes, more likely in central nervous system functioning, while decreased activity levels correlated with general lethargy in these animals. The neuropathological evaluations should lend credence to these ideas.

By far the most interesting point in terms of the toxicity of methyl bromide is the fact that over 18 months post-exposure, the 100 ppm animals never really recovered from the effects of their early exposure. None of the changes observed in those animals during the first 5 months of the study ever reversed themselves and in fact the 100 ppm animals continued to die at a higher rate than animals in any other group months after the exposures had been terminated.

Until the pathology data is available, a no-effect level is not easily discernible. From the data discussed in this report, 10 ppm may be a reasonable assumption for this compound.

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Medical Department

V. QUALITY ASSURANCE STATEMENT

I have reviewed the drafts of tables, original data and final report entitled, "A Chronic Inhalation Study of Methyl Bromide Toxicity in B6C3F₁ Mice". All findings were discussed with the principal investigator, the BNL quality assurance officer and reported to the department chairman.

Robert B. Aronson, Ph.D., Quality Assurance Officer

Date

VI. REFERENCES

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REPROCUREMENT REPORT
ANALYSIS OF METHYL BROMIDE

NCI CONTRACT NO. N01-CP-95615
MRI Project No. 7094-C
MRI Task Designation: RE

MIDWEST RESEARCH INSTITUTE
425 Volker Boulevard
Kansas City, MO 64110

December 6, 1982

METHYL BROMIDE

Management Information

CAS NO.: 74-83-9
CBDS NO.: C04148
MRI REQUEST NO.: 153N
SUBMITTER: National Toxicology Program
STUDY SUPPORTED: Bioassay (Carcinogenesis)
MRI RECEIPT DATE: 10/28/82
INTERIM REPORT TO NTP: Phone 11/30/82
SUPPLIER DATA:
Company: Matheson Gas Products
Purchase Order Date: 10/11/82
Company Lot No.: None given
MRI Assigned Lot No.: M102882
MRI Batch No.: 02
Amount Available for Bioassayer: 5 x 50 lb cylinders
Purity Grade: 99.5%
Manufacturer Specifications: None given
Typical Lot Analysis: None given
Actual Lot Analysis: None given

Chemical Information

STRUCTURE:

MOLECULAR FORMULA: CH_3Br
MOLECULAR WEIGHT: 94.95

Toxicological Information*

TOXICITY: ihl-man LCLo: 60,000 ppm/2H
ihl-chd LCLo: 1 g/m³/2H
3F14K13R11 ihl-hmn TCLo: 35 ppm TFX:GIT
ihl-rat LCLo: 3,120 ppm/15M
TUMORIGENIC EFFECTS: Not available in standard references
REPRODUCTIVE EFFECTS: Not available in standard references
EXPOSURE STANDARDS: OSHA standard - air: Cl 20 ppm (skin) (SCP-J)

* Registry of Toxic Effects of Chemical Substances, Microfiche Edition
(July 1982), U.S. Department of Health and Human Services, National
Institute of Occupational Safety and Health, Cincinnati, Ohio, PA4900000,
p. 8324, Grid B 02.

EXECUTIVE SUMMARY

This material was identified as methyl bromide by spectroscopy. Two flame ionization gas chromatography systems detected only one impurity, assumed to be the same in both systems. The impurity peak was estimated at 0.13 and 0.12% relative to the major peak area in the two systems. Based on the data in this report, the purity of this material is estimated to be 99.8%, which is consistent with the previously analyzed batch.

REPROCUREMENT REPORT - METHYL BROMIDE

I. INTRODUCTION

The purpose of this work was to provide chemical support necessary for bioassay studies. This support consisted of chemical analyses of reprocured material. The analyses included confirmation of the identity of the chemical and purity assays.

II. CHEMICAL HANDLING

Note: This compound was analyzed as received because it is a compressed gas. The cylinders were stored at 25°C in a well-ventilated area.

1. SUB-BATCH EQUIVALENCY

a. Procedure: The sample was received in 5 cylinders. Two cylinders, labeled "A" and "B", were randomly chosen for analysis. The complete chemical analysis was performed on cylinder "A". A gas chromatographic impurity profile analysis to establish sub-batch equivalency was performed on "B" using gas chromatography system 2 (described on p. 3).

b. Results: The gas chromatographic impurity profiles of samples from cylinders "A" and "B" were identical with experimental limits. Results are tabulated below.

	<u>Cylinder A</u>		<u>Cylinder B</u>	
Peak No.	1	2	1	2
Retention Time (min)	8.2	11.8	8.4	11.9
Relative Retention Time	0.69	1.00	0.70	1.00
Area (% of major peak area)	0.12	100	0.12	100

A. APPEARANCE

Colorless gas

B. SPECTRAL DATA

	<u>Determined</u>	<u>Literature Values</u>
1. <u>INFRARED</u>		
Instrument: Perkin-Elmer 283		Spectrum consistent with structure and literature reference. ¹
Cell: Neat gas in 8.6 cm gas cell with sodium chloride windows		
Results: See attached spectrum (Figure 1)		

¹ Craver, C. D. (Ed.), The Infrared Spectra of Halogenated Hydrocarbons, The Coblentz Society, Inc., Kirkwood, Missouri, 1977, p. 103, Spectrum No. 8828.

DeterminedLiterature Values2. NUCLEAR MAGNETIC RESONANCE

Instrument: Varian EM-360A
Solvent: Carbon tetrachloride
with tetramethylsilane internal
standard
Assignments: See attached spectrum
(Figure 2)
(a) s, δ 2.60
Integration Ratios:
Observed* Theoretical
(a) 3.00 3.00

Spectrum consistent with
literature reference.²

C. GAS CHROMATOGRAPHY

Instrument: Varian 3700
Detector: Flame ionization
Inlet Temperature: 150°C
Detector Temperature: 200°C
Carrier Gas: Nitrogen
Carrier Flow Rate: 40 cc/min (system 1)
80 cc/min (system 2)

1. SYSTEM 1

Column: OPN/Porasil C, 80/100 mesh, 1.8 m x 4 mm I.D., glass
Oven Temperature Program: 30°C for 3 min, then 30 to 100°C at
10°C/min

Samples Injected: Neat gas (0.6 ml) and 1/60 and 1/120 dilutions
with ambient air to quantitate impurities and check linearity
of detector response

Results: A major peak and one impurity, with an area estimated at
0.13% relative to the major peak, eluting before the major peak.

<u>Peak No.</u>	<u>Retention Time (min)</u>	<u>Retention Time (Relative to Major Peak)</u>	<u>Area (% of Major Peak Area)</u>
1	3.5	0.68	0.13
2	5.4	1.00	100

² Applications of Nuclear Magnetic Resonance Spectroscopy in Organic Chem-
istry, Jackman, L. M., and S. Sternhell, Pergamon Press, New York,
2nd Ed., p. 160, 1969.

* Only a singlet was observed for the methyl protons. Therefore, the in-
tegration was assumed to equal the theoretical three protons.

2. SYSTEM 2

Column: Porapak QS, 80/100 mesh, 1.8 m x 4 mm I.D., glass
Oven Temperature Program: 50°C for 5 min, then 50 to 200°C at 10°C/min

Samples Injected: Neat gas (0.6 ml) and 1/60 and 1/120 dilutions with ambient air to quantitate impurities and check linearity of detector response

Results: A major peak and one impurity, with an area estimated at 0.12% relative to the major peak, eluting before the major peak.

<u>Peak No.</u>	<u>Retention Time (min)</u>	<u>Retention Time (Relative to Major Peak)</u>	<u>Area (% of Major Peak Area)</u>
1	8.2	0.69	0.12
2	11.8	1.00	100

D. SUMMARY AND DISCUSSION

The infrared and nuclear magnetic resonance spectra were consistent with the structure of methyl bromide. Gas chromatography, using two different systems, each resolved a single impurity estimated at 0.13 and 0.12% relative to the major peak, respectively. The impurity is assumed to be the same in both systems. Samples from two cylinders produced identical gas chromatographic impurity profiles within experimental limits.

E. CONCLUSION

The compound was identified by spectroscopy as methyl bromide. Purity was estimated on the basis of flame ionization gas chromatography at 99.8%, which is consistent with the previously analyzed batch. GC analysis of two randomly selected cylinders showed the sub-batches to be equivalent.

III. CONTRIBUTORS

Personnel contributing to the analysis of methyl bromide were Becky Hanson and Dan Timmons.

Dr. Evelyn Murrill served as technical consultant on the analysis of methyl bromide.

Chemical Characterization

Steven Graves
Senior Chemist

Approved:

K. M. Stelting, Ph.D.
Principal Investigator

E. J. Woodhouse, Ph.D.
Head, Bioanalytical Chemistry Section

D. Y. Takade, Ph.D.
Head, Quality Assurance Unit

Figure 1 - Infrared spectrum of methyl bromide.

Figure 2 - Nuclear magnetic resonance spectrum of methyl bromide.

ANALYSIS OF METHYL BROMIDE NEAT GAS USING A VARIAN MODEL 3700 GAS
CHROMATOGRAPH EQUIPPED WITH A FLAME IONIZATION DETECTOR

1) Introduction

Methyl bromide neat gas should be checked for impurities at four month intervals to assure the stability of the compound.

2) Reagents and Supplies

- 2.1 Hydrogen compressed gas, 99.99% pure.
- 2.2 Nitrogen compressed gas, 99.99% pure.
- 2.3 Oxygen compressed gas, pre-purified.
- 2.4 Gas-tight syringes (Hamilton Co., Reno, NV, 89510), 1000 μ l volume.
- 2.5 Gas sampling bags (Calibrated Instruments, Inc., Ardsley, NY, 10502).
- 2.6 Methyl bromide neat gas.
- 2.7 Column (6' x 1/18"): stainless steel, 80/100 mesh, packed with Porapak Q, and preconditioned according to the manufacturer's specifications.

3) Instrument Operation

- 3.1 Refer to ITF-SOP No. 3.5.5 for the instrument start-up instructions. Make sure all gas flows are regulated correctly.
- 3.2 Set the following parameters for the analyses:
 - 3.2.1 Readout/temperature controller module:
 - a. Injector A at 150°C.
 - b. Injector B to OFF.
 - c. Detector temperature to 200°C.
 - 3.2.2 Auto linear temperature programmer (ALTP):
 - a. Set the column oven temperature to 100°C for 00 minutes (no temperature programming used).
 - 3.2.3 Differential electrometer module:
 - a. Set the RANGE select to 10^{-10} A/mV.
 - b. Depress the MODE pushbutton under ION DETECTOR A.
 - 3.2.4 CDS 111C data center:
 - a. Set the RECORDER attenuation control to the proper setting as specified in Section 4.

Analysis of Methyl Bromide Neat Gas Using a Varian Model 3700 Gas Chromatograph Equipped with a Flame Ionization Detector

3.2.4 Recorder:

- a. Set the range to 0.01 volts full scale.
- b. Set the chart speed to 0.5 cm/min.
- c. With the zero control knob, set the desired baseline level.
- d. Load the pen.

4. Sample Analysis

4.1 Impurity peak on scale and methyl bromide peak off scale:

- 4.1.1 Obtain a sufficient sample of neat gas in a gas sampling bag.
- 4.1.2 When all operating parameters on the 3700 module have equilibrated, place the CDS 111C data system into the READY mode and place the RECORDER attenuation knob on 1.
- 4.1.3 Turn on the chart feed.
- 4.1.4 Using a gas tight syringe, withdraw a 600 μ l sample of neat gas from the gas sampling bag.
- 4.1.5 Inject the sample into sampling port A on top of the G.C. while simultaneously depressing the INJECT button on the CDS 111 control panel.
- 4.1.6 Allow the sample to run until the CH_3Br peak returns to baseline, after which two peaks will probably be recorded on the strip chart. (It should be noted that the data center may record more than the impurity and main peaks. Baseline deflection from both the sample injection and detector noise may be recorded.)
- 4.1.7 Terminate the analysis by depressing the compute switch on the CDS 111C. The full data report in Area % values will be printed.
- 4.1.8 If the 600 μ l volume of neat gas injected is not a sufficient volume to produce an impurity peak on the data center report, larger volumes are to be used. Repeat Section 4.1.4 to 4.1.7 until an impurity is reported.
- 4.1.9 The percent impurity analysis is to be performed in triplicate to ensure reproducibility of the data.

4.2 Impurity peak absent and methyl bromide peak on scale:

- 4.2.1 Proceed as in Section 4.1, omitting part of subsection 4.1.2. Instead of placing the RECORDER attentuation on 1, place it on 4 to retain the methyl bromide peak on scale.

5. Calculations

- 5.1 Results from the CDS 111C data center are given in area percent of total sample eluted according to the following equation:

$$\text{AREA\%}_N = \frac{\text{AREA}_N}{\text{AREA}_{\text{TOTAL}}} \times 100 \quad N = \text{component peak}$$

- 5.2 The percent impurity can be read directly off of the data report obtained with either injection of neat gas (Section 4.1 or 4.2).

6. Maintenance

- 6.1 Refer to ITF-SOP No. 3.5.5 for maintenance procedures.

7. Instrument Shut-Down

- 7.1 See ITF-SOP No. 3.5.5 for instrument shut-down instructions.

QUALITY ASSURANCE
OFFICER

L V Hanks
L V. HANKES, PH.D.

8/6/84

BROOKHAVEN NATIONAL LABORATORY

MEMORANDUM

DATE: June 13, 1986
TO: Dr. S. Haber *SMH*
FROM: J. M. Firriolo *JMF*
SUBJECT: Gas Chromatography Purity Assessment of the Methyl Bromide
Exposure Compound, Lot No. E21-1012-00 (Tanks 4 and 5)

The four month purity assessments of methyl bromide tanks 4 (exposure tank) and 5 (calibration tank) scheduled to occur in May were performed today according to ITF-SOP No. 8.3.3. The analyses were conducted without the CDS 111C data center connected to the system because it is out for repair. The area values were obtained by hand using a digital M.O.P.-3 integrator (Carl Zeiss, Inc.). To compare these results to past analyses, the last purity assessment of 01/13/86 was integrated by the same procedure. The tabulated data are as follows:

<u>Date Analysis Performed</u>	<u>Tank No.</u>	<u>Impurity Area %</u>	<u>Methyl Bromide Area %</u>
01/13/86	4	0.27	99.73
	5	1.43	98.57
06/13/86	4	0.13	99.87
	5	1.45	98.55

METHYL BROMIDE CHRONIC
EXPERIMENT 840002

BROOKHAVEN NATIONAL LABORATORY

M E M O R A N D U M

DATE: June 16, 1986

TO: Dr. S. Haber *SH*

FROM: J. M. Firriolo *JMF*

SUBJECT: Gas Chromatography Purity Assessment of the Methyl Bromide Exposure Compound, Lot No. E21-1012-00 (Tanks 4 and 5)

The mandatory four month purity assessments of methyl bromide tanks 4 (exposure tank) and 5 (calibration tank) were conducted according to ITF-SOP No. 8.3.3/2. The tabulated results to date are as follows:

<u>Date Analysis Performed</u>	<u>Tank No.</u>	<u>Impurity^a Area %</u>	<u>Methyl Bromide Area %</u>
09/26/84	4	0.11	99.89
	5	0.13	99.87
01/30/85	4	0.03	99.96
	5	0.17	99.85
05/16/85 ^b	4	0.04	99.96
	5	0.13	99.87
08/13/85	4	0.04	99.96
	5	0.14	99.86
09/13/85	4	0.03	99.97
	5	0.14	99.86
01/13/86	4	0.03	99.97
	5	0.12	99.88
06/13/86 ^c	-	--	--

^a The calculations used to derive these values are recorded in the methyl bromide Varian 3700 G.C. log books.

^b These analyses were repeated on 8/13/85 due to column separation problems.

^c The results of these analyses can be found in the June 13, 1986 memo entitled, "Gas Chromatography Purity Assessment of the Methyl Bromide Exposure Compound, Lot No. E21-1012-00 (Tanks 4 and 5)".

METHYL BROMIDE CHRONIC
EXPERIMENT 840002

BROOKHAVEN NATIONAL LABORATORY

M E M O R A N D U M

DATE: September 25, 1986

TO: Dr. S. Haber *SHB*FROM: M. Schmaeler *MS*SUBJECT: Gas Chromatography Purity Assessment of the Methyl Bromide
Exposure Compound, Lot No. E21-1012-00 (Tanks 4 and 5)

The final purity assessments of methyl bromide tanks 4 (exposure tank) and 5 (calibration tank) were performed September 23, 1986 according to ITF-SOP No. 3.6.1. The analyses were conducted without the CDS 111C data center connected to the system because it is out for repair. The area values were obtained by hand using a digital M.O.P.-3 integrator (Carl Zeiss, Inc.). The tabulated data are as follows:

<u>Date Analysis Performed</u>	<u>Tank No.</u>	<u>Impurity Area %</u>	<u>Methyl Bromide Area %</u>
09/23/86	4	0.02	99.98
	5	0.12	99.88

METHYL BROMIDE CHRONIC
EXPERIMENT 840002

Mean Concentration (ppm) and % Relative Standard
Deviation for Each Exposure Day

10 PPM Chamber

Date	Exposure Day	Mean	S.D.	% RSD
09/26/84	1	10.1	1.1	10.5
09/27/84	2	10.7	0.9	8.2
09/28/84	3	10.6	0.8	7.5
10/01/84	4	10.5	0.4	4.1
10/02/84	5	10.8	0.5	4.4
10/03/84	6	10.3	0.4	3.8
10/04/84	7	10.4	0.2	2.1
10/05/84	8	9.9	0.2	2.3
10/08/84	9	10.7	0.5	4.3
10/09/84	10	10.9	0.5	4.8
10/10/84	11	9.5	1.4	14.9
10/11/84	12	10.6	0.6	5.5
10/12/84	13	10.0	0.3	3.1
10/15/84	14	10.1	0.4	4.4
10/16/84	15	10.0	0.5	5.3
10/17/84	16	9.7	0.4	3.7
10/18/84	17	9.9	0.2	1.9
10/19/84	18	9.8	0.5	5.3
10/22/84	19	10.3	1.2	11.6
10/23/84	20	10.5	0.4	3.5
10/24/84	21	9.8	0.4	3.9
10/25/84	22	9.4	0.4	4.0
10/26/84	23	10.5	0.3	3.1
10/29/84	24	9.7	0.7	7.6
10/30/84	25	9.7	0.5	5.3
10/31/84	26	9.5	0.4	4.2

Mean Concentration (ppm) and % Relative Standard
Deviation for Each Exposure Day

10 PPM Chamber

Date	Exposure Day	Mean	S.D.	% RSD
11/01/84	27	9.6	0.6	5.8
11/02/84	28	9.7	0.5	5.6
11/05/84	29	10.4	0.4	4.1
11/06/84	30	9.6	0.5	5.0
11/07/84	31	10.4	0.3	3.3
11/08/84	32	10.2	0.4	4.2
11/09/84	33	10.0	0.2	2.0
11/13/84	34	9.7	0.4	4.0
11/14/84	35	9.4	0.3	3.7
11/15/84	36	10.2	0.4	4.3
11/16/84	37	10.6	0.4	3.6
11/19/84	38	9.6	0.2	2.5
11/20/84	39	9.8	0.3	3.5
11/21/84	40	9.8	0.4	3.7
11/26/84	41	9.6	0.5	5.1
11/27/84	42	9.8	0.4	3.8
11/28/84	43	10.1	0.4	4.4
11/29/84	44	10.1	0.2	2.2
11/30/84	45	10.2	0.7	6.5

METHYL BROMIDE CHRONIC
EXPERIMENT 840002

Mean Concentration (ppm) and % Relative Standard
Deviation for Each Exposure Day

10 PPM Chamber

Date	Exposure Day	Mean	S.D.	% RSD
12/03/84	46	9.7	0.7	6.8
12/04/84	47	9.5	0.4	3.8
12/05/84	48	10.0	0.2	2.5
12/06/84	49	9.5	0.4	4.1
12/07/84	50	9.9	0.8	8.5
12/10/84	51	10.6	0.6	5.6
12/11/84	52	10.2	0.3	2.9
12/12/84	53	10.2	0.4	3.6
12/13/84	54	10.5	0.4	4.2
12/14/84	55	9.5	0.4	4.3
12/17/84	56	10.3	0.6	6.2
12/18/84	57	10.0	0.6	5.7
12/19/84	58	10.0	0.3	2.6
12/20/84	59	10.0	0.6	5.7
12/21/84	60	9.8	0.3	2.7
12/24/84	61	9.0	0.5	5.1
12/27/84	62	9.8	0.4	3.9
12/28/84	63	10.4	0.2	1.8
12/31/84	64	10.3	0.3	3.3

Mean Concentration (ppm) and % Relative Standard
Deviation for Each Exposure Day

10 PPM Chamber

Date	Exposure Day	Mean	S.D.	% RSD
01/02/85	65	10.8	0.4	3.4
01/03/85	66	9.6	0.5	4.7
01/04/85	67	9.8	0.8	8.5
01/07/85	68	10.3	0.5	4.8
01/08/85	69	10.0	0.6	5.7
01/09/85	70	9.7	0.3	3.4
01/10/85	71	10.0	0.9	9.1
01/11/85	72	10.3	0.3	3.3
01/14/85	73	9.9	0.3	3.4
01/15/85	74	10.0	0.5	5.1
01/16/85	75	10.1	0.3	3.4
01/17/85	76	10.2	0.2	2.0
01/18/85	77	10.1	0.4	3.7
01/21/85	78	9.4	0.4	4.7
01/22/85	79	9.8	0.3	3.6
01/23/85	80	9.6	0.7	6.9
01/24/85	81	10.1	0.5	5.1
01/25/85	82	10.5	0.4	3.9
01/28/85	83	10.2	0.3	2.8
01/29/85	84	10.3	0.4	4.0
01/30/85	85	10.1	0.6	5.9
01/31/85	86	10.3	0.3	3.3

Mean Concentration (ppm) and % Relative Standard
Deviation for Each Exposure Day

10 PPM Chamber

Date	Exposure Day	Mean	S.D.	% RSD	n	Range
02/01/85	87	10.1	0.3	2.8	7	9.8-10.6
02/04/85	88	10.2	0.4	4.2	8	9.6-10.8
02/05/85	89	10.2	0.7	6.7	7	9.0-11.0
02/06/85	90	9.9	0.7	6.9	7	9.2-10.6
02/07/85	91	9.9	0.4	4.3	7	9.2-10.6
02/08/85	92	10.2	0.2	2.3	7	10.0-10.6
02/11/85	93	10.3	0.4	3.6	7	10.0-11.0
02/12/85	94	10.2	0.7	6.5	7	9.0-11.0
02/13/85	95	9.5	0.9	9.8	7	8.0-11.0
02/14/85	96	9.6	0.4	4.0	8	9.0-10.0
02/15/85	97	10.4	0.4	4.2	7	10.0-11.0
02/19/85	98	10.7	0.6	5.3	7	10.0-11.4
02/20/85	99	10.3	0.7	6.6	8	9.0-11.2
02/21/85	100	10.4	0.6	5.9	7	9.5-11.0
02/22/85	101	10.1	0.5	5.4	8	9.4-11.0
02/25/85	102	10.3	0.3	2.9	7	10.0-10.8
02/26/85	103	10.1	0.7	6.7	7	9.0-11.2
02/27/85	104	9.9	0.3	3.2	7	9.4-10.2
02/28/85	105	10.3	0.4	4.0	7	10.0-11.0

Mean Concentration (ppm) and % Relative Standard
Deviation for Each Exposure Day

10 PPM Chamber

Date	Exposure Day	Mean	S.D.	% RSD	n	Range
03/01/85	106	10.3	0.2	1.9	8	10.0-10.5
03/06/85	107	9.7	0.7	7.5	9	8.5-11.0
03/07/85	108	10.4	0.6	5.7	11	9.0-11.2
03/08/85	109	9.9	0.5	4.9	11	9.2-10.6
03/11/85	110	10.5	1.2	11.6	10	8.0-12.4
03/12/85	111	10.1	0.5	5.1	10	9.0-10.4
03/13/85	112	10.1	0.4	3.9	11	9.5-10.8
03/14/85	113	10.0	0.5	5.4	11	8.0-10.8
03/15/85	114	9.8	0.7	7.5	9	8.5-11.0
03/18/85	115	10.4	0.8	7.7	11	9.2-11.6
03/19/85	116	10.1	0.4	3.5	11	9.5-10.8
03/20/85	117	9.9	0.5	5.4	11	9.0-10.6
03/21/85	118	10.1	0.9	9.3	8	8.0-11.0
03/22/85	119	10.6	0.8	7.2	7	9.8-11.6
03/25/85	120	10.4	0.4	4.2	7	10.0-11.0
03/26/85	121	10.3	0.6	5.7	7	9.8-11.2
03/27/85	122	10.5	0.4	3.8	8	9.8-11.0
03/28/85	123	10.2	0.7	6.6	8	9.5-11.6
03/29/85	124	10.2	0.4	3.9	7	9.8-11.0

Mean Concentration (ppm) and % Relative Standard
Deviation for Each Exposure Day

10 PPM Chamber

Date	Exposure Day	Mean	S.D.	% RSD	n	Range
04/01/85	125	10.2	0.2	1.6	7	10.0-10.4
04/02/85	126	9.6	0.3	3.5	8	9.2-10.0
04/03/85	127	9.9	0.7	6.6	7	9.2-10.8
04/04/85	128	10.2	0.7	6.6	7	9.0-11.2
04/05/85	129	10.4	0.3	3.2	8	10.0-11.0
04/08/85	130	10.2	0.4	3.9	8	9.5-10.8
04/09/85	131	10.5	0.5	4.6	7	9.6-11.0
04/10/85	132	10.1	0.6	5.5	7	9.4-11.2
04/11/85	133	10.3	0.3	3.3	7	10.0-11.0
04/12/85	134	10.1	0.4	4.1	8	9.4-10.8
04/15/85	135	10.2	0.7	6.8	7	9.4-11.5
04/16/85	136	9.9	0.3	3.5	10	9.0-10.2
04/17/85	137	10.1	0.5	5.0	8	9.0-10.6
04/18/85	138	10.4	0.3	3.1	8	10.0-11.0
04/19/85	139	10.0	0.5	4.6	8	9.4-11.0
04/22/85	140	10.2	0.4	4.0	8	9.4-10.6
04/23/85	141	10.1	0.4	3.8	8	9.6-10.8
04/24/85	142	10.3	0.6	5.7	8	9.8-11.5
04/25/85	143	9.9	0.3	2.8	7	9.5-10.4
04/26/85	144	10.4	0.5	4.8	8	9.5-11.2
04/29/85	145	9.9	0.5	5.5	7	9.2-10.8
04/30/85	146	9.9	0.7	7.4	8	8.8-11.0

Mean Concentration (ppm) and % Relative Standard
Deviation for Each Exposure Day

10 PPM Chamber

Date	Exposure Day	Mean	S.D.	% RSD	n	Range
05/01/85	147	9.7	0.6	5.8	7	9.0-10.6
05/02/85	148	9.8	0.4	4.0	8	9.2-10.4
05/03/85	149	9.9	0.3	2.6	8	9.5-10.4
05/06/85	150	9.6	0.9	9.7	8	8.8-11.6
05/07/85	151	9.9	0.2	1.9	8	9.6-10.2
05/08/85	152	10.2	0.6	5.8	8	9.6-11.0
05/09/85	153	10.1	0.4	4.2	7	9.6-10.8
05/10/85	154	10.2	0.3	2.8	8	9.8-10.5
05/13/85	155	10.4	0.5	5.2	7	9.5-11.2
05/14/85	156	10.2	0.5	5.3	7	9.6-11.0
05/15/85	157	10.3	0.4	4.3	7	9.8-10.8
05/16/85	158	10.1	0.4	3.8	7	9.6-10.8
05/17/85	159	9.7	0.5	5.1	8	9.2-10.8
05/20/85	160	10.3	0.2	2.3	8	10.0-10.8
05/21/85	161	10.3	0.3	3.2	7	9.8-10.8
05/22/85	162	10.2	0.4	4.0	8	9.6-11.0
05/23/85	163	9.9	0.5	5.5	8	9.0-10.8
05/24/85	164	9.5	1.1	11.4	8	7.5-11.4
05/28/85	165	10.3	0.5	4.8	7	9.4-10.8
05/29/85	166	10.5	0.4	3.6	7	10.0-11.2
05/30/85	167	10.1	0.5	5.2	7	9.4-11.0
05/31/85	168	10.2	0.2	1.8	7	10.0-10.4

Mean Concentration (ppm) and % Relative Standard
Deviation for Each Exposure Day

10 PPM Chamber

Date	Exposure Day	Mean	S.D.	% RSD	n	Range
06/03/85	169	10.1	0.8	7.6	8	9.0 - 11.2
06/04/85	170	10.3	0.3	2.5	8	10.0 - 10.6
06/05/85	171	10.2	0.3	2.5	7	10.0 - 10.6
06/06/85	172	10.3	0.6	5.5	8	9.4 - 11.4
06/07/85	173	10.2	0.5	5.0	7	9.6 - 11.0
06/10/85	174	10.1	0.3	2.6	8	9.6 - 10.4
06/11/85	175	10.4	0.6	6.0	7	9.6 - 11.0
06/12/85	176	10.5	1.2	11.8	9	9.4 - 12.7
06/13/85	177	10.2	0.4	3.5	8	9.6 - 10.8
06/14/85	178	9.1	0.3	3.2	8	8.58- 9.54
06/17/85	179	9.9	0.5	5.1	7	9.36- 10.71
06/18/85	180	11.1	0.6	5.3	8	10.31- 11.90
06/19/85	181	8.0	1.0	12.3	7	6.67- 9.63
06/20/85	182	10.6	0.3	2.6	9	10.23- 11.04
06/21/85	183	10.2	0.3	2.6	8	8.89- 10.78
06/24/85	184	11.1	0.7	6.5	7	10.24- 12.33
06/25/85	185	10.0	0.4	3.8	8	9.53- 10.51
06/26/85	186	10.0	0.5	5.0	8	9.0 - 10.6
06/27/85	187	10.1	0.4	3.5	8	10.0 - 11.0
06/28/85	188	9.8	0.6	5.7	8	9.0 - 10.6

ETHYL BROMIDE CHRONIC
EXPERIMENT 240002

Mean Concentration (ppm) and % Relative Standard
Deviation for Each Exposure Day

10 PPM Chamber

Date	Exposure Day	Mean	S.D.	% RSD	n	Range
07/01/85	189	10.1	0.5	4.9	7	9.5 - 11.0
07/02/85	190	9.8	0.4	3.6	7	9.5 - 10.6
07/03/85	191	10.0	0.3	3.3	8	9.4 - 10.6
07/08/85	192	10.4	0.7	6.7	8	9.0 - 11.0
07/09/85	193	10.1	0.2	1.9	7	9.8 - 10.4
07/10/85	194	10.3	0.4	3.7	8	10.0 - 11.0
07/11/85	195	10.1	0.4	4.0	8	9.5 - 10.6
07/12/85	196	10.3	0.7	6.5	8	9.0 - 11.0
07/15/85	197	10.2	0.5	5.1	8	9.5 - 11.0
07/16/85	198	10.7	0.6	5.2	7	9.5 - 11.0
07/17/85	199	10.2	0.2	2.4	7	10.0 - 10.6
07/18/85	200	10.1	0.6	6.3	8	9.0 - 11.0
07/19/85	201	10.4	0.5	5.1	8	9.4 - 11.0
07/22/85	202	10.3	0.5	5.2	8	9.5 - 11.0
07/23/85	203	10.4	0.5	4.4	8	9.8 - 11.0
07/24/85	204	10.3	0.3	3.1	7	10.0 - 10.8
07/25/85	205	10.3	0.2	1.8	7	10.0 - 10.6
07/26/85	206	10.4	0.2	2.2	7	10.0 - 10.7
07/29/85	207	10.4	0.2	1.5	7	10.2 - 10.6
07/30/85	208	10.2	0.4	3.5	7	9.5 - 10.5
07/31/85	209	10.1	0.2	2.2	7	9.7 - 10.3

EXPERIMENTAL DATA

Mean Concentration (ppm) and % Relative Standard
Deviation for Each Exposure Day

10 PPM Chamber

<u>Date</u>	<u>Exposure Day</u>	<u>Mean</u>	<u>S.D.</u>	<u>% RSD</u>	<u>n</u>	<u>Range</u>
08/01/85	210	10.4	0.3	3.2	8	10.0 - 11.0
08/02/85	211	10.0	0.8	8.2	7	9.0 - 11.0
08/05/85	212	10.1	0.8	7.8	7	9.0 - 11.0
08/06/85	213	10.0	0.7	6.5	8	9.0 - 11.0
08/07/85	214	10.3	0.2	2.2	8	10.0 - 10.6
08/08/85	215	10.3	0.2	2.3	7	10.1 - 10.7
08/09/85	216	10.2	0.3	2.7	7	9.7 - 10.5
08/12/85	217	10.1	0.4	4.1	7	9.5 - 10.7
08/13/85	218	10.2	0.3	2.6	8	9.9 - 10.7
08/14/85	219	10.4	0.4	3.4	8	9.7 - 10.7
08/15/85	220	10.2	0.3	2.8	8	9.7 - 10.7
08/16/85	221	9.9	0.4	3.8	7	9.3 - 10.3
08/19/85	222	10.0	0.3	2.9	7	9.7 - 10.5
08/20/85	223	10.1	0.4	3.9	7	9.7 - 10.9
08/21/85	224	9.9	0.2	2.3	7	9.6 - 10.3
08/22/85	225	10.1	0.3	3.1	8	9.5 - 10.4
08/23/85	226	9.9	0.3	2.6	7	9.7 - 10.4
08/26/85	227	10.4	0.4	4.0	7	9.8 - 11.0
08/27/85	228	9.9	0.5	5.2	7	9.0 - 10.6
08/28/85	229	10.2	0.6	5.7	7	9.0 - 10.6
08/29/85	230	9.2	0.3	3.7	7	8.7 - 9.6
08/30/85	231	10.1	0.3	3.2	8	9.7 - 10.6

METHYL BROMIDE CHRONIC
EXPERIMENT 840002

Mean Concentration (ppm) and % Relative Standard
Deviation for Each Exposure Day

10 PPM Chamber

<u>Date</u>	<u>Exposure Day</u>	<u>Mean</u>	<u>S.D.</u>	<u>% RSD</u>	<u>n</u>	<u>Range</u>
09/03/85	232	10.1	0.3	2.8	8	9.7 - 10.6
09/04/85	233	9.9	0.4	4.5	8	9.2 - 10.7
09/05/85	234	9.9	0.3	3.1	8	9.3 - 10.3
09/06/85	235	9.8	0.2	1.9	7	9.5 - 10.0
09/09/85	236	9.9	0.3	2.9	8	9.6 - 10.5
09/10/85	237	10.2	0.3	2.5	8	9.9 - 10.7
09/11/85	238	9.9	0.2	1.6	8	9.7 - 10.2
09/12/85	239	9.8	0.4	4.1	7	9.0 - 10.2
09/13/85	240	10.0	0.8	8.4	7	9.0 - 11.7
09/16/85	241	9.6	0.7	6.8	7	9.0 - 11.0
09/17/85	242	9.8	0.4	4.4	8	9.2 - 10.6
09/18/85	243	10.0	0.3	3.0	8	9.5 - 10.6
09/19/85	244	10.0	0.6	5.8	7	9.0 - 10.8
09/20/85	245	10.0	0.2	2.3	8	9.4 - 10.2
09/23/85	246	9.9	0.6	6.4	7	9.0 - 10.8
09/24/85	247	10.3	0.4	3.9	7	10.0 - 11.0
09/25/85	248	9.8	0.4	3.7	8	9.0 - 10.0
09/26/85	249	9.8	0.4	4.1	8	9.0 - 10.2
09/30/85	250	10.0	0.7	7.0	9	9.0 - 11.0

METHYL BROMIDE CHRONIC
EXPERIMENT 840002

Mean Concentration (ppm) and % Relative Standard
Deviation for Each Exposure Day

10 PPM Chamber

<u>Date</u>	<u>Exposure Day</u>	<u>Mean</u>	<u>S.D.</u>	<u>% RSD</u>	<u>n</u>	<u>Range</u>
10/01/85	251	9.8	0.6	6.3	8	9.0 - 10.5
10/02/85	252	10.2	0.6	5.4	8	9.2 - 11.0
10/03/85	253	10.5	0.4	3.7	8	10.0 - 11.0
10/04/85	254	10.3	0.4	3.7	7	10.0 - 11.0
10/07/85	255	10.5	0.5	4.5	7	10.0 - 11.0
10/08/85	256	10.0	0.7	7.2	7	9.0 - 11.0
10/09/85	257	10.7	0.7	6.5	8	10.0 - 12.0
10/10/85	258	10.4	0.7	6.9	8	9.2 - 11.4
10/11/85	259	10.0	0.4	3.6	8	9.7 - 10.6
10/14/85	260	10.3	0.5	4.6	8	9.8 - 11.3
10/15/85	261	10.2	0.3	3.4	8	9.8 - 10.6
10/16/85	262	9.8	0.5	4.8	8	9.0 - 10.6
10/17/85	263	10.3	0.4	3.5	7	10.0 - 10.8
10/18/85	264	9.8	0.4	3.8	7	9.0 - 10.0
10/21/85	265	10.2	0.4	4.4	7	9.6 - 11.0
10/22/85	266	10.2	0.4	3.7	8	9.8 - 11.0
10/23/85	267	10.0	0.4	4.0	7	9.6 - 10.8
10/24/85	268	10.3	0.3	3.1	8	10.0 - 10.8
10/25/85	269	10.1	0.1	1.4	8	10.0 - 10.4
10/28/85	270	10.0	0.4	3.9	8	9.6 - 10.8
10/29/85	271	10.2	0.4	3.9	8	9.5 - 10.8
10/30/85	272	10.1	0.2	1.9	7	10.0 - 10.5
10/31/85	273	10.0	0.3	3.2	8	9.2 - 10.2

Mean Concentration (ppm) and % Relative Standard
Deviation for Each Exposure Day

10 PPM Chamber

<u>Date</u>	<u>Exposure Day</u>	<u>Mean</u>	<u>S.D.</u>	<u>% RSD</u>	<u>n</u>	<u>Range</u>
11/01/85	274	10.1	0.4	4.1	8	9.6 - 11.0
11/04/85	275	10.0	0.3	2.5	8	9.5 - 10.4
11/05/85	276	10.0	0.6	6.0	7	9.0 - 10.8
11/06/85	277	9.5	0.4	4.4	8	9.0 - 10.0
11/07/85	278	9.9	0.4	4.3	7	9.0 - 10.4
11/08/85	279	10.2	0.2	2.3	8	10.0 - 10.6
11/12/85	280	9.8	0.6	5.7	8	9.0 - 10.6
11/13/85	281	10.2	0.4	4.3	8	9.6 - 11.0
11/14/85	282	10.0	0.3	3.3	8	9.4 - 10.6
11/15/85	283	10.3	0.4	3.9	8	10.0 - 11.0
11/18/85	284	10.2	0.4	4.4	8	9.5 - 11.0
11/19/85	285	10.1	0.6	5.5	8	9.4 - 11.0
11/20/85	286	10.1	0.5	4.8	8	9.2 - 10.8
11/21/85	287	9.8	0.4	3.9	8	9.2 - 10.2
11/22/85	288	10.0	0.5	5.0	8	9.4 - 11.0
11/25/85	289	9.9	0.4	3.7	8	9.0 - 10.2
11/26/85	290	10.3	0.4	4.2	8	10.0 - 11.0
11/27/85	291	9.9	0.2	2.4	8	9.4 - 10.0

METHYL BROMIDE CHRONIC
EXPERIMENT 840002

Mean Concentration (ppm) and % Relative Standard
Deviation for Each Exposure Day

10 PPM Chamber

<u>Date</u>	<u>Exposure Day</u>	<u>Mean</u>	<u>S.D.</u>	<u>% RSD</u>	<u>n</u>	<u>Range</u>
12/02/85	292	9.8	0.4	3.8	8	9.0 - 10.2
12/03/85	293	9.7	0.5	4.9	8	9.0 - 10.4
12/04/85	294	10.0	0.2	1.7	8	9.6 - 10.2
12/05/85	295	9.9	0.7	6.7	9	9.0 - 10.7
12/06/85	296	9.8	0.4	4.4	8	9.0 - 10.4
12/09/85	297	10.0	0.3	3.4	8	9.5 - 10.6
12/10/85	298	10.0	0.4	4.4	8	9.4 - 10.8
12/11/85	299	9.8	0.6	6.2	6	8.8 - 10.6
12/12/85	300	9.7	0.5	4.8	8	9.0 - 10.0
12/13/85	301	9.9	0.5	4.6	8	9.0 - 10.4
12/16/85	302	10.1	0.2	1.8	8	10.0 - 10.4
12/17/85	303	10.1	0.5	4.7	7	9.6 - 11.0
12/18/85	304	10.2	0.5	4.9	8	9.6 - 11.2
12/19/85	305	10.1	0.2	1.8	8	10.0 - 10.5
12/20/85	306	10.2	0.3	2.8	8	10.0 - 10.6
12/23/85	307	9.6	0.4	4.2	8	9.0 - 10.0
12/24/85	308	10.1	0.4	3.9	8	9.5 - 10.6
12/27/85	309	9.9	0.4	4.0	8	9.0 - 10.4
12/30/85	310	10.1	0.3	3.1	7	9.5 - 10.4
12/31/85	311	10.3	0.4	3.7	8	10.0 - 11.0

METHYL BROMIDE CHRONIC
EXPERIMENT 840002

Methyl Bromide Study
Mean Concentration (ppm) and % Relative Standard
Deviation for Each Exposure Day

10 PPM Chamber

<u>Date</u>	<u>Exposure Day</u>	<u>Mean</u>	<u>S.D.</u>	<u>% RSD</u>	<u>n</u>	<u>Range</u>
01/02/86	312	9.9	0.4	3.8	8	9.3 - 10.6
01/03/86	313	10.1	0.3	2.8	8	9.6 - 10.6
01/06/86	314	10.0	0.5	4.9	8	9.0 - 10.8
01/07/86	315	10.0	0.2	2.1	7	9.8 - 10.5
01/08/86	316	9.9	0.8	7.9	8	8.6 - 11.0
01/09/86	317	9.9	0.4	4.0	8	9.0 - 10.4
01/10/86	318	10.0	0.3	2.6	8	9.4 - 10.2
01/13/86	319	9.7	0.3	2.8	8	9.2 - 10.0
01/14/86	320	10.1	0.2	2.3	8	9.8 - 10.5
01/15/86	321	9.8	0.5	5.2	8	9.0 - 10.4
01/16/86	322	9.7	0.4	3.8	8	9.0 - 10.0
01/17/86	323	10.3	0.6	5.6	9	9.4 - 11.0
01/20/86	324	10.1	0.2	2.2	7	10.0 - 10.6
01/21/86	325	9.7	0.3	3.3	8	9.2 - 10.0
01/22/86	326	10.0	0.4	3.9	8	9.5 - 10.6
01/23/86	327	10.1	0.2	2.3	8	9.6 - 10.4
01/24/86	328	10.0	0.6	6.3	8	9.0 - 11.0
01/27/86	329	9.7	0.5	5.3	7	9.0 - 10.6
01/28/86	330	9.8	0.4	4.1	8	9.0 - 10.2
01/29/86	331	10.2	0.3	2.8	8	10.0 - 10.8
01/30/86	332	10.0	0.1	1.1	8	9.8 - 10.2
01/31/86	333	10.2	0.2	2.4	7	10.0 - 10.6

METHYL BROMIDE CHRONIC
EXPERIMENT 840002

Methyl Bromide Study
Mean Concentration (ppm) and % Relative Standard
Deviation for Each Exposure Day

10 PPM Chamber

<u>Date</u>	<u>Exposure Day</u>	<u>Mean</u>	<u>S.D.</u>	<u>% RSD</u>	<u>n</u>	<u>Range</u>
02/03/86	334	10.2	0.4	4.3	8	9.6 - 10.8
02/04/86	335	10.1	0.1	1.5	8	10.0 - 10.4
02/05/86	336	9.9	0.4	4.3	7	9.0 - 10.4
02/06/86	337	10.0	0.3	3.5	8	9.4 - 10.4
02/07/86	338	10.1	0.3	3.3	8	9.4 - 10.6
02/10/86	339	10.1	0.4	3.7	7	9.4 - 10.5
02/11/86	340	10.2	0.4	4.1	7	9.7 - 11.0
02/12/86	341	9.9	0.3	3.1	8	9.4 - 10.4
02/13/86	342	10.0	0.4	4.3	8	9.2 - 10.6
02/14/86	343	9.9	0.5	5.4	8	9.2 - 11.0
02/18/86	344	9.9	0.5	5.2	8	9.0 - 10.8
02/19/86	345	9.8	0.3	2.7	8	9.3 - 10.0
02/20/86	346	10.3	0.4	4.2	7	9.8 - 11.0
02/21/86	347	10.1	0.2	2.1	8	10.0 - 10.6
02/24/86	348	9.8	0.5	5.2	8	8.8 - 10.6
02/25/86	349	10.0	0.4	4.3	8	9.0 - 10.4
02/26/86	350	10.0	0.2	1.7	8	9.8 - 10.2
02/27/86	351	10.0	0.3	2.9	7	9.4 - 10.2
02/28/86	352	10.1	0.4	4.1	8	9.6 - 10.8

METHYL BROMIDE CHRONIC
EXPERIMENT 040002

Methyl Bromide Study
Mean Concentration (ppm) and % Relative Standard
Deviation for Each Exposure Day

10 PPM Chamber

<u>Date</u>	<u>Exposure Day</u>	<u>Mean</u>	<u>S.D.</u>	<u>% RSD</u>	<u>n</u>	<u>Range</u>
03/03/86	353	10.0	0.3	3.2	8	9.5 - 10.4
03/04/86	354	9.9	0.4	4.4	8	9.2 - 10.5
03/05/86	355	9.8	0.2	2.1	8	9.4 - 10.0
03/06/86	356	9.8	0.5	4.6	8	9.0 - 10.4
03/07/86	357	9.9	0.6	5.8	8	9.0 - 11.0
03/10/86	358	9.9	0.5	4.8	8	9.0 - 10.4
03/11/86	359	10.1	0.5	4.5	8	9.4 - 10.8
03/12/86	360	10.2	0.2	1.8	8	10.0 - 10.4
03/13/86	361	10.1	0.2	2.1	8	9.8 - 10.4
03/14/86	362	9.9	0.6	5.9	8	9.2 - 10.8
03/17/86	363	10.1	0.5	5.0	7	9.2 - 10.6
03/18/86	364	9.9	0.2	2.0	7	9.6 - 10.2
03/19/86	365	10.3	0.4	4.3	8	9.8 - 11.0
03/20/86	366	10.0	0.4	3.8	7	9.5 - 10.6
03/21/86	367	10.2	0.2	2.4	8	10.0 - 10.6
03/24/86	368	9.9	0.6	5.7	8	9.2 - 10.8
03/25/86	369	10.2	0.4	3.6	8	9.8 - 10.8
03/26/86	370	10.0	0.3	2.5	8	9.5 - 10.2
03/27/86	371	10.0	0.5	4.7	8	9.4 - 10.5
03/28/86	372	10.0	0.5	4.9	8	9.2 - 10.8
03/31/86	373	10.0	0.4	4.2	8	9.2 - 10.6

METHYL BROMIDE CHRONIC
EXPERIMENT 040002

Methyl Bromide Study
Mean Concentration (ppm) and % Relative Standard
Deviation for Each Exposure Day

10 PPM Chamber

<u>Date</u>	<u>Exposure Day</u>	<u>Mean</u>	<u>S.D.</u>	<u>% RSD</u>	<u>n</u>	<u>Range</u>
04/01/86	374	10.1	0.7	6.5	8	9.3 - 11.0
04/02/86	375	10.0	0.3	3.4	8	9.6 - 10.5
04/03/86	376	9.7	0.4	3.7	8	9.2 - 10.2
04/04/86	377	10.0	0.3	2.8	8	9.8 - 10.5
04/07/86	378	9.8	0.3	3.4	7	9.2 - 10.2
04/08/86	379	9.9	0.4	4.3	8	9.5 - 10.8
04/09/86	380	9.7	0.3	3.5	8	9.2 - 10.2
04/10/86	381	10.0	0.4	3.7	8	9.6 - 10.5
04/11/86	382	9.6	0.6	6.2	8	8.8 - 10.6
04/14/86	383	10.1	0.9	8.7	7	9.0 - 11.6
04/15/86	384	10.0	0.4	4.3	8	9.4 - 10.8
04/16/86	385	10.0	0.5	4.8	8	9.4 - 10.8
04/17/86	386	9.9	0.5	4.6	7	9.0 - 10.4
04/18/86	387	10.0	0.3	2.9	8	9.5 - 10.4
04/21/86	388	10.0	0.3	2.8	8	9.6 - 10.5
04/22/86	389	10.0	0.7	7.0	8	9.0 - 11.0
04/23/86	390	9.8	0.7	6.9	8	8.6 - 10.6
04/24/86	391	9.9	0.4	3.9	8	9.4 - 10.6
04/25/86	392	9.9	0.8	8.1	8	9.0 - 11.4
04/28/86	393	10.1	0.7	7.3	8	9.4 - 11.5
04/29/86	394	9.9	0.7	7.5	8	8.6 - 11.0
04/30/86	395	9.6	0.4	4.6	8	9.2 - 10.4

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Methyl Bromide Study
Mean Concentration (ppm) and % Relative Standard
Deviation for Each Exposure Day

10 PPM Chamber

<u>Date</u>	<u>Exposure Day</u>	<u>Mean</u>	<u>S.D.</u>	<u>% RSD</u>	<u>n</u>	<u>Range</u>
05/01/86	396	9.8	0.4	4.0	7	9.2 - 10.4
05/02/86	397	9.9	0.6	5.7	8	9.0 - 11.0
05/05/86	398	10.1	0.4	4.0	8	9.5 - 10.8
05/06/86	399	9.7	0.4	4.5	8	9.0 - 10.4
05/07/86	400	10.1	0.7	7.2	8	9.0 - 11.4
05/08/86	401	9.9	0.8	8.5	8	9.0 - 11.4
05/09/86	402	10.0	0.1	0.7	8	10.0 - 10.2
05/12/86	403	10.2	0.5	5.1	7	9.2 - 10.6
05/13/86	404	10.1	0.8	7.6	7	9.0 - 11.0
05/14/86	405	10.4	0.9	9.1	7	9.0 - 11.3
05/15/86	406	10.6	0.7	6.4	5	9.9 - 11.7
05/16/86	407	10.5	0.2	2.0	5	10.3 - 10.8
05/19/86	408	10.6	0.5	4.3	8	10.0 - 11.4
05/20/86	409	10.2	0.4	4.0	7	9.6 - 10.8
05/21/86	410	10.2	0.4	4.0	7	9.8 - 11.0
05/22/86	411	10.3	0.4	3.9	7	9.6 - 10.8
05/23/86	412	10.3	0.5	4.7	7	10.0 - 11.0
05/27/86	413	10.3	0.6	6.2	8	9.2 - 11.0
05/28/86	414	10.5	0.6	5.7	7	9.8 - 11.6
05/29/86	415	9.7	0.3	2.9	8	9.4 - 10.0
05/30/86	416	9.9	0.4	4.0	8	9.4 - 10.6

METHYL BROMIDE CHRONIC
EXPERIMENT 940002

Methyl Bromide Study
Mean Concentration (ppm) and % Relative Standard
Deviation for Each Exposure Day

10 PPM Chamber

<u>Date</u>	<u>Exposure Day</u>	<u>Mean</u>	<u>S.D.</u>	<u>% RSD</u>	<u>n</u>	<u>Range</u>
06/02/86	417	10.1	0.6	6.0	8	8.8 - 11.0
06/03/86	418	10.3	0.2	2.3	7	10.0 - 10.6
06/04/86	419	10.3	0.6	5.8	7	9.8 - 11.5
06/05/86	420	10.0	0.6	5.5	8	9.5 - 11.2
06/06/86	421	10.2	0.5	5.2	8	9.2 - 11.0
06/09/86	422	10.4	0.5	4.5	8	10.0 - 11.0
06/10/86	423	10.0	0.6	5.7	8	9.0 - 10.8
06/11/86	424	10.2	0.5	5.2	8	9.2 - 10.8
06/12/86	425	9.7	0.5	5.5	7	9.0 - 10.4
06/13/86	426	10.0	0.6	6.4	8	9.0 - 10.8
06/16/86	427	10.4	0.4	3.8	7	10.0 - 11.0
06/17/86	428	10.4	0.6	5.8	7	9.6 - 11.2
06/18/86	429	9.9	0.7	6.7	8	8.8 - 11.0
06/19/86	430	9.9	0.5	4.8	8	9.0 - 10.6
06/20/86	431	10.1	0.5	5.1	8	9.0 - 10.8
06/23/86	432	10.5	0.5	4.8	8	9.5 - 11.0
06/24/86	433	9.9	0.6	5.8	8	8.6 - 10.4
06/25/86	434	9.8	0.4	3.9	8	9.0 - 10.4
06/26/86	435	10.3	0.4	3.4	8	10.0 - 10.8
06/27/86	436	10.1	0.4	4.0	8	9.6 - 10.8
06/30/86	437	10.1	0.5	5.2	8	9.0 - 10.8

METHYL BROMIDE CHRONIC
EXPERIMENT 3-10002

Methyl Bromide Study
Mean Concentration (ppm) and % Relative Standard
Deviation for Each Exposure Day

10 PPM Chamber

<u>Date</u>	<u>Exposure Day</u>	<u>Mean</u>	<u>S.D.</u>	<u>% RSD</u>	<u>n</u>	<u>Range</u>
07/01/86	438	9.9	0.3	2.6	8	9.6-10.2
07/02/86	439	10.1	0.4	3.6	8	9.4-10.5
07/07/86	440	10.1	0.4	4.1	7	9.4-10.6
07/08/86	441	10.0	0.4	4.1	8	9.5-10.8
07/09/86	442	9.9	0.5	4.7	8	9.0-10.4
07/10/86	443	10.3	0.3	3.0	7	10.0-10.8
07/11/86	444	9.9	0.4	4.3	8	9.4-10.7
07/14/86	445	10.1	0.5	4.6	8	9.4-10.6
07/15/86	446	10.0	0.4	3.5	8	9.4-10.4
07/16/86	447	10.1	0.1	1.4	8	9.8-10.2
07/17/86	448	10.3	0.8	7.4	7	9.2-11.5
07/18/86	449	10.0	0.5	5.3	8	9.0-10.5
07/21/86	450	10.4	0.4	3.8	8	10.0-11.0
07/22/86	451	10.4	0.4	3.6	8	10.0-11.0
07/23/86	452	10.2	0.4	4.0	8	9.4-10.6
07/24/86	453	10.1	0.4	3.8	8	9.2-10.4
07/25/86	454	10.0	0.4	4.1	8	9.4-10.5
07/28/86	455	9.9	0.3	3.2	8	9.4-10.4
07/29/86	456	10.3	0.4	4.2	8	9.6-10.8
07/30/86	457	10.0	0.6	6.4	8	9.0-11.2
07/31/86	458	8.9	0.3	3.4	8	9.4-10.4

METHYL BROMIDE CHRONIC
EXPOSURE 341002

Methyl Bromide Study
Mean Concentration (ppm) and % Relative Standard
Deviation for Each Exposure Day

10 PPM Chamber

<u>Date</u>	<u>Exposure Day</u>	<u>Mean</u>	<u>S.D.</u>	<u>% RSD</u>	<u>n</u>	<u>Range</u>
08/01/86	459	10.4	0.4	4.2	8	9.8-11.2
08/04/86	460	10.2	0.4	4.2	7	9.6-10.6
08/05/86	461	9.9	0.5	4.6	8	9.4-10.6
08/06/86	462	10.3	0.6	5.9	8	9.4-11.0
08/07/86	463	10.5	0.5	4.6	7	9.6-11.0
08/08/86	464	10.2	0.5	4.9	7	9.2-10.6
08/11/86	465	10.5	0.7	7.1	8	9.6-12.0
08/12/86	466	10.2	0.7	7.0	8	9.2-11.2
08/13/86	467	9.9	0.7	6.6	8	9.0-10.6
08/14/86	468	10.0	0.6	6.3	8	9.0-10.6
08/15/86	469	10.3	0.4	3.9	8	9.8-11.0
08/18/86	470	9.8	0.5	4.7	7	9.4-10.8
08/19/86	471	10.4	0.3	3.3	8	10.2-11.0
08/20/86	472	9.9	0.5	5.3	8	9.0-10.5
08/21/86	473	9.6	0.6	6.1	7	8.8-10.2
08/22/86	474	10.5	0.9	8.7	7	9.4-11.8
08/25/86	475	9.8	0.4	4.3	7	9.0-10.2
08/26/86	476	10.0	0.5	5.4	7	9.0-10.4
08/27/86	477	10.6	0.5	5.0	8	9.6-11.4
08/28/86	478	10.2	0.3	2.9	8	9.8-10.6
08/29/86	479	10.2	0.5	5.0	8	9.0-10.6

Methyl Bromide Study
Mean Concentration (ppm) and % Relative Standard
Deviation for Each Exposure Day

10 PPM Chamber

<u>Date</u>	<u>Exposure Day</u>	<u>Mean</u>	<u>S.D.</u>	<u>% RSD</u>	<u>n</u>	<u>Range</u>
09/02/86	480	10.1	0.3	2.9	8	9.8-10.6
09/03/86	481	10.6	0.4	3.5	7	10.0-11.0
09/04/86	482	9.7	0.8	7.9	7	9.0-11.0
09/05/86	483	9.9	0.4	4.3	7	9.1-10.3
09/08/86	484	9.9	0.7	6.9	8	8.9-10.8
09/09/86	485	9.7	0.3	3.1	8	9.1-10.2
09/10/86	486	10.0	0.6	6.0	8	8.7-10.7
09/11/86	487	9.6	0.9	9.1	8	8.3-10.4
09/12/86	488	10.1	0.2	2.5	8	9.8-10.6
09/15/86	489	10.0	0.4	4.4	7	9.1-10.5

METHYL BROMIDE CHRONIC
EXPOSURE REPORT 8400002

Mean Concentration (ppm) and % Relative Standard
Deviation for Each Exposure Day

33 PPM Chamber

Date	Exposure Day	Mean	S.D.	% RSD
09/26/84	1	33.2	1.4	4.1
09/27/84	2	34.1	0.9	2.6
09/28/84	3	33.7	1.7	5.1
10/01/84	4	33.9	1.3	3.9
10/02/84	5	34.4	0.9	2.7
10/03/84	6	33.5	2.2	6.5
10/04/84	7	32.9	2.4	7.3
10/05/84	8	33.1	1.5	4.4
10/08/84	9	33.8	0.9	2.7
10/09/84	10	33.6	1.1	3.2
10/10/84	11	33.7	0.7	2.2
10/11/84	12	33.6	0.9	2.6
10/12/84	13	32.8	0.9	2.6
10/15/84	14	32.8	1.5	4.7
10/16/84	15	33.0	1.4	4.1
10/17/84	16	32.2	1.2	3.6
10/18/84	17	31.9	1.0	3.0
10/19/84	18	33.1	0.5	1.6
10/22/84	19	31.6	1.1	3.4
10/23/84	20	32.4	0.9	2.6
10/24/84	21	31.7	0.8	2.5
10/25/84	22	32.5	1.2	3.8
10/26/84	23	32.2	1.1	3.4
10/29/84	24	32.2	1.8	5.6
10/30/84	25	32.3	0.7	2.1
10/31/84	26	33.2	1.8	5.5

Mean Concentration (ppm) and % Relative Standard
Deviation for Each Exposure Day

33 PPM Chamber

Date	Exposure Day	Mean	S.D.	% RSD
11/01/84	27	33.9	1.1	3.3
11/02/84	28	31.5	0.6	1.8
11/05/84	29	33.0	1.2	3.6
11/06/84	30	32.4	1.4	4.2
11/07/84	31	32.0	0.8	2.4
11/08/84	32	32.7	2.3	7.0
11/09/84	33	33.5	0.6	1.6
11/13/84	34	32.7	1.7	5.2
11/14/84	35	32.7	0.8	2.6
11/15/84	36	34.1	0.8	2.4
11/16/84	37	32.9	3.0	9.1
11/19/84	38	31.7	2.4	7.6
11/20/84	39	32.6	0.8	2.3
11/21/84	40	33.0	1.4	4.2
11/26/84	41	33.2	1.2	3.8
11/27/84	42	32.9	0.7	2.2
11/28/84	43	32.6	1.2	3.8
11/29/84	44	31.8	0.7	2.1
11/30/84	45	32.3	1.4	4.5

Mean Concentration (ppm) and % Relative Standard
Deviation for Each Exposure Day

33 PPM Chamber

Date	Exposure Day	Mean	S.D.	% RSD
12/03/84	46	32.6	1.1	3.5
12/04/84	47	32.9	0.2	0.7
12/05/84	48	33.4	0.5	1.5
12/06/84	49	33.3	0.5	1.4
12/07/84	50	32.6	0.6	2.0
12/10/84	51	32.4	0.9	2.7
12/11/84	52	32.9	0.7	2.3
12/12/84	53	32.7	1.0	3.0
12/13/84	54	33.7	1.5	4.4
12/14/84	55	33.5	0.8	2.4
12/17/84	56	33.6	1.0	2.9
12/18/84	57	34.8	0.6	1.8
12/19/84	58	33.2	1.4	4.1
12/20/84	59	32.4	1.0	3.0
12/21/84	60	31.8	0.6	2.0
12/24/84	61	33.2	0.5	1.7
12/27/84	62	32.4	0.4	1.2
12/28/84	63	34.0	1.0	3.1
12/31/84	64	33.3	1.0	2.9

Mean Concentration (ppm) and % Relative Standard
Deviation for Each Exposure Day

33 PPM Chamber

Date	Exposure Day	Mean	S.D.	% RSD
01/02/85	65	33.5	1.8	5.3
01/03/85	66	31.5	2.0	6.3
01/04/85	67	33.7	1.0	3.0
01/07/85	68	34.0	0.3	1.0
01/08/85	69	32.1	0.5	1.6
01/09/85	70	32.9	0.7	2.0
01/10/85	71	33.8	0.7	1.9
01/11/85	72	33.4	1.2	3.6
01/14/85	73	32.7	1.3	3.9
01/15/85	74	33.3	0.5	1.4
01/16/85	75	33.7	0.4	1.1
01/17/85	76	32.6	0.6	1.7
01/18/85	77	32.7	1.5	4.7
01/21/85	78	33.0	1.4	4.2
01/22/85	79	33.5	0.9	2.7
01/23/85	80	33.3	0.6	1.7
01/24/85	81	33.3	0.9	2.6
01/25/85	82	33.9	0.6	1.9
01/28/85	83	34.0	0.6	1.7
01/29/85	84	33.0	1.6	4.8
01/30/85	85	33.3	1.2	3.5
01/31/85	86	33.1	1.1	3.4

Mean Concentration (ppm) and % Relative Standard
Deviation for Each Exposure Day

33 PPM Chamber

Date	Exposure Day	Mean	S.D.	% RSD	n	Range
02/01/85	87	33.5	0.6	1.7	7	32.6-34.2
02/04/85	88	33.7	1.1	3.1	8	32.4-35.0
02/05/85	89	32.8	1.1	3.4	7	31.0-34.8
02/06/85	90	33.1	0.8	2.5	7	32.2-34.8
02/07/85	91	33.4	0.5	1.4	7	32.5-34.0
02/08/85	92	32.7	0.4	1.3	7	32.0-33.2
02/11/85	93	33.7	0.9	2.7	7	32.0-34.6
02/12/85	94	32.4	1.5	4.7	7	31.0-34.6
02/13/85	95	32.5	1.2	3.7	7	30.0-33.6
02/14/85	96	33.2	0.8	2.5	8	32.5-34.6
02/15/85	97	33.7	0.8	2.4	7	32.6-34.8
02/19/85	98	34.0	1.2	3.7	7	32.4-35.8
02/20/85	99	33.4	0.9	2.7	8	32.0-34.3
02/21/85	100	33.5	1.2	3.7	7	32.2-35.6
02/22/85	101	33.1	0.8	2.5	8	31.8-34.2
02/25/85	102	33.8	1.3	3.9	7	32.2-35.8
02/26/85	103	33.0	1.4	4.4	7	31.8-35.6
02/27/85	104	33.0	0.6	1.7	7	32.0-33.8
02/28/85	105	33.5	0.9	2.8	7	32.0-35.0

Mean Concentration (ppm) and % Relative Standard
Deviation for Each Exposure Day

33 PPM Chamber

Date	Exposure Day	Mean	S.D.	% RSD	n	Range
03/01/85	106	32.3	2.6	8.1	9	25.8-34.0
03/06/85	107	32.9	1.3	4.0	9	31.4-35.6
03/07/85	108	33.6	0.4	1.1	11	33.0-34.2
03/08/85	109	33.1	1.2	3.5	11	31.4-35.6
03/11/85	110	33.0	1.5	14.6	10	31.0-35.0
03/12/85	111	32.2	1.3	4.1	11	30.8-34.6
03/13/85	112	32.8	0.9	2.7	11	32.0-34.6
03/14/85	113	32.7	1.1	3.5	11	30.5-34.4
03/15/85	114	32.6	1.0	2.9	9	31.0-33.6
03/18/85	115	33.0	1.2	3.7	11	31.6-36.0
03/19/85	116	32.6	1.4	4.4	11	30.0-34.8
03/20/85	117	32.6	1.0	3.2	11	31.6-35.5
03/21/85	118	33.1	0.8	2.4	7	32.0-34.0
03/22/85	119	33.0	0.4	1.1	7	32.6-33.5
03/25/85	120	33.7	1.0	2.9	7	32.4-35.2
03/26/85	121	33.6	0.9	2.8	7	33.0-35.6
03/27/85	122	34.1	2.4	6.9	8	31.8-39.4
03/28/85	123	34.0	0.6	1.9	8	33.2-35.0
03/29/85	124	33.1	1.6	4.7	7	31.0-35.0

Mean Concentration (ppm) and % Relative Standard
Deviation for Each Exposure Day

33 PPM Chamber

Date	Exposure Day	Mean	S.D.	% RSD	n	Range
04/01/85	125	33.8	0.7	2.2	7	32.8-35.2
04/02/85	126	33.2	1.0	2.9	8	32.2-34.5
04/03/85	127	33.3	0.7	2.1	7	32.2-34.4
04/04/85	128	34.0	0.6	1.7	7	33.0-34.8
04/05/85	129	34.0	0.9	2.5	8	32.8-35.0
04/08/85	130	33.1	1.9	5.6	9	31.5-37.2
04/09/85	131	32.6	1.3	3.9	7	30.0-34.0
04/10/85	132	33.8	1.2	3.5	7	32.2-35.5
04/11/85	133	33.2	0.5	1.7	7	32.2-33.8
04/12/85	134	33.6	0.8	2.5	8	32.0-34.6
04/15/85	135	33.2	1.1	3.4	7	31.8-34.6
04/16/85	136	33.1	1.4	4.2	10	31.0-35.6
04/17/85	137	33.2	1.0	3.0	7	32.5-35.4
04/18/85	138	33.7	0.9	2.6	8	32.2-35.2
04/19/85	139	33.2	1.0	2.9	8	32.0-34.8
04/22/85	140	32.6	1.1	3.3	8	31.0-34.2
04/23/85	141	33.2	0.5	1.6	8	32.5-34.0
04/24/85	142	32.9	1.0	3.1	7	31.4-34.0
04/25/85	143	32.6	0.9	2.7	7	31.5-33.8
04/26/85	144	34.0	1.2	3.7	8	31.5-35.6
04/29/85	145	32.9	1.3	4.0	7	31.4-35.0
04/30/85	146	33.3	1.0	3.0	7	31.6-34.8

CHRONIC
EXPOSURE

Mean Concentration (ppm) and % Relative Standard
Deviation for Each Exposure Day

33 PPM Chamber

Date	Exposure Day	Mean	S.D.	% RSD	n	Range
05/01/85	147	33.2	0.8	2.4	7	32.2-34.4
05/02/85	148	32.8	0.6	1.8	8	32.5-34.2
05/03/85	149	32.8	0.9	2.7	8	31.6-33.8
05/06/85	150	33.0	1.3	3.8	8	31.6-35.0
05/07/85	151	33.1	0.9	2.8	8	31.5-34.6
05/08/85	152	33.2	0.9	2.9	8	32.0-35.0
05/09/85	153	33.4	0.9	2.6	7	32.5-35.0
05/10/85	154	33.8	1.2	3.6	8	32.8-36.0
05/13/85	155	33.0	0.9	2.9	7	31.4-34.0
05/14/85	156	33.0	1.2	3.7	7	30.8-34.5
05/15/85	157	34.2	0.6	1.9	7	33.6-35.5
05/16/85	158	33.2	1.3	4.1	7	30.4-34.0
05/17/85	159	33.4	0.8	2.4	8	32.4-35.0
05/20/85	160	33.5	0.9	2.8	8	32.3-34.6
05/21/85	161	33.9	0.6	1.7	7	32.8-34.5
05/22/85	162	33.3	0.8	2.5	8	32.6-34.5
05/23/85	163	33.4	0.9	2.7	8	32.4-35.0
05/24/85	164	33.1	1.4	4.3	8	30.7-35.0
05/28/85	165	33.1	0.6	1.8	7	32.0-33.8
05/29/85	166	33.0	0.7	2.2	7	32.2-34.4
05/30/85	167	33.0	0.9	2.8	7	31.4-33.8
05/31/85	168	33.2	1.2	3.7	7	31.8-35.5

CHRONIC
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33 PPM Chamber

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Mean Concentration (ppm) and % Relative Standard
Deviation for Each Exposure Day

33 PPM Chamber

Date	Exposure Day	Mean	S.D.	% RSD	n	Range
07/01/85	189	32.8	0.9	2.7	7	32.0 - 34.6
07/02/85	190	33.2	1.1	3.3	7	32.0 - 34.2
07/03/85	191	33.7	0.7	2.0	8	33.0 - 35.0
07/08/85	192	33.5	1.0	3.1	8	32.2 - 35.0
07/09/85	193	33.6	0.8	2.4	7	32.0 - 34.4
07/10/85	194	33.8	0.8	2.4	8	32.7 - 35.5
07/11/85	195	33.5	0.6	1.7	8	32.8 - 34.4
07/12/85	196	33.5	0.8	2.5	8	32.8 - 35.0
07/15/85	197	33.7	1.1	3.2	8	31.4 - 35.0
07/16/85	198	33.7	0.7	2.0	7	32.8 - 34.8
07/17/85	199	33.5	0.6	1.8	8	32.6 - 34.5
07/18/85	200	33.5	0.7	2.1	8	32.6 - 34.5
07/19/85	201	33.2	1.0	3.1	8	32.0 - 35.0
07/22/85	202	33.2	0.9	2.6	8	32.0 - 34.8
07/23/85	203	33.1	0.7	2.0	8	32.0 - 34.0
07/24/85	204	33.3	0.8	2.5	7	32.4 - 35.0
07/25/85	205	33.7	0.8	2.3	8	32.6 - 35.2
07/26/85	206	33.4	0.6	1.9	7	32.5 - 34.2
07/29/85	207	32.9	1.6	4.9	7	28.5 - 34.4
07/30/85	208	33.1	1.0	3.0	7	31.6 - 34.3
07/31/85	209	33.6	0.8	2.3	7	32.2 - 34.4

THYROID GLAND CHRONIC
AGENT 640002

Mean Concentration (ppm) and % Relative Standard
Deviation for Each Exposure Day

33 PPM Chamber

<u>Date</u>	<u>Exposure Day</u>	<u>Mean</u>	<u>S.D.</u>	<u>% RSD</u>	<u>n</u>	<u>Range</u>
08/01/85	210	33.5	1.0	3.1	8	31.8 - 34.5
08/02/85	211	33.2	1.0	3.0	7	32.0 - 35.0
08/05/85	212	32.7	0.7	2.3	7	32.2 - 34.0
08/06/85	213	32.9	1.0	3.0	8	30.8 - 34.0
08/07/85	214	33.6	0.6	1.7	8	32.5 - 34.3
08/08/85	215	33.1	1.3	3.9	7	31.3 - 34.9
08/09/85	216	33.4	1.1	3.3	7	31.3 - 34.6
08/12/85	217	33.1	1.2	3.6	7	31.0 - 34.7
08/13/85	218	33.2	0.5	1.6	8	32.0 - 33.7
08/14/85	219	33.3	1.3	3.8	8	31.3 - 35.5
08/15/85	220	32.9	2.0	6.0	9	30.4 - 36.2
08/16/85	221	32.9	1.2	3.6	8	31.1 - 34.9
08/19/85	222	32.8	0.7	2.1	7	31.6 - 33.7
08/20/85	223	32.7	1.3	3.9	8	30.5 - 34.3
08/21/85	224	33.0	0.5	1.4	8	32.6 - 34.1
08/22/85	225	33.4	1.3	3.8	8	30.7 - 34.4
08/23/85	226	32.9	1.5	4.5	7	31.6 - 35.2
08/26/85	227	33.1	0.9	2.7	8	32.0 - 34.5
08/27/85	228	33.5	0.3	0.9	8	33.2 - 34.0
08/28/85	229	33.2	0.7	2.0	7	32.4 - 34.0
08/29/85	230	33.2	1.9	5.8	7	29.4 - 34.9
08/30/85	231	33.9	1.3	3.9	8	32.6 - 35.8

ETHYL MERCAPIDE CHRONIC
EXPOSURE 040002

Mean Concentration (ppm) and % Relative Standard
Deviation for Each Exposure Day

33 PPM Chamber

<u>Date</u>	<u>Exposure Day</u>	<u>Mean</u>	<u>S.D.</u>	<u>% RSD</u>	<u>n</u>	<u>Range</u>
09/03/85	232	33.5	1.3	3.9	8	31.7 - 35.4
09/04/85	233	34.1	1.5	4.5	8	32.2 - 37.2
09/05/85	234	33.0	1.1	3.4	8	31.7 - 35.0
09/06/85	235	33.7	1.3	3.9	7	32.0 - 35.4
09/09/85	236	33.5	1.2	3.6	8	32.1 - 35.0
09/10/85	237	33.4	1.6	4.7	7	30.4 - 35.6
09/11/85	238	34.3	0.2	0.5	8	34.1 - 34.5
09/12/85	239	33.6	0.7	2.2	7	33.0 - 34.8
09/13/85	240	36.6	1.7	5.1	7	30.6 - 35.5
09/16/85	241	33.3	1.3	3.9	7	32.0 - 35.8
09/17/85	242	32.7	0.3	0.8	8	32.2 - 33.0
09/18/85	243	33.3	0.6	1.9	8	32.2 - 34.0
09/19/85	244	33.7	0.8	2.5	7	33.0 - 35.4
09/20/85	245	33.1	1.0	3.0	8	31.5 - 34.6
09/23/85	246	33.1	0.8	2.5	7	31.5 - 34.0
09/24/85	247	33.2	1.1	3.4	7	32.0 - 34.4
09/25/85	248	32.5	0.6	1.9	8	32.0 - 33.8
09/26/85	249	32.8	0.8	2.3	8	31.0 - 33.6
09/30/85	250	33.2	1.0	3.0	9	31.5 - 34.5

CHRONIC
EXPOSURE 2-10002

Mean Concentration (ppm) and % Relative Standard
Deviation for Each Exposure Day

33 PPM Chamber

<u>Date</u>	<u>Exposure Day</u>	<u>Mean</u>	<u>S.D.</u>	<u>% RSD</u>	<u>n</u>	<u>Range</u>
10/01/85	251	33.4	1.3	3.9	8	31.0 - 35.0
10/02/85	252	33.5	0.8	2.4	8	32.0 - 34.8
10/03/85	253	33.5	0.7	2.1	8	32.5 - 34.6
10/04/85	254	32.6	0.3	1.0	7	32.0 - 33.0
10/07/85	255	33.8	0.5	1.6	7	33.0 - 34.4
10/08/85	256	33.1	0.8	2.3	7	32.0 - 34.4
10/09/85	257	33.5	1.1	3.3	8	31.0 - 34.4
10/10/85	258	33.6	0.9	2.7	8	32.3 - 34.8
10/11/85	259	33.5	0.6	1.7	8	32.5 - 34.6
10/14/85	260	33.5	1.2	3.6	8	31.1 - 34.7
10/15/85	261	33.7	0.8	2.5	8	32.5 - 35.0
10/16/85	262	32.9	0.3	0.8	8	32.4 - 33.2
10/17/85	263	32.5	0.4	1.1	8	32.0 - 33.0
10/18/85	264	32.6	1.0	2.9	8	31.5 - 34.0
10/21/85	265	33.2	0.4	1.3	8	32.5 - 34.0
10/22/85	266	33.3	1.0	2.9	8	31.5 - 34.6
10/23/85	267	32.8	1.0	2.9	7	31.6 - 34.0
10/24/85	268	33.7	0.7	2.0	8	32.6 - 34.6
10/25/85	269	33.2	0.9	2.6	8	31.5 - 34.0
10/28/85	270	33.7	0.8	2.4	8	32.4 - 35.2
10/29/85	271	33.1	0.7	2.0	8	32.3 - 34.4
10/30/85	272	33.5	0.7	2.0	7	32.5 - 34.4
10/31/85	273	32.8	1.2	3.5	8	31.8 - 35.0

10/31/85
10/31/85

Mean Concentration (ppm) and % Relative Standard
Deviation for Each Exposure Day

33 PPM Chamber

<u>Date</u>	<u>Exposure Day</u>	<u>Mean</u>	<u>S.D.</u>	<u>% RSD</u>	<u>n</u>	<u>Range</u>
11/01/85	274	33.3	1.1	3.4	8	31.0 - 34.5
11/04/85	275	33.7	0.5	1.6	8	33.0 - 34.4
11/05/85	276	33.7	0.5	1.5	8	33.0 - 34.2
11/06/85	277	33.2	0.7	2.2	8	31.8 - 34.2
11/07/85	278	33.6	0.5	1.5	8	33.0 - 34.2
11/08/85	279	33.0	1.0	3.1	8	32.0 - 34.5
11/12/85	280	33.4	1.2	3.5	8	31.5 - 35.0
11/13/85	281	33.0	1.4	4.2	8	31.0 - 34.6
11/14/85	282	33.4	1.2	3.5	8	31.6 - 35.0
11/15/85	283	33.0	1.4	4.3	8	31.0 - 35.0
11/18/85	284	33.6	1.0	2.8	8	32.0 - 34.8
11/19/85	285	33.5	0.6	1.7	8	32.8 - 34.0
11/20/85	286	33.4	1.0	3.1	8	31.6 - 34.4
11/21/85	287	33.2	1.2	3.6	8	32.0 - 35.5
11/22/85	288	33.1	0.5	1.6	8	32.4 - 34.0
11/25/85	289	32.9	0.5	1.6	8	32.0 - 33.8
11/26/85	290	33.4	0.4	1.3	8	33.0 - 34.0
11/27/85	291	33.2	0.4	1.2	8	32.8 - 34.0

Mean Concentration (ppm) and % Relative Standard
Deviation for Each Exposure Day

33 PPM Chamber

<u>Date</u>	<u>Exposure Day</u>	<u>Mean</u>	<u>S.D.</u>	<u>% RSD</u>	<u>n</u>	<u>Range</u>
12/02/85	292	33.3	0.5	1.6	8	32.5 - 34.0
12/03/85	293	33.5	0.5	1.5	8	33.0 - 34.2
12/04/85	294	32.6	0.8	2.5	8	31.5 - 34.0
12/05/85	295	32.2	1.2	3.6	9	30.8 - 34.3
12/06/85	296	33.3	1.0	3.0	8	31.0 - 34.0
12/09/85	297	33.3	0.8	2.5	8	31.5 - 34.0
12/10/85	298	33.8	0.3	1.0	8	33.0 - 34.0
12/11/85	299	33.3	2.5	7.5	8	27.8 - 35.8
12/12/85	300	32.5	0.3	1.0	8	32.0 - 33.0
12/13/85	301	32.3	0.6	2.0	8	31.0 - 33.0
12/16/85	302	33.3	0.7	2.0	8	32.0 - 34.0
12/17/85	303	33.1	0.3	1.0	7	32.6 - 33.5
12/18/85	304	32.6	0.6	1.8	8	31.6 - 33.4
12/19/85	305	33.3	1.2	3.6	8	31.8 - 35.0
12/20/85	306	33.8	0.4	1.2	8	33.0 - 34.4
12/23/85	307	33.1	0.8	2.4	8	32.0 - 34.4
12/24/85	308	33.3	0.7	2.2	8	32.8 - 35.0
12/27/85	309	33.8	0.3	0.8	8	33.4 - 34.2
12/30/85	310	33.8	0.5	1.6	8	32.5 - 34.0
12/31/85	311	33.4	0.7	2.2	8	33.0 - 35.0

Methyl Bromide Study
Mean Concentration (ppm) and % Relative Standard
Deviation for Each Exposure Day

33 PPM Chamber

<u>Date</u>	<u>Exposure Day</u>	<u>Mean</u>	<u>S.D.</u>	<u>% RSD</u>	<u>n</u>	<u>Range</u>
01/02/86	312	33.4	1.0	2.9	8	32.2 - 35.0
01/03/86	313	33.5	1.1	3.3	8	32.0 - 35.5
01/06/86	314	33.5	1.1	3.3	8	31.5 - 34.4
01/07/86	315	33.5	0.5	1.4	7	33.0 - 34.2
01/08/86	316	33.2	1.2	3.6	8	31.5 - 34.4
01/09/86	317	33.6	0.9	2.8	8	32.5 - 35.0
01/10/86	318	33.3	0.8	2.4	8	32.0 - 34.6
01/13/86	319	33.1	0.9	2.8	8	32.0 - 34.5
01/14/86	320	33.1	0.7	2.2	8	32.2 - 34.0
01/15/86	321	33.2	1.0	3.1	8	31.8 - 34.8
01/16/86	322	32.6	0.4	1.4	8	32.0 - 33.0
01/17/86	323	32.9	1.5	4.5	9	30.0 - 34.6
01/20/86	324	32.7	0.6	1.9	8	31.8 - 33.8
01/21/86	325	32.9	0.5	1.6	8	32.0 - 33.8
01/22/86	326	32.8	1.7	5.3	8	29.0 - 35.0
01/23/86	327	32.9	0.3	1.0	8	32.6 - 33.6
01/24/86	328	32.5	0.4	1.3	8	32.0 - 33.0
01/27/86	329	33.0	1.0	3.1	8	31.0 - 34.0
01/28/86	330	32.5	0.3	1.0	7	32.0 - 33.0
01/29/86	331	32.8	0.4	1.1	8	32.0 - 33.0
01/30/86	332	33.2	0.7	2.1	8	32.4 - 34.0
01/31/86	333	33.7	0.3	0.9	8	33.2 - 34.0

Methyl Bromide Study
Mean Concentration (ppm) and % Relative Standard
Deviation for Each Exposure Day

33 PPM Chamber

<u>Date</u>	<u>Exposure Day</u>	<u>Mean</u>	<u>S.D.</u>	<u>% RSD</u>	<u>n</u>	<u>Range</u>
02/03/86	334	33.4	0.7	2.0	8	32.0 - 34.0
02/04/86	335	33.3	0.3	1.0	8	33.0 - 33.8
02/05/86	336	33.5	1.8	5.3	8	29.2 - 34.5
02/06/86	337	32.8	0.5	1.6	8	32.0 - 33.3
02/07/86	338	32.9	0.4	1.2	8	32.2 - 33.4
02/10/86	339	32.4	0.8	2.6	9	31.0 - 33.3
02/11/86	340	33.6	0.3	0.9	8	33.0 - 34.0
02/12/86	341	33.1	1.1	3.2	8	31.2 - 34.4
02/13/86	342	33.5	1.3	3.8	8	30.5 - 34.4
02/14/86	343	33.2	0.8	2.3	8	32.2 - 34.5
02/18/86	344	33.4	0.6	1.7	8	32.5 - 34.2
02/19/86	345	33.1	0.7	2.0	8	32.3 - 34.5
02/20/86	346	33.0	0.7	2.1	8	32.4 - 34.5
02/21/86	347	33.3	1.0	3.1	8	31.5 - 35.0
02/24/86	348	33.2	1.0	2.9	8	31.5 - 34.8
02/25/86	349	33.7	0.7	2.1	8	32.2 - 34.8
02/26/86	350	33.1	0.5	1.5	8	32.2 - 33.8
02/27/86	351	33.2	0.6	1.9	8	32.4 - 34.2
02/28/86	352	32.9	1.1	3.3	8	32.0 - 34.8

Methyl Bromide Study
Mean Concentration (ppm) and % Relative Standard
Deviation for Each Exposure Day

33 PPM Chamber

<u>Date</u>	<u>Exposure Day</u>	<u>Mean</u>	<u>S.D.</u>	<u>% RSD</u>	<u>n</u>	<u>Range</u>
03/03/86	353	33.2	1.4	4.2	8	32.0 - 36.2
03/04/86	354	33.2	1.2	3.5	8	32.4 - 35.6
03/05/86	355	33.3	1.3	4.0	8	31.5 - 35.0
03/06/86	356	33.3	0.6	1.7	8	32.5 - 34.0
03/07/86	357	33.1	1.1	3.2	8	31.0 - 34.4
03/10/86	358	33.3	1.1	3.2	8	31.5 - 35.0
03/11/86	359	33.2	0.5	1.5	8	32.6 - 34.0
03/12/86	360	33.4	0.9	2.7	8	31.6 - 34.4
03/13/86	361	33.4	0.9	2.8	8	32.0 - 34.8
03/14/86	362	33.6	0.6	1.7	8	32.6 - 34.2
03/17/86	363	33.3	1.0	2.9	8	31.8 - 34.4
03/18/86	364	33.7	0.4	1.1	7	33.2 - 34.2
03/19/86	365	33.3	0.8	2.4	8	31.5 - 34.0
03/20/86	366	33.7	0.9	2.6	8	32.6 - 35.5
03/21/86	367	33.3	0.6	1.8	8	32.5 - 34.0
03/24/86	368	33.1	0.9	2.6	8	31.2 - 34.2
03/25/86	369	33.1	0.8	2.3	8	32.0 - 34.0
03/26/86	370	32.8	1.2	3.5	8	32.0 - 35.0
03/27/86	371	32.8	0.9	2.6	8	30.8 - 33.5
03/28/86	372	33.4	0.9	2.6	8	32.2 - 34.5
03/31/86	373	33.0	1.0	3.1	8	32.0 - 34.4

Methyl Bromide Study
Mean Concentration (ppm) and % Relative Standard
Deviation for Each Exposure Day

33 PPM Chamber

<u>Date</u>	<u>Exposure Day</u>	<u>Mean</u>	<u>S.D.</u>	<u>% RSD</u>	<u>n</u>	<u>Range</u>
04/01/86	374	33.4	0.4	1.2	8	33.0 - 34.0
04/02/86	375	32.5	0.5	1.5	8	32.0 - 33.2
04/03/86	376	32.8	0.5	1.5	8	32.0 - 33.6
04/04/86	377	32.8	0.3	0.8	8	32.5 - 33.2
04/07/86	378	32.8	1.2	3.7	7	30.5 - 34.2
04/08/86	379	33.5	0.7	2.2	8	32.3 - 34.5
04/09/86	380	32.9	1.2	3.7	8	31.4 - 34.8
04/10/86	381	33.6	1.7	4.9	8	31.0 - 36.4
04/11/86	382	33.3	1.1	3.3	8	31.5 - 34.6
04/14/86	383	34.6	0.6	1.8	8	33.8 - 35.5
04/15/86	384	33.4	0.9	2.8	8	32.8 - 35.5
04/16/86	385	33.0	0.6	1.7	8	32.2 - 34.0
04/17/86	386	33.8	0.4	1.3	7	33.2 - 34.5
04/18/86	387	33.2	1.3	3.8	8	31.2 - 35.5
04/21/86	388	33.1	1.0	3.1	8	30.8 - 34.0
04/22/86	389	33.4	1.3	4.0	8	31.4 - 36.0
04/23/86	390	33.0	0.7	2.2	8	31.5 - 33.6
04/24/86	391	33.0	0.9	2.9	8	32.0 - 34.8
04/25/86	392	32.6	0.7	2.1	8	31.8 - 33.8
04/28/86	393	33.2	1.8	5.5	8	29.7 - 35.8
04/29/86	394	33.0	1.3	4.1	8	30.8 - 35.2
04/30/86	395	33.4	1.5	4.4	8	31.0 - 35.0

Methyl Bromide Study
Mean Concentration (ppm) and % Relative Standard
Deviation for Each Exposure Day

33 PPM Chamber

<u>Date</u>	<u>Exposure Day</u>	<u>Mean</u>	<u>S.D.</u>	<u>% RSD</u>	<u>n</u>	<u>Range</u>
05/01/86	396	33.5	1.7	5.0	7	30.4 - 35.7
05/02/86	397	33.0	0.8	2.6	8	32.0 - 34.5
05/05/86	398	33.5	1.1	3.3	8	31.8 - 35.0
05/06/86	399	33.2	1.6	4.7	8	31.0 - 35.0
05/07/86	400	33.1	0.7	2.2	8	32.0 - 34.0
05/08/86	401	31.1	1.3	3.8	7	30.4 - 34.0
05/09/86	402	32.2	0.6	1.9	7	31.8 - 33.6
05/12/86	403	32.7	1.7	5.2	7	30.0 - 35.0
05/13/86	404	32.6	2.7	8.2	7	29.2 - 37.0
05/14/86	405	33.1	0.9	2.8	7	32.2 - 34.2
05/15/86	406	31.7	2.7	8.5	6	27.2 - 35.0
05/16/86	407	31.5	2.4	7.6	5	29.2 - 34.0
05/19/86	408	32.7	0.6	1.9	8	32.0 - 33.8
05/20/86	409	32.9	0.9	2.8	7	31.4 - 34.0
05/21/86	410	33.0	0.5	1.5	7	32.0 - 33.6
05/22/86	411	33.2	1.1	3.2	7	31.5 - 34.4
05/23/86	412	33.1	0.9	2.8	7	32.2 - 34.8
05/27/86	413	33.7	0.9	2.6	8	32.5 - 35.2
05/28/86	414	32.9	1.3	4.0	7	30.4 - 34.4
05/29/86	415	33.4	1.4	4.2	8	31.6 - 35.6
05/30/86	416	32.9	1.3	3.8	8	30.2 - 34.0

Methyl Bromide Study
Mean Concentration (ppm) and % Relative Standard
Deviation for Each Exposure Day

33 PPM Chamber

<u>Date</u>	<u>Exposure Day</u>	<u>Mean</u>	<u>S.D.</u>	<u>% RSD</u>	<u>n</u>	<u>Range</u>
06/02/86	417	32.9	1.5	4.5	9	31.6 - 35.8
06/03/86	418	33.3	1.0	3.1	7	31.4 - 34.5
06/04/86	419	33.3	1.1	3.4	7	31.8 - 34.8
06/05/86	420	33.9	1.1	3.3	8	31.6 - 35.5
06/06/86	421	33.4	0.6	1.8	8	32.5 - 34.0
06/09/86	422	33.1	1.1	3.4	8	31.4 - 35.0
06/10/86	423	33.3	0.9	2.6	8	32.0 - 34.2
06/11/86	424	33.6	0.8	2.4	8	31.8 - 34.5
06/12/86	425	33.5	0.7	2.1	8	33.0 - 35.0
06/13/86	426	33.6	1.0	2.9	8	32.0 - 35.2
06/16/86	427	33.1	0.5	1.5	7	32.4 - 34.0
06/17/86	428	33.2	1.1	3.3	8	30.8 - 34.6
06/18/86	429	32.8	1.5	4.7	8	30.6 - 35.4
06/19/86	430	32.9	0.7	2.2	8	31.5 - 34.0
06/20/86	431	33.4	0.4	1.3	8	33.0 - 34.0
06/23/86	432	34.2	1.1	3.2	8	32.8 - 36.0
06/24/86	433	33.4	0.8	2.4	8	31.8 - 34.5
06/25/86	434	33.6	1.0	2.8	8	31.8 - 35.0
06/26/86	435	33.6	1.2	3.6	8	31.8 - 35.5
06/27/86	436	33.2	1.2	3.5	8	31.6 - 35.0
06/30/86	437	33.3	1.1	3.4	8	31.7 - 34.5

Methyl Bromide Study
Mean Concentration (ppm) and % Relative Standard
Deviation for Each Exposure Day

33 PPM Chamber

<u>Date</u>	<u>Exposure Day</u>	<u>Mean</u>	<u>S.D.</u>	<u>% RSD</u>	<u>n</u>	<u>Range</u>
07/01/86	438	33.0	0.7	2.2	8	32.0-34.0
07/02/86	439	33.6	1.1	3.3	8	31.8-35.4
07/07/86	440	33.1	1.4	4.2	7	31.0-35.0
07/08/86	441	33.4	1.2	3.6	8	30.8-34.5
07/09/86	442	33.2	1.8	5.5	8	30.0-34.8
07/10/86	443	32.7	1.0	3.0	8	31.0-34.4
07/11/86	444	33.3	1.4	4.1	8	30.8-34.4
07/14/86	445	32.8	1.9	5.8	8	29.5-35.8
07/15/86	446	33.4	2.1	6.4	9	31.0-38.0
07/16/86	447	32.8	1.7	5.1	8	29.8-34.4
07/17/86	448	33.2	0.7	2.1	7	32.0-34.0
07/18/86	449	33.8	1.4	4.1	8	32.0-35.8
07/21/86	450	33.4	0.7	2.2	8	32.6-34.6
07/22/86	451	33.4	0.8	2.3	8	32.0-34.2
07/23/86	452	33.4	0.9	2.7	8	32.0-34.4
07/24/86	453	33.2	0.7	2.1	8	32.0-34.0
07/25/86	454	32.7	0.6	1.8	8	32.0-34.0
07/28/86	455	33.4	0.6	1.7	8	32.5-34.0
07/29/86	456	32.9	0.4	1.3	8	32.2-33.5
07/30/86	457	33.0	1.1	3.2	8	31.4-34.0
07/31/86	458	33.6	0.5	1.4	8	33.0-34.2

Methyl Bromide Study
Mean Concentration (ppm) and % Relative Standard
Deviation for Each Exposure Day

33 PPM Chamber

<u>Date</u>	<u>Exposure Day</u>	<u>Mean</u>	<u>S.D.</u>	<u>% RSD</u>	<u>n</u>	<u>Range</u>
08/01/86	459	33.6	1.0	3.1	8	31.6-35.5
08/04/86	460	33.1	1.1	3.4	8	31.6-34.5
08/05/86	461	33.7	1.3	3.9	8	31.8-35.5
08/06/86	462	33.3	1.1	3.3	8	31.6-34.8
08/07/86	463	34.0	0.7	2.0	7	33.2-35.0
08/08/86	464	33.5	1.5	4.5	7	31.0-35.5
08/11/86	465	33.3	2.5	7.5	9	27.8-37.0
08/12/86	466	33.4	0.7	2.0	8	32.6-34.6
08/13/86	467	33.5	0.7	2.1	8	32.5-34.6
08/14/86	468	33.5	0.8	2.3	8	32.0-34.6
08/15/86	469	33.2	0.9	2.6	8	32.5-34.6
08/18/86	470	33.0	0.8	2.6	8	32.4-35.0
08/19/86	471	33.2	1.0	3.1	8	31.2-34.8
08/20/86	472	33.1	1.5	4.7	8	30.7-34.6
08/21/86	473	33.8	1.2	3.4	7	31.8-34.5
08/22/86	474	33.6	1.2	3.6	7	31.6-35.0
08/25/86	475	33.0	0.8	2.3	7	31.8-34.0
08/26/86	476	32.9	2.1	6.3	7	28.8-35.0
08/27/86	477	33.2	1.4	4.1	8	30.6-34.6
08/28/86	478	32.8	0.9	2.6	8	31.5-34.2
08/29/86	479	33.4	0.5	1.4	8	32.6-34.0

Methyl Bromide Study
Mean Concentration (ppm) and % Relative Standard
Deviation for Each Exposure Day

33 PPM Chamber

<u>Date</u>	<u>Exposure Day</u>	<u>Mean</u>	<u>S.D.</u>	<u>% RSD</u>	<u>n</u>	<u>Range</u>
09/02/86	480	33.1	0.9	2.6	8	31.5-33.8
09/03/86	481	33.0	1.2	3.6	7	31.4-34.0
09/04/86	482	32.7	0.8	2.5	7	31.4-33.6
09/05/86	483	34.3	0.6	1.9	7	33.2-34.9
09/08/86	484	33.3	1.1	3.3	8	31.9-34.7
09/09/86	485	33.1	0.9	2.9	8	31.6-34.2
09/10/86	486	33.6	0.9	2.8	8	32.4-35.2
09/11/86	487	33.8	0.2	0.7	8	33.6-34.2
09/12/86	488	33.2	1.0	3.1	8	31.6-34.3
09/15/86	489	33.5	0.8	2.4	7	32.3-34.5

Mean Concentration (ppm) and % Relative Standard
Deviation for Each Exposure Day

100 PPM Chamber

Date	Exposure Day	Mean	S.D.	% RSD
09/26/84	1	99.2	2.1	2.1
09/27/84	2	102.4	2.1	2.1
09/28/84	3	102.7	2.3	2.2
10/01/84	4	101.1	4.1	4.1
10/02/84	5	102.7	3.2	3.1
10/03/84	6	101.9	1.0	1.0
10/04/84	7	100.1	0.7	0.7
10/05/84	8	100.8	0.6	0.6
10/08/84	9	98.0	3.5	3.5
10/09/84	10	102.7	1.8	1.7
10/10/84	11	98.1	1.0	1.1
10/11/84	12	99.9	1.5	1.5
10/12/84	13	100.4	0.3	0.3
10/15/84	14	100.7	0.8	0.8
10/16/84	15	99.1	0.9	0.9
10/17/84	16	99.6	0.3	0.3
10/18/84	17	98.2	2.5	2.6
10/19/84	18	101.8	1.0	1.0
10/22/84	19	100.9	0.9	0.9
10/23/84	20	100.6	2.1	2.1
10/24/84	21	100.4	0.5	0.5
10/25/84	22	101.2	1.2	1.2
10/26/84	23	99.8	0.5	0.5
10/29/84	24	101.7	2.8	2.8
10/30/84	25	99.4	1.3	1.3
10/31/84	26	98.7	1.1	1.1

Mean Concentration (ppm) and % Relative Standard
Deviation for Each Exposure Day

100 PPM Chamber

Date	Exposure Day	Mean	S.D.	% RSD
11/01/84	27	99.2	2.7	2.7
11/02/84	28	98.5	2.4	2.5
11/05/84	29	101.3	3.5	3.4
11/06/84	30	98.6	1.1	1.1
11/07/84	31	98.8	1.5	1.5
11/08/84	32	101.4	2.5	2.4
11/09/84	33	99.1	2.4	2.4
11/13/84	34	101.4	0.7	0.7
11/14/84	35	99.0	1.1	1.2
11/15/84	36	101.5	1.7	1.7
11/16/84	37	100.8	1.5	1.5
11/19/84	38	97.4	1.4	1.4
11/20/84	39	100.1	0.6	0.6
11/21/84	40	100.4	1.1	1.1
11/26/84	41	101.1	0.8	0.8
11/27/84	42	101.0	0.8	0.8
11/28/84	43	103.3	1.2	1.1
11/29/84	44	96.9	1.0	1.1
11/30/84	45	101.3	1.6	1.6

Mean Concentration (ppm) and % Relative Standard
Deviation for Each Exposure Day

100 PPM Chamber

Date	Exposure Day	Mean	S.D.	% RSD
12/03/84	46	100.8	1.5	1.5
12/04/84	47	101.7	1.0	1.0
12/05/84	48	100.4	0.7	0.7
12/06/84	49	99.4	2.5	2.5
12/07/84	50	100.3	0.9	0.9
12/10/84	51	102.8	1.0	1.0
12/11/84	52	100.7	1.3	1.3
12/12/84	53	100.8	1.1	1.1
12/13/84	54	102.3	1.6	1.6
12/14/84	55	101.2	1.7	1.7
12/17/84	56	101.3	2.1	2.1
12/18/84	57	100.3	0.5	0.5
12/19/84	58	99.7	0.6	0.6
12/20/84	59	99.1	0.8	0.8
12/21/84	60	98.4	2.6	2.6
12/24/84	61	101.2	1.8	1.8
12/27/84	62	99.0	1.6	1.6
12/28/84	63	101.3	2.9	2.8
12/31/84	64	103.0	1.6	1.6

Mean Concentration (ppm) and % Relative Standard
Deviation for Each Exposure Day

100 PPM Chamber

Date	Exposure Day	Mean	S.D.	% RSD
01/02/85	65	99.1	2.4	2.4
01/03/85	66	99.1	1.2	1.2
01/04/85	67	99.8	1.0	1.0
01/07/85	68	100.8	3.1	3.1
01/08/85	69	99.1	2.3	2.3
01/09/85	70	98.2	1.0	1.1
01/10/85	71	99.1	1.1	1.1
01/11/85	72	97.6	1.1	1.2
01/14/85	73	101.9	1.7	1.6
01/15/85	74	98.9	1.9	1.9
01/16/85	75	99.3	1.3	1.3
01/17/85	76	100.6	0.3	0.3
01/18/85	77	99.5	2.5	2.5
01/21/85	78	98.5	2.0	2.1
01/22/85	79	101.5	2.4	2.3
01/23/85	80	101.0	1.5	1.4
01/24/85	81	101.4	1.3	1.3
01/25/85	82	101.5	1.3	1.3
01/28/85	83	101.2	1.2	1.2
01/29/85	84	100.2	2.5	2.5
01/30/85	85	101.1	2.3	2.3
01/31/85	86	101.1	2.1	2.1

Mean Concentration (ppm) and % Relative Standard
Deviation for Each Exposure Day

100 PPM Chamber

Date	Exposure Day	Mean	S.D.	% RSD	n	Range
02/01/85	87	101.3	1.9	1.9	7	99.8-105.0
02/04/85	88	101.5	1.4	1.4	7	100.4-104.5
02/05/85	89	102.0	0.9	0.9	7	100.8-103.6
02/06/85	90	100.1	1.2	1.2	7	98.8-102.5
02/07/85	91	100.4	1.3	1.3	7	98.6-102.4
02/08/85	92	98.7	3.8	3.9	7	93.6-104.0
02/11/85	93	99.3	0.7	0.7	7	98.0-100.0
02/12/85	94	99.6	1.7	1.7	7	98.0-103.0
02/13/85	95	100.6	0.9	0.9	7	99.0-101.4

Last day of exposure was 02/13/85

Average Monthly Chamber Concentrations

10 PPM Chamber

Month	Year	Mean	S.D.	% RSD	n	Range of Means
Sept.	1984	10.5	0.3	3.1	3	10.1-10.7
Oct.	1984	10.1	0.4	4.4	23	9.4-10.9
Nov.	1984	9.9	0.3	3.4	19	9.4-10.6
Dec.	1984	10.0	0.4	4.0	19	9.0-10.6
Jan.	1985	10.1	0.3	3.2	22	9.4-10.8
Feb.	1985	10.1	0.3	2.8	19	9.5-10.7
Mar.	1985	10.2	0.3	2.5	19	9.7-10.6
Apr.	1985	10.1	0.2	2.2	22	9.6-10.5
May	1985	10.1	0.3	2.7	22	9.5-10.5
June	1985	10.1	0.7	6.5	20	8.0-11.1
July	1985	10.2	0.2	1.8	21	9.8-10.7
Aug.	1985	10.1	0.3	2.5	22	9.2-10.4
Sept.	1985	9.9	0.2	1.6	19	9.6-10.3
Oct.	1985	10.2	0.2	2.3	23	9.8-10.7
Nov.	1985	10.0	0.2	2.0	18	9.5-10.3
Dec.	1985	10.0	0.2	1.9	20	9.6-10.3
Jan.	1986	10.0	0.2	1.8	22	9.7-10.3
Feb.	1986	10.0	0.1	1.4	19	9.8-10.3
Mar.	1986	10.0	0.1	1.4	21	9.8-10.3
Apr.	1986	9.9	0.2	1.5	22	9.6-10.1
May	1986	10.2	0.3	2.7	21	9.7-10.6
June	1986	10.1	0.2	2.2	21	9.7-10.5
July	1986	10.1	0.2	1.7	21	9.9-10.4
Aug.	1986	10.2	0.3	2.7	21	9.6-10.6
Sept.	1986	10.0	0.3	2.8	10	9.6-10.6

Average Monthly Chamber Concentrations

33 PPM Chamber

Month	Year	Mean	S.D.	% RSD	n	Range of Means
Sept.	1984	33.7	0.5	1.3	3	33.2-34.1
Oct.	1984	32.9	0.8	2.3	23	31.6-34.4
Nov.	1984	32.7	0.7	2.1	19	31.5-34.1
Dec.	1984	33.1	0.7	2.1	19	31.8-34.8
Jan.	1985	33.2	0.6	1.9	22	31.5-34.0
Feb.	1985	33.3	0.5	1.4	19	32.4-34.0
Mar.	1985	33.1	0.5	1.6	19	32.2-34.1
Apr.	1985	33.3	0.4	1.3	22	32.6-34.0
May	1985	33.3	0.3	1.0	22	32.8-34.2
June	1985	33.2	0.9	2.6	20	30.6-35.1
July	1985	33.4	0.3	0.8	21	32.8-33.7
Aug.	1985	33.2	0.3	0.9	22	32.7-33.9
Sept.	1985	33.3	0.5	1.4	19	32.5-34.3
Oct.	1985	33.3	0.4	1.2	23	32.5-33.8
Nov.	1985	33.3	0.3	0.8	18	32.9-33.7
Dec.	1985	33.2	0.5	1.5	20	32.2-33.8
Jan.	1986	33.1	0.4	1.1	22	32.5-33.7
Feb.	1986	33.2	0.3	0.9	19	32.4-33.7
Mar.	1986	33.3	0.2	0.7	21	32.8-33.7
Apr.	1986	33.2	0.5	1.4	22	32.5-34.6
May	1986	32.8	0.7	2.1	21	31.1-33.7
June	1986	33.4	0.3	1.0	21	32.8-34.2
July	1986	33.2	0.3	0.9	21	32.7-33.8
Aug.	1986	33.3	0.3	0.9	21	32.8-34.0
Sept.	1986	33.4	0.5	1.4	10	32.7-34.3

Average Monthly Chamber Concentrations

100 PPM Chamber

Month	Year	Mean	SD	% RSD	n	Range of Means
Sept.	1984	101.4	1.9	1.9	3	99.2-102.7
Oct.	1984	100.3	1.4	1.4	23	98.0-102.7
Nov.	1984	100.1	1.6	1.6	19	96.9-103.3
Dec.	1984	100.7	1.3	1.2	19	98.4-103.0
Jan.	1985	100.0	1.2	1.2	22	97.6-101.9
Feb.	1985	100.4	1.1	1.1	9	98.7-102.0

Chamber Distribution Data Sheet

Compound Name and Number: Methyl Bromide (CAS NO. 74-83-9) Chronic Study: Without Animals

Chamber No.	2G (10 ppm)		2F (33 ppm)		2E (100 ppm)	
Sample Port	Monitor Reading	%Normalized Reading	Monitor Reading	%Normalized Reading	Monitor Reading	%Normalized Reading
Back: 1B	13.97	106.60	37.41	101.65	87.99	88.41
2B	15.41	117.58	39.51	107.36	73.84	74.20
5B	14.37	109.64	39.33	106.87	102.90	103.39
6B	15.53	118.47	41.29	112.20	94.06	94.51
9B	11.53	87.92	36.73	99.79	102.76	103.25
10B	12.64	96.43	37.51	101.94	101.49	101.98
13B	10.82	82.55	34.63	94.10	104.98	105.48
14B	12.34	94.10	34.29	93.16	105.40	105.91
Front: 3F	13.88	105.87	36.53	99.27	94.88	95.33
4F	15.48	118.09	36.53	99.27	90.17	90.60
7F	14.64	111.66	34.69	94.26	106.85	107.36
8F	14.36	109.54	36.08	98.03	105.96	106.47
11F	10.73	81.82	37.32	101.41	105.72	106.23
12F	12.11	92.41	37.37	101.56	107.58	108.10
15F	11.04	84.22	34.05	92.53	104.68	105.19
16F	10.89	83.04	35.54	96.58	103.09	103.58
Mean	13.11	100	36.80	100	99.52	100
Ref. Pt: 1	15.65	112.93	36.73	96.86	96.32	91.89
2	15.90	114.74	37.86	99.84	93.70	89.39
3	16.28	117.46	41.04	108.23	111.19	106.03
4	12.53	90.40	37.52	98.95	108.14	103.16
5	12.09	87.22	37.91	99.99	108.68	103.68
6	12.38	89.31	36.45	96.12	110.91	105.81
7	12.18	87.93				
Mean	13.86	100	37.92	100	104.82	100

Monitor Type: Varian 3700 Gas Chromatograph

Serial No.: 6588-13

Comments: Temporal Variability (RSD): Chamber 2G: 0.142

Chamber 2F: 0.043

Chamber 2E: 0.074

Spatial Variability (RSD by difference): Chamber 2G: -0.005

Chamber 2F: 0.011

Chamber 2E: 0.018

Adequacy:

Location of Monitor Data: ITF Archives for the Methyl Bromide Chronic Study

Compiled By: Janet M. Firriolo Date: 9/18-20/84

Reviewed By: Max A. Schmaeler Date: 04/03/85

Janet M. Firriolo 4/3/85

Max A. Schmaeler

4/3/85

Chamber Distribution Data Sheet

Compound Name and Number: Methyl Bromide (CAS NO. 74-83-9) Chronic Study: With Animals

Chamber No.	2G (10 ppm)		2F (33 ppm)		2E (100 ppm)	
Sample Port	Monitor Reading	%Normalized Reading	Monitor Reading	%Normalized Reading	Monitor Reading	%Normalized Reading
Back: 1B	8.48	81.24	30.79	93.03	89.18	86.32
2B	9.25	88.59	30.97	93.56	86.55	83.78
5B	8.84	84.71	37.96	114.71	92.26	89.31
6B	9.66	92.55	32.97	99.62	95.42	92.36
9B	11.34	108.65	31.52	95.23	108.42	104.94
10B	12.70	121.63	30.58	92.39	107.69	104.23
13B	11.98	114.74	33.22	100.38	110.29	106.76
14B	12.42	119.00	32.98	99.65	106.10	102.70
Front: 3F	7.95	76.15	33.74	101.94	101.12	97.88
4F	7.27	69.66	35.05	105.89	99.46	96.27
7F	9.81	93.93	33.58	101.46	105.13	101.76
8F	9.85	94.32	33.12	100.06	102.12	98.85
11F	11.97	114.70	33.77	102.04	115.15	111.46
12F	11.59	111.03	32.06	96.86	107.64	104.19
15F	12.03	115.25	33.22	100.37	114.88	111.20
16F	11.88	113.78	34.02	102.80	111.61	108.04
Mean	10.44	100	33.10	100	103.31	100
Ref. Pt: 1	9.07	87.68	31.58	94.78	89.72	88.75
2	8.11	78.39	33.61	100.86	95.30	94.27
3	9.94	96.12	33.03	99.13	102.70	101.59
4	10.87	105.06	32.90	98.72	106.56	105.41
5	11.32	109.46	34.34	103.07	105.23	104.10
6	12.76	123.32	34.47	103.44	107.05	105.90
Mean	10.35	100	33.32	100	101.09	100

Monitor Type: Varian 3700 Gas Chromatograph

Serial No.: 6588-13

Comments: Temporal Variability: Chamber 2G: 0.161

Chamber 2F: 0.032

Chamber 2E: 0.07

Spatial Variability (by difference): Chamber 2G: 0.007

Chamber 2F: 0.023

Chamber 2E: 0.015

Adequacy:

Location of Monitor Data: IIT Archives for the Methyl Bromide Chronic Study

Compiled By: Janet M. Firriolo Date: 10/8-11/84

Reviewed By: Max A. Schmaeler Date: 04/03/85

Janet M. Firriolo 4/13/85

Max A. Schmaeler 4/13/85

Chamber Distribution Data Sheet

Compound Name and Number: Methyl Bromide (CAS NO. 74-83-9) Chronic Study: 90-Day Analyses

Chamber No.	2G (10 ppm)		2F (33 ppm)		2E (100 ppm)	
Sample Port	Monitor Reading	%Normalized Reading	Monitor Reading	%Normalized Reading	Monitor Reading	%Normalized Reading
Back: 1B	9.48	95.45	31.02	97.79	100.94	98.91
2B	10.69	107.70	31.59	99.61	93.45	91.57
5B	9.62	96.93	29.87	94.17	104.04	101.95
6B	10.82	108.94	33.26	104.87	95.04	93.13
9B	9.84	99.13	31.06	97.91	104.89	102.78
10B	10.20	102.74	30.86	97.29	102.85	100.78
13B	9.89	99.56	31.52	99.38	102.29	100.24
14B	10.53	106.04	32.61	102.81	100.04	98.03
Front: 3F	9.77	98.40	29.73	93.74	105.67	103.55
4F	9.87	99.37	30.99	97.69	98.38	96.40
7F	8.99	90.58	31.75	100.11	110.22	108.01
8F	9.56	96.23	32.44	102.28	101.25	99.22
11F	9.76	98.32	32.63	102.87	108.45	106.27
12F	10.12	101.89	32.75	103.25	100.354	98.33
15F	9.58	96.50	32.76	103.28	107.39	105.23
16F	10.15	102.20	32.66	102.96	97.52	95.56
Mean	9.93	100	31.72	100	102.05	100
Ref. Pt: 1	10.78	103.49	29.98	97.11	106.31	101.42
2	10.28	98.68	30.24	97.97	104.86	100.04
3	10.39	99.75	29.08	94.20	103.18	98.44
4	10.66	102.36	32.80	106.24	105.89	101.02
5	10.48	100.58	31.38	101.66	106.16	101.28
6	9.91	95.13	31.75	102.83	102.50	97.79
Mean	10.42	100	30.87	100	104.82	100

Monitor Type: Varian 3700 Gas Chromatograph

Serial No.: 6588-13

Comments: Temporal Variability: Chamber 2G: 0.030

Chamber 2F: 0.044

Chamber 2E: 0.016

Spatial Variability (by difference): Chamber 2G: 0.018

Chamber 2F: 0.010

Chamber 2E: 0.030

Adequacy:

Location of Monitor Data: TTF Archives for the Methyl Bromide Chronic Study

Compiled By: Janet M. Firriolo Date: 01/3,4,8/85

Reviewed By: Max A. Schmaeler Date: 04/03/85

Janet H. Firriolo 4/3/85

Max A. Schmaeler 4/3/85

Chamber Distribution Data Sheet

Compound Name and Number: Methyl Bromide (CAS NO. 74-83-9) Chronic Study: 180-Day Analyses

Chamber No.	2G (10 ppm)		2F (33 ppm)	
<u>Sample Port</u>	<u>Monitor Reading</u>	<u>%Normalized Reading</u>	<u>Monitor Reading</u>	<u>%Normalized Reading</u>
Back: 1B	11.84	105.47	37.00	115.08
2B	12.44	110.81	35.23	109.56
5B	11.82	105.30	31.13	96.81
6B	11.94	106.36	33.94	105.57
9B	11.41	101.65	31.84	99.02
10B	11.38	101.36	33.87	105.33
13B	10.77	95.90	31.41	97.69
14B	11.08	98.71	33.94	105.56
Front: 3F	11.27	100.35	32.12	99.89
4F	11.39	101.49	30.99	96.38
7F	10.98	97.77	30.77	95.71
8F	11.14	99.25	30.34	94.35
11F	10.72	95.53	30.98	96.35
12F	10.95	97.57	30.63	95.26
15F	10.15	90.45	30.12	93.69
16F	10.33	92.04	30.14	93.75
Mean	11.23	100	32.23	100
Ref. Pt: 1	12.02	104.11	32.91	107.14
2	12.21	105.74	30.23	98.42
3	11.55	100.03	30.82	100.35
4	11.83	102.50	31.03	101.01
5	10.99	95.24	29.81	97.04
6	10.67	92.39	29.50	96.04
Mean	11.54	100	30.72	100

Monitor Type: Varian 3700 Gas Chromatograph

Serial No.: 6588-13

Comments: Temporal Variability: Chamber 2G: 0.052

Chamber 2F: 0.040

Spatial Variability (by difference): Chamber 2G: 0.001

Chamber 2F: 0.024

Adequacy:

Location of Monitor Data: ITF Archives for the Methyl Bromide Chronic Study

Compiled By: Janet M. Firriolo Date: 03/25-26/85

Reviewed By: Max A. Schmaeler Date: 04/03/85

Janet M. Firriolo 4/3/85

Max A. Schmaeler 4/3/85

Chamber Distribution Data Sheet

Compound Name and Number: Methyl Bromide (CAS NO. 74-83-9) Chronic Study: 270 Day Analyses

Chamber No.	2G (10 ppm)		2F (33 ppm)			
Sample Port	Monitor Reading	%Normalized Reading	Monitor Reading	%Normalized Reading	Monitor Reading	%Normalized Reading
Back: 1B	10.37	100.85	33.10	103.30		
2B	10.74	104.44	33.73	105.28		
5B	10.29	100.07	33.72	105.23		
6B	10.62	103.30	33.25	103.79		
9B	10.19	99.11	33.65	105.03		
10B	10.72	104.25	32.64	101.89		
13B	10.04	97.68	33.56	104.75		
14B	10.57	102.77	33.14	103.43		
Front: 3F	9.69	94.28	31.21	97.42		
4F	10.35	100.71	29.34	91.59		
7F	9.91	96.38	31.56	98.49		
8F	10.47	101.83	29.32	91.52		
11F	10.20	99.21	32.78	102.32		
12F	10.27	99.88	29.60	92.39		
15F	10.02	97.42	32.54	101.57		
16F	10.05	97.79	29.48	92.01		
Mean	10.28	100	32.04	100		
Ref. Pt: 1	10.43	102.41	30.92	101.05		
2	9.97	97.88	30.97	101.21		
3	9.64	94.58	30.06	98.24		
4	10.58	103.83	30.68	100.26		
5	10.46	102.71	30.57	99.91		
6	10.04	98.60	30.40	99.33		
Mean	10.19	100	30.60	100		

Monitor Type: Varian 3700 Gas Chromatograph

Serial No.: 6588-13

Comments: Temporal Variability (RSD): Chamber 2G: 0.0357
Chamber 2F: 0.0111

Spatial Variability (RSD by difference): Chamber 2G: -0.0068
Chamber 2F: 0.0421

Location of Monitor Data: ITF Archives for the Methyl Bromide Chronic Study

Compiled By: Janet M. Firriolo Date: 7/1/85

J.M. Firriolo 7/10/85

Reviewed By: Max A. Schmaeler

Date: 7/10/85

M. Schmaeler

7/10/85

Chamber Distribution Data Sheet
Compound Name and Number: Methyl Bromide (CAS No. 74-83-9)
Chronic Study: 360-Day Analyses

<u>Chamber</u> <u>Sample</u> <u>Port</u>		<u>2G (10 ppm)</u>		<u>2F (33 ppm)</u>	
		<u>Monitor</u> <u>Reading</u>	<u>% Normalized</u> <u>Reading</u>	<u>Monitor</u> <u>Reading</u>	<u>% Normalized</u> <u>Reading</u>
Back:	1B	10.44	98.12	29.35	93.44
	2B	10.25	96.33	31.48	100.22
	5B	10.09	94.83	28.42	90.48
	6B	11.03	103.67	30.91	98.41
	9B	11.13	104.61	32.00	101.88
	10B	11.02	103.57	34.84	110.92
	13B	11.39	107.05	34.00	108.25
	14B	10.97	103.10	35.56	113.21
Front:	3F	9.97	93.70	29.87	95.10
	4F	9.93	93.33	28.51	90.77
	7F	10.33	97.09	30.48	97.04
	8F	10.37	97.46	29.74	94.68
	11F	10.78	101.32	32.59	103.76
	12F	10.70	100.56	32.62	103.85
	15F	11.07	104.04	32.31	102.87
	16F	10.79	101.41	29.93	95.29
Mean		10.64	100	31.41	100
Ref. Pt.	1	9.62	91.79	28.33	92.31
	2	10.00	95.42	27.78	90.52
	3	10.60	101.15	29.86	97.30
	4	11.01	105.06	32.13	104.69
	5	10.99	104.87	34.31	111.80
	6	10.66	101.72	31.70	103.29
Mean		10.48	100	30.69	100

METHYL BROMIDE CHRONIC
EXPERIMENT 840002

Monitor Type: Varian 3700 Gas Chromatograph Serial No. 6588-13

Comments: Temporal Variability (RSD): Chamber 2G: 0.053; Chamber 2F: 0.081

Spatial Variability (RSD by difference): Chamber 2G: -0.011; Chamber 2F: -0.012

Location of Monitor Data: I.T.F. Archives for the Methyl Bromide Chronic Study

Compiled by: J. M. Firriolo Date: 9/24-26/85 Reviewed by: M.A. Schmaeler, 10/3/85

J.M. Firriolo, 9/30/85

M.A. Schmaeler 10/7/85

Chamber Distribution Data Sheet
Compound Name and Number: Methyl Bromide (CAS No. 74-83-9)
Chronic Study: 450-Day Analyses

	Chamber Sample Port	2G (10 ppm)		2F (33 ppm)	
		Monitor Reading	% Normalized Reading	Monitor Reading	% Normalized Reading
Back:	1	10.52	107.32	36.19	105.09
	2	10.41	106.26	35.98	104.47
	5	9.86	100.58	34.35	99.73
	6	9.78	99.84	34.59	100.45
	9	9.92	101.26	36.33	105.50
	10	9.91	101.14	35.52	103.14
	13	9.99	101.96	35.94	104.36
	14	9.92	101.26	36.29	105.36
Front:	3	9.64	98.34	33.91	98.47
	4	9.99	101.90	32.11	93.23
	7	9.34	95.35	32.95	95.66
	8	9.68	98.81	32.14	93.34
	11	9.22	94.12	35.08	101.86
	12	9.74	99.38	32.71	94.98
	15	9.33	95.22	34.55	100.33
	16	9.54	97.35	32.37	94.00
Mean		9.80	100	34.44	100
Ref. Pt.	1	10.71	107.41	32.87	97.98
	2	9.95	99.73	33.35	99.42
	3	9.71	97.35	33.23	99.05
	4	10.09	101.22	34.60	103.14
	5	9.74	97.71	33.21	98.99
	6	9.63	96.56	34.03	101.43
Mean		9.97	100	33.55	100

Monitor Type: Varian 3700 Gas Chromatograph Serial No. 6588-13

Comments: Temporal Variability (RSD): Chamber 2G: 0.040; Chamber 2F: 0.019

Spatial Variability (RSD by difference): Chamber 2G: -0.004; Chamber 2F: 0.026

Location of Monitor Data: I.T.F. Archives for the Methyl Bromide Chronic Study

Compiled by: J. M. Firriolo Date: 12/17-19/85 Reviewed by: M.A. Schmaeler, 12/27/85

J.M. Firriolo

m.a. Schmaeler

METHYL BROMIDE CHRONIC
EXPERIMENT 840002

Chamber Distribution Data Sheet

Compound Name and Number: Methyl Bromide (CAS NO. 74-83-9) Chronic Study: 540-Day Analyses

Chamber No.		2G (10 ppm)		2F (33 ppm)	
Sample Port		Monitor Reading	%Normalized Reading	Monitor Reading	%Normalized Reading
Back:	1B	10.68	109.54	31.40	99.18
	2B	10.47	107.38	33.79	106.73
	5B	9.86	101.13	32.26	101.90
	6B	10.04	102.97	33.11	104.58
	9B	9.96	102.15	34.14	107.83
	10B	9.86	101.13	33.11	104.58
	13B	9.65	98.97	31.57	99.72
	14B	10.06	103.18	33.11	104.58
Front:	3F	9.35	95.90	30.89	97.57
	4F	9.65	98.97	30.38	95.96
	7F	9.24	94.77	30.72	97.03
	8F	9.45	96.92	30.55	96.49
	11F	9.24	94.77	30.89	97.57
	12F	9.76	100.10	30.21	95.42
	15F	9.14	93.74	30.21	95.42
	16F	9.65	98.97	30.21	95.42
Mean		9.75	100	31.66	100
Ref. Pt:	1	10.27	104.05	29.87	96.42
	2	9.96	100.91	29.69	95.84
	3	9.65	97.77	31.23	100.81
	4	10.06	101.93	32.77	105.78
	5	9.65	97.77	31.23	100.81
	6	9.65	97.77	31.06	100.26
Mean		9.87	100	30.98	100

Monitor Type: Varian 3700 Gas Chromatograph

Serial No.: 6588-13

Comments: Temporal Variability: Chamber 2G: 0.0268

Chamber 2F: 0.0360

Spatial Variability (by difference): Chamber 2G: 0.0175

Chamber 2F: 0.0077

Location of Monitor Data: IIF Archives for the Methyl Bromide Chronic Study

Compiled By: Janet M. Firriolo Date: 03/25-26/86

Reviewed By: Max A. Schmaeler

Date: 03/31/86

J.M.F.

4/7/86

m.a.s.

4/15/86

Chamber Distribution Data Sheet

Compound Name and Number: Methyl Bromide (CAS NO. 74-83-9) Chronic Study: 630-Day Analyses

Chamber No.	2G (10 ppm)		2F (33 ppm)	
Sample Port	Monitor Reading	%Normalized Reading	Monitor Reading	%Normalized Reading
Back: 1B	10.27	106.92	34.00	111.16
2B	10.45	108.80	31.21	102.04
5B	9.73	101.29	30.81	100.73
6B	10.09	105.05	30.21	98.78
9B	8.83	91.91	32.40	105.94
10B	9.73	101.29	33.20	108.55
13B	9.55	99.42	32.21	105.29
14B	9.73	101.29	33.20	108.55
Front: 3F	9.55	99.42	27.82	90.96
4F	9.55	99.42	27.62	90.31
7F	9.55	99.42	27.82	90.96
8F	9.55	99.42	27.82	90.96
11F	9.01	93.79	30.21	98.78
12F	9.37	97.54	30.01	98.13
15F	9.01	93.79	30.81	100.73
16F	9.73	101.29	30.01	98.13
Mean	9.61	100	30.59	100
Ref. Pt: 1	10.81	110.78	33.00	103.65
2	9.73	99.69	30.01	94.26
3	9.91	101.55	29.81	93.64
4	9.01	92.31	32.80	103.02
5	9.37	96.00	32.60	102.40
6	9.73	99.69	32.80	103.02
Mean	9.76	100	31.84	100

Monitor Type: Varian 3700 Gas Chromatograph

Serial No.: 6588-13

Comments: Temporal Variability: Chamber 2G: 0.062

Chamber 2F: 0.047

Spatial Variability (by difference): Chamber 2G:-0.017

Chamber 2F: 0.021

Location of Monitor Data: ITF Archives for the Methyl Bromide Chronic Study

Compiled By: Janet M. Firriolo Date: 06/17-18/86

Reviewed By:

Date:

Janet M. Firriolo 6/23/86

M. Schuster

7/9/86

July 30, 1986

P. Bonti

Identifying Experimental Animals

All experimental animals are marked for positive identification. Animals are individually marked following formal randomization after (or during) holding/quarantine time. Unless animals come previously identified (as in S and R rats), each animal will be assigned a 5 digit number, the first digit signifying the year the study began (1983 = 3).

The method of animal identification shall be specified in the study protocol.

Mice and rats are individually marked using the toe clipping and/or ear punching marking systems. An illustration of these methods follows:

If the toe clipping method is not used, rats and mice can be individually and uniquely identified using numbered metal ear tags (National Band and Tag Co.). Duplicate tags will be purchased and used if any animal loses a tag. If an animal loses the second tag, no further tags will be used. Note: The animal will not be assigned another number.

Page I of I

R. B. Aronson
 Qual. Assur. Officer
 8/6/86

CH3Br Chronic - Expt 840002 - Animal Codes/Numbers

Sex	Assess. Endpoint	Sacrifice Endpoint	(1) 0 ppm	(2) 10 ppm	(3) 33 ppm	(4) 100 ppm	#
0	1 mult	1 6 mos	40221-210	40403-412	40575-514	40747-756	40
2	1 mult	3 15 mos	40211-220	40413-422	40525-574	40757-766	40
	1 mult	5 24 mos	40221-245	40423-472	40595-644	40767-716	195
	3 mult	5 24 mos	40225-270	—	—	—	5
	4 mult	— #	40271-272	40473-480	40515-652	40817-824	32
	5 mult	— #	40279-276	40421-488	40553-660	40825-832	32
	2 mult	1 6 mos	40287-291	—	—	—	5
	2 mult	2 12 mos	40292-296	—	—	—	5
	2 mult	4 18 mos	40297-301	—	—	—	5
			101 ✓	26 ✓	26 ✓	26 ✓	359 ✓

Sex	Assess. Endpoint	Sacrifice Endpoint	(1) 0 ppm	(2) 10 ppm	(3) 33 ppm	(4) 100 ppm	#
1	1 mult	1 6 mos	40302-311	40427-472	40531-670	40833-842	40
	1 mult	3 15 mos	40312-321	40427-508	40571-620	40843-852	40
	1 mult	5 24 mos	40322-326	40537-592	40631-730	40853-902	195
	3 mult	5 24 mos	40367-371	—	—	—	5
	4 mult	— #	40372-377	40557-566	40731-738	40922-910	32
	5 mult	— #	40320-327	40559-574	40737-746	40911-912	32
	2 mult	1 6 mos	40327-332	—	—	—	5
	2 mult	2 12 mos	40373-377	—	—	—	5
	2 mult	4 18 mos	40373-402	—	—	—	5
			101 ✓	26 ✓	26 ✓	26 ✓	359 ✓

840002 41 G XXXX A 4XXXX

Animal ID Number

Exposure Group: 1 - 0 ppm

2 - 10 ppm

3 - 33 ppm

4 - 100 ppm

Sex: 0 - male

1 - female

Sacrifice Endpoint

1 - 6 mos. sac.

2 - 12 mos. sac.

3 - 15 mos. sac.

4 - 18 mos. sac.

5 - 24 mos. sac.

Assessment Endpoint

1 - multiple use - histopath, hematology, clin. chem.

2 - sentinel - part. necropsy + serum toxicology

3 - sentinel - histopath + serum toxicology

4 - neurobehavior - 1st group

5 - neurobehavior - 2nd group

Species

4 - mouse

1 - B6C3F1

Experiment Number

* Note: 4 neurobehavior mice/sex will be used at 6 & 15 mos, and 2/sex at 24 mos in each dose/exposure group. The animals to be designated are dependent on observation and shall be coded at that time.

BROOKHAVEN NATIONAL LABORATORY

M E M O R A N D U M

DATE: October 1, 1984

TO: The Record

FROM: Sonja B. Haber, Ph.D., Study Director *S.B. Haber*

SUBJECT: Animal Replacements in Methyl Bromide 2-Year Chronic Mouse Study

Early deaths in the 2 year chronic methyl bromide mouse study occurred prior to or immediately following the first day of exposure, September 26, 1984. The exact causes of these deaths are unknown but they were probably due to the light weight of some of the animals used as well as problems with new cages and feeders. The majority of the deaths, 6 out of a total of 9, were animals designated for the control group. Since sentinel animals are housed in the control chamber as well, and are used only for gross examination and viral serology, it was decided with the verbal approval of our Project Officer, to utilize some of those sentinels to replace the ones that had died. The animals would still be bled for viral serology, but would also be sacrificed and tested as part of the particular endpoint group to which they were assigned. The following sentinel animals will now be included in the bioassay portion of the study:

<u>Animal Number</u>	<u>Sex</u>	<u>Groups</u>
40287	Male	6 month sacrifice
40288	Male	6 month sacrifice
40388	Female	15 month sacrifice
40389	Female	24 month sacrifice
40390	Female	24 month sacrifice

The sixth control animal that died was assigned to the neurobehavior group and will not be replaced since no baseline behavioral data would be available on any new animal.

SBH:pmb

**MICROBIOLOGICAL
ASSOCIATES INC.**

COMPREHENSIVE ANIMAL HEALTH SERVICE - VIROLOGY

TO: Robert T. Drew
Inhalation Toxicology Facility
Brookhaven National Laboratory
Upton, NY 11973

FROM: Robert L. Peters, Ph.D. *RLP*
DATE: 4/12/85
TEST: Murine virus antibody determination
SPECIMEN: 10 mouse sera
RECEIVED: 4/2/85

Microbiological Associates Inc.
5221 River Road
Bethesda, Maryland 20816
(301) 654-3400
Telex: 90-8793

A Subsidiary of

Daryl Laboratories Inc. *✓*

Our Code NTP186
Contract N01-ES-45056
88835/C0418B/01
BIOASSAY

See attached page.

METHYL BROMIDE CHRONIC
EXPERIMENT 840002

Inhalation Toxicology Facility

NTP186

4/12/85

Page 2 of 2

Sample #	Hemagglutination			Complement Fixation	ELISA									IFA EDIM
	K	Poly	MVM		LCM	M.pulmonis	Reo3*	M.Ad*	PVM*	Send*	MHV*	Ectro*	GDVII*	
40287	-	-	-	-	-	0	.01	.01	0	.05	0	0	-	-
40288	-	-	-	-	-	0	.03	.01	.01	.04	0	0	-	-
40289	-	-	-	-	-	0	.02	.01	0	.08	0	0	-	-
40290	-	-	-	-	-	0	0	0	0	.09	0	0	-	-
40291	-	-	-	-	-	0	0	.01	.01	.12	.01	0	-	-
40302	-	-	-	-	-	0	.02	.01	0	.05	.01	0	-	-
40303	-	-	-	-	-	0	.03	0	0	.07	0	0	-	-
40304	-	-	-	-	-	0	.02	0	.01	.09	0	0	-	-
40391	-	-	-	-	-	.02	.02	0	.01	.10	0	0	-	-
40392	-	-	-	-	-	0	.02	.01	.01	TC	.01	0	-	-

Significant

Titer 10 20 20 10

*Positive value ≥ 0.17 absorbance units.

TC = Serum reacts with control antigen.

MICROBIOLOGICAL ASSOCIATES INC.

COMPREHENSIVE ANIMAL HEALTH SERVICE - VIROLOGY

Microbiological Associates Inc.
5221 River Road
Bethesda, Maryland 20816
(301) 654-3400
Telex: 90-8793

TO: Robert T. Drew
Inhalation Toxicology Facility
Brookhaven National Laboratory
Upton, NY 11973

A Subsidiary of

Daryl Laboratories Inc. *KV*

Our Code NTP311
N01-ES-45056
BIOASSAY
88835/C04148/02

FROM: Robert L. Peters, Ph.D. *RLP*
DATE: 10/8/85
TEST: Murine virus antibody determination
SPECIMEN: 10 mouse sera
RECEIVED: 10/1/85

See attached page.

METHYL BROMIDE CHRONIC
EXPERIMENT 840002

Inhalation Toxicology Facility

NTP311

10/8/85

Page 2 of 2

Sample #	Hemagglutination Inhibition			Complement Fixation LCM	ELISA*								IFA EDIM	ELISA* GDVII
	K	Poly	MVM		M.pulmonis	M.arth	M.Ad	Reo3	PVM	Send	MHV	Ectro		
35-C4148-														
02-40292	-	-	-	-	0	.49	.03	.03	.01	.02	0	0	-	0
40293	-	-	-	-	0	.15	.02	.02	0	0	.02	.03	-	0
40294	-	-	-	-	0	0	.03	.01	.02	0	.04	.05	-	0
40295	-	-	-	-	0	0	.03	.03	0	0	.03	0	-	.01
40296	-	-	-	-	0	0	.04	.04	0	0	.05	.02	-	.01
40393	-	-	-	-	0	TC	.04	.03	0	0	0	.01	-	.01
40394	-	-	-	-	0	TC	.08	.03	0	0	.03	.01	-	0
40395	-	-	-	-	0	.10	.06	.04	0	0	.01	.02	-	0
40396	-	-	-	-	0	.10	.04	.03	0	0	.07	.04	-	0
40397	-	-	-	-	0	.16	.03	.02	.01	0	.03	.10	-	0
<hr/>														
Significant														
Titer	10	20	20		10									
<hr/>														

*Positive value ≥ 0.17 absorbance units.

TC = Serum reacts with control antigen.

**MICROBIOLOGICAL
ASSOCIATES INC.**

COMPREHENSIVE ANIMAL HEALTH SERVICE - VIROLOGY

Microbiological Associates Inc.
5221 River Road
Bethesda, Maryland 20816
(301) 854-3400
Telex: 90-8793

A Subsidiary of

Daryl Laboratories Inc. *LS*

TO: R. T. Drew
Inhalation Toxicology Facility
Brookhaven National Laboratory
Upton, NY 11973

Our Code NTP347 *LS*
N01-ES-45056
88835/C04148/021
BIOASSAY

FROM: Robert L. Peters, Ph.D. *fil*
DATE: 12/12/85
TEST: Murine virus antibody determination
SPECIMEN: 4 mouse sera
RECEIVED: 12/3/85

See attached page.

METHYL BROMIDE CHRONIC
EXPERIMENT 840002

NTP347 58.
 12/12/85
 Page 2 of 2

Sample #	Hemagglutination Inhibition			Complement Fixation	ELISA*									IFA
	K	Poly	MVM	LCM	Reo3	M.Ad	M.pulmonis	M.arth	PVM	Send	MHV	Ectro	GDVII	EDIM
40836	-	-	-	-	.01	.02	0	0	0	.01	0	.03	.03	-
40323	-	-	-	-	.05	.05	0	0	.03	0	0	.02	.11	TC
40371	NS	NS	NS	NS	.06	NS	NS	NS	.02	NS	.07	.08	NS	NS
40562	-	-	-	-	.01	.06	0	TC	.06	0	0	.03	.07	-

Significant				
Titer	10	20	20	10

*Positive value ≥ 0.17 absorbance units.
 NS = Insufficient serum.
 TC = Serum reacts with control antigen.

**MICROBIOLOGICAL
ASSOCIATES INC.**

Microbiological Associates Inc.
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(301) 654-3400
Telex: 90-8793

COMPREHENSIVE ANIMAL HEALTH SERVICE - VIROLOGY

TO: Robert T. Drew *STW*
Inhalation Toxicology Facility
Brookhaven National Laboratory
Upton, NY 11973

Our Code NTP421
Contract N01-ES-45056
88835/CO4148/03
BIOASSAY
Page 1 of 2

FROM: Robert L. Peters, Ph.D. *RLP*
DATE: 4/11/86
TEST: Murine virus antibody determination
SPECIMEN: 9 mouse sera
RECEIVED: 4/2/86

See attached page.

NTP421
 Inhalation Toxicology Facility
 4/11/86
 Page 2 of 2

Sample #	Hemagglutination Inhibition			Complement Fixation	ELISA*									IFA
	K	Poly	MVM	LCM	Reo3	M.Ad	M.pulmonis	M.arth	PVM	Send	MHV	Ectro	GDVII	EDIM
-C04148-														
40297	-	-	-	-	.12	.02	0	0	0	.01	.01	.02	.06	-
40298	-	-	-	-	.05	.02	.92	0	0	.01	0	.01	.02	-
40299	-	-	-	-	.03	.04	.54	0	0	.01	0	.01	.05	-
40300	-	-	-	-	.05	.04	0	0	.01	.01	0	0	.07	-
40301	-	-	-	-	.08	.07	0	0	0	.03	0	.01	.05	-
40398	-	-	-	AC40**	.08	.05	0	.02	0	.02	0	.02	.04	-
40399	-	-	-	-	.09	.07	0	.06	0	.03	0	.02	.05	-
40400	-	-	-	AC10**	.07	.04	0	0	0	.10	0	.05	0	-
40401	-	-	-	-	.05	.03	0	.03	0	0	0	.03	.05	TC
<hr/>														
Significant Titer	10	20	20	10										

*Positive value $\geq$ 0.17 absorbance units.

**Unreadable at dilution indicated, negative at two fold higher dilution.

AC = Anticomplementary serum.

TC = Serum reacts with control antigen.

MICROBIOLOGICAL ASSOCIATES INC.

COMPREHENSIVE ANIMAL HEALTH SERVICE-VIROLOGY

CORPORATE OFFICES

5221 River Road • Bethesda • Maryland 20816-1493
(301) 654-3400 • Telex 90-8793

TO: Dr. Sonja Haber
Brookhaven National Lab.
Medical Dept.,
Inhalation Toxicology Facility
Upton, NY 11713

Our Code NTP456 CB
Contract N01-ES-45056 PPS
88835/C04148/031
BIOASSAY
Page 1 of 2

FROM: Robert L. Peters, Ph.D. *rl*
DATE: 6/6/86
TEST: Murine virus antibody determination
SPECIMEN: 10 mouse sera
RECEIVED: 5/6/86

See attached page.

ALL INFORMATION CONTAINED
HEREIN IS UNCLASSIFIED
DATE 10/10/86 BY SP-8/BJA

Brookhaven National Lab.,

NTP456 65

6/6/86

Page 2 of 2

Sample #	Hemagglutination Complement				ELISA*										IFA
	Inhibition			Fixation	Reo3	M.Ad	M.pulmonis	M.arth	PVM	Send	MHV	Ectro	GDVII	EDIM	
	K	Poly	MVM	LCM											
40631	-	-	-	-	.05	.03	0	0	0	.02	0	.01	0	-	
40659	-	-	-	-	NS	NS	.13	.07	0	0	.02	0	TC	-	
40599	-	-	-	-	.04	.05	0	.05	0	.01	.01	.02	.14	-	
40523	-	-	-	-	.02	.02	.03	.01	.01	0	.01	0	.05	-	
40897	-	-	-	-	NS	NS	0	.14	0	.04	.02	.01	.06	TC	
40802	-	-	-	-	.05	.03	0	.03	0	.01	.02	.01	0	-	
40878	-	-	-	-	NS	NS	0	.04	0	.03	0	.01	.06	-	
40424	-	-	-	-	.01	.02	0	.02	0	.02	0	0	.05	-	
40901	-	-	-	-	.02	.04	0	.01	0	.01	.02	0	.04	-	
40250	-	-	-	-	.14	.52	0	.06	0	0	0	.02	TC	TC	

Significant

Titer 10 20 20 10

*Positive value $\geq$ 0.17 absorbance units.

TC = Serum reacts with control antigen.

NS = Insufficient serum.

Reactivity to the FL strain of M.Ad virus has been rare in recent years. Suggest continued monitoring, but, is probably a false positive.

MICROBIOLOGICAL ASSOCIATES INC.

CORPORATE OFFICES *YV*

5221 River Road • Bethesda • Maryland 20816-1493
(301) 654-3400 • Telex 90-8793

COMPREHENSIVE ANIMAL HEALTH SERVICE - VIROLOGY

TO:

Dr. Sonja Haber
Brookhaven National Lab.
Medical Department
Illolation Toxicology Facility
Upton, NY 11713

Our Code NTP590m^w
Contract N01-ES-45056
888/35/CO4148/04
BIOASSAY
Page 1 of 2

FROM:

Robert L. Peters, Ph.D. *el*

DATE:

10/16/86

TEST:

Murine virus antibody determination

SPECIMEN:

10 mouse sera

RECEIVED:

10/2/86

See attached report.

METHYL BROMIDE CHRONIC
EXPERIMENT 840002

Our Code NTP590 mW
 Brookhaven National Lab.
 10/16/86
 Page 2 of 2

Sample #	Hemagglutination			Complement	ELISA*									IFA
	Inhibition			Fixation	Reo3	M.Ad	PVM	Send	MHV	Ectro	GDVII	M.Pulmonis	M.Arth	EDIM
	K	Poly	MVM	LCM										
40255	-	-	-	-	.05	.03	0	0	0	.02	.02	0	TC	TC
40234	-	-	-	AC10**	.02	.03	0	0	.01	0	.02	0	.10	-
40339	-	-	-	-	.03	.07	0	.02	0	.04	.02	0	.07	-
40231	-	-	-	-	NS	NS	0	0	0	.01	.01	0	NS	-
40347	-	-	-	AC10**	.04	.06	0	.13	0	.02	.03	0	TC	TC
40389	-	-	-	AC20**	.04	.04	0	.05	0	.05	.01	0	TC	-
40362	-	-	-	-	.04	.07	0	0	.02	.03	.03	0	.49	-
40364	-	-	-	-	.04	.06	0	.01	0	.06	.02	0	TC	-
40253	-	-	-	-	NS	NS	0	0	0	.03	.01	0	.06	-
40258	-	-	-	-	.02	.03	0	.02	0	.03	0	0	.12	-

Significant				
Titer	10	20	20	10

* = Positive value ≥ 0.17 absorbance units.

AC = Anticomplementary serum.

TC = Serum reacts with control antigen.

NS = Insufficient serum.

** = Unreadable at dilution indicated, negative at two-fold higher dilution.

PHYL BROMIDE CHEMICAL
 EXPERIMENT 840002

APPENDIX C1

ANIMAL FEED LOG

Date	Manufacturing Date	No. of Bags
9-24-84	8-14-84	3 <i>off</i>
10-2-84	9-14-84	2 <i>off</i>
10-8-84	9-14-84	2 <i>off</i>
10-15-84	9-14-84	2 <i>off</i>
10-19-84	9-14-84	2 <i>off</i>
10-25-84	9-14-84	2 <i>off</i>
11-1-84	9-14-84	2 <i>off</i>
11-8-84	9-14-84	2 <i>off</i>
11-15-84	10-17-84	2 <i>off</i>
11-20-84	10-17-84	2 <i>off</i>
11-27-84	10-17-84	3 <i>off</i>
12-5-84	10-17-84	2 <i>off</i>
12-11-84	10-17-84	2 <i>off</i>
12-18-84	10-17-84	2 <i>off</i>
12-24-84	10-17-84	3 <i>off</i>
12-31-84	10-17-84	1 <i>off</i>

ANIMAL FEED LOG

Date	Manufacturing Date	No. of Bags
1-7-85	10-17-84	See CONTROL ANIMAL LOG BOOK
1-11-85	11-19-84	
1-18-85	11-19-84	
1-25-85	11-19-84	
2-1-85	11-19-84	
2-8-85	11-19-84	
2-15-85	12-10-84	
2-25-85	12-10-84	
3-4-85	12-10-84	
3-12-85	12-10-84	
3-19-85	12-10-84 + 2-6-85	
3-25-85	2-6-85	
4-2-85	2-6-85	
4-9-85	2-6-85	
4-19-85	2-6-85	

AMH-PAC
4/15/85

ANIMAL FEED LOG

Date	Manufacturing Date	No. of Bags
4-29-85	2-6-85	2 P/B
5-6-85	2-6-85	2 T.O.
5-14-85	2-6-85	2 Rwt
5-20-85	2-6-85	2 P/B
5-29-85	2-6-85	1 P/B
5-31-85	3-4-85	2 T.O.
6-7-85	3-4-85	2 T.O.
6-14-85	3-4-85	2 P/B
6-21-85	3-4-85	2 P/B
6-28-85	3-4-85	2 P/B
7-3-85	6-4-85	2 P/B
7-12-85	6-4-85	2 P/B
7-19-85	6-4-85	2 P/B
7-27-85	6-4-85	2 P/B
8-2-85	6-4-85	2 P/B
8-8-85	6-4-85	2 SBA
8-16-85	6-4-85	2 P/B

ANIMAL FEED LOG

Date	Manufacturing Date	No. of Bags
8-23-85	6-4-85	See CONTROL ANIMAL Log Book <i>OP</i>
8-30-85	6-4-85	<i>9/5</i>
8-30-85	7-8-85	<i>9/5</i>
9-6-85	7-8-85	<i>9/5</i>
9-13-85	7-8-85	<i>9/5</i>
9-20-85	7-8-85	<i>9/5</i>
9-26-85	8-5-85	<i>9/5</i>
10-2-85	8-5-85	<i>9/5</i>
10-10-85	8-5-85	<i>9/5</i>
10-18-85	8-5-85	<i>9/5</i>
10-25-85	8-5-85	<i>9/5</i>
11-1-85	8-5-85	<i>9/5</i>
11-1-85	9-8-85 ⁸	<i>9/5</i>
11-8-85	9-8-85	<i>9/5</i>
11-18-85	9-8-85	<i>9/5</i>
11-22-85	9-8-85	<i>9/5</i>
12-3-85	9-8-85	<i>9/5</i>
12-10-85	10-9-85	<i>9/5</i>
12-17-85	10-9-85	<i>9/5</i>
12-20-85	10-9-85	<i>9/5</i>
12-31-85	10-9-85	<i>9/5</i>
1-6-86	10-9-85	<i>9/5</i>
		✓

ANIMAL FEED LOG

Date	Manufacturing Date	No. of Bags
1/13/86	11-6-85	2 1/2
1/20/86	11-6-85	" 1/2
1-27-86	11-6-85	2 Ruct
2-3-86	12-6-85	2 Ruct
2-10-86	1-8-86	2 Ruct
2-18-86	12-6-85	2 Ruct
2-24-86	12-6-85	2 Ruct
3-3-86	1-8-86	2 Ruct
3-10-86	1-8-86	2 Ruct
3-17-86	1-8-86	2 Ruct
3-24-86	2-4-86	2 Ruct
3-31-86	2-4-86	2 Ruct
4-7-86	2-4-86	1 Ruct
4-14-86	2-4-86	2 Ruct
4-21-86	2-4-86	2 Ruct
4-27-86	3-3-86	2 Ruct

ANIMAL FEED LOG

Date	Manufacturing Date	No. of Bags	
5-5-86	3-3-86	2	Ract
5- ¹⁶ 7-86	3-3-86	2	JS
5-23-86	3-3-86	2	JS
6-3-86	4-4-86	2	JS
6-11-86	4-4-86	2	Ract
6-20-86	4-4-86	2	JS
6-27-86	4-4-86	2	JS
7-7-86	4-4-86	2	Ract
7-16-86	4-4-86	2	JS
7-23-86	4-4-86	2	JS
7-31-86	5-2-86	2	Ho
8-8-86	5-2-86	2	Ho
8-19-86	5-2-86	2	Ract
8-25-86	5-2-86	2	JS
9-3-86	5-2-86	2	JS
9-9-86	6-4-86	2	JS
9/16/86	6-4-86	1	Ract

78 6 31

8-14-88

35-553

NIH 07 **RAT and MOUSE** **RATION**

NET WT. 22.7 kg (50 lb.)

GUARANTEED ANALYSIS

Crude Protein	Min.	23.5%
Crude Fat	Min.	0%
Crude Fiber	Max.	5.5%
Ash	Max.	7.0%

INGREDIENTS

Dried Skim Milk, Fish Meal, Soybean Meal, Alfalfa Meal, Corn Gluten Meal, Rolled Corn, Ground Wheat, Wheat Middlings, Dried Yeast, Dry Molasses, Soybean Oil, Dicalcium Phosphate, Ground Limestone, Vitamin A Acetate, dl-Alpha-Tocopheryl Acetate, Choline Chloride, Folic Acid, Calcium Pantothenate, Riboflavin, Thiamine Mononitrate, Pyridoxine HCL, Cobalt Carbonate, Copper Sulfate, Iron Sulfate, Manganous Oxide, Zinc Oxide, Calcium Iodate, D-Activated Animal Sterol, Cyanocobalamin, Menadione Sodium Bisulfite Complex, Biotin, Niacin.

MANUFACTURED BY

Zeigler

Zeigler Bros., Inc.
P. O. Box 95
Gardners, PA 17324

355-55

BROOKHAVEN NATIONAL LABORATORY

MEMORANDUM

DATE: November 5, 1984
TO: The Record
FROM: R. T. Drew
SUBJECT: Contamination of NIH 07 Diet

On Thursday, November 1, we were notified by Ziegler Bros. that their most recent formulation of NIH 07 diet had been analyzed and had higher than acceptable levels of lead and arsenic. On Friday, November 2, we received a shipment consisting of 10 bags of the NIH 07 diet from the formulation that had been identified as being contaminated. However, we were also informed that Dr. Rao of the National Toxicology Program had given permission to use pelleted chow if necessary, so we retained the shipment. On Monday, November 5, I was informed by Ms. Alice Tommansini from Ziegler Bros. that the analysis had been in error and that reanalysis indicated that neither lead nor arsenic was above the recommended levels. Therefore, we are retaining the bags of 07 diet that were received on Friday, November 2 and will use them as necessary.

*WH - DRG
11/11/84*

RTD:pmb

cc: P. Bonti
P. Carr
S. Haber
Dr. G. Rao

METHYL BROMIDE CHRONIC
EXPERIMENT 840002

78 01

10-1784

35-553

NIH 07 **RAT and MOUSE** **RATION**

NET WT. 22.7 kg (50 lb.)

GUARANTEED ANALYSIS

Crude Protein	Min.	23.5%
Crude Fat	Min.	5.0%
Crude Fiber	Max.	4.5%
Ash	Max.	7.0%

INGREDIENTS

Dried Skim Milk, Fish Meal, Soybean Meal, Alfalfa Meal, Corn Gluten Meal, Rolled Corn, Ground Wheat, Wheat Middlings, Brewers Dried Yeast, Dry Molasses, Soybean Oil, Salt, Dicalcium Phosphate, Ground Limestone, Vitamin A Acetate, dl-Alpha-Tocopheryl Acetate, Choline Chloride, Folic Acid, Calcium Pantothenate, Riboflavin, Thiamine Mononitrate, Pyridoxine HCL, Cobalt Carbonate, Copper Sulfate, Iron Sulfate, Manganous Oxide, Zinc Oxide, Calcium Iodate, D-Activated Animal Sterol, Cyanocobalamin, Menadione Sodium Bisulfite Complex, Biotin, Niacin.

MANUFACTURED BY

Zeigler

Zeigler Bros., Inc.
P. O. Box 95
Gardners, PA 17324

35-553

METHYL BROMIDE CHLORIDE
EXPERIMENTAL ROUTE

4811

1113-34

35-553

NIH 07 RAT and MOUSE RATION

NET WT. 22.7 kg (50 lb.)

GUARANTEED ANALYSIS

Crude Protein	Min.	23.5%
Crude Fat	Min.	5.0%
Crude Fiber	Max.	4.5%
Ash	Max.	7.0%

INGREDIENTS

Dried Skim Milk, Fish Meal, Soybean Meal, Alfalfa Meal, Corn Gluten Meal, Shelled Corn, Ground Wheat, Wheat Middlings, Brewers Dried Yeast, Dry Molasses, Soybean Oil, Salt, Dicalcium Phosphate, Ground Lime Stone, Vitamin A Acetate, dl-Alpha-Tocopheryl Acetate, Choline Chloride, Folic Acid, Calcium Pantothenate, Riboflavin, Thiamine Mononitrate, Pyridoxine HCL, Cobalt Carbonate, Copper Sulfate, Iron Sulfate, Manganous Oxide, Zinc Oxide, Calcium Iodate, D-Activated Animal Sterol, Cyanocobalamin, Menadione Sodium Bisulfite Complex, Biotin, Niacin.

MANUFACTURED BY

Zeigler

Zeigler Bros., Inc.
P.O. Box 95
Gardners, PA 17324

ESS-55

METHYL BROMIDE CHRONIC
EXPERIMENT 840002

METHYL BROMIDE CHRONIC
EXPERIMENT 840002

35-553

NIH 07
RAT and MOUSE
RATION

NET WT. 22.7 kg (50 lb.)

GUARANTEED ANALYSIS

Crude Protein	Min.	23.5%
Crude Fat	Min.	5.0%
Crude Fiber	Max.	4.5%
Ash	Max.	7.0%

INGREDIENTS

Dried Skim Milk, Fish Meal, Soybean Meal, Alfalfa Meal, Corn Gluten Meal, Shelled Corn, Ground Wheat, Wheat Middlings, Brewers Dried Yeast, Dry Molasses, Soybean Oil, Salt, Dicalcium Phosphate, Ground Limestone, Vitamin A Acetate, dl-Alpha-Tocopheryl Acetate, Choline Chloride, Folic Acid, Calcium Pantothenate, Riboflavin, Thiamine Mononitrate, Pyridoxine HCL, Cobalt Carbonate, Copper Sulfate, Iron Sulfate, Manganous Oxide, Zinc Oxide, Calcium Iodate, D-Activated Animal Sterol, Cyanocobalamin, Menadione Sodium Bisulfite Complex, Biotin, Niacin

MANUFACTURED BY

ZEIGLER

Zeigler Bros., Inc.
P. O. Box 95
Gardners, PA 17324

35-553

ANALYSIS REPORT

Lancaster Laboratories INCORPORATED

LLI Sample No. F 349757

N I E H S
P. O. Box 12233
Res. Triangle Park, NC 27709

Date Reported 12/19/84
Date Submitted 12/12/84
Discard Date 1/19/85
P. O. No. BR-545271
Collected by Client

Zeigler Brothers Feed NIH-07 Milled 10/17/84

ANALYSIS	AS RECEIVED	LAB CODE
Standard Plate Count	110000. /gram	321-119-00
Coliforms	460. /gm by MPN	325-124-01
E. coli	< 3. /gm by MPN	326-067-02
Salmonella	Negative /100 grams	328-124-01

1 COPY TO N I E H S

Attn: Dr. G. N. Rao

*Repeat assay of NIH 07 553 P-10-17-84 m
diet for Bacterial contaminants. This diet is
acceptable for NTP Studies.*

G. N. Rao

12-26-84

*NIH 07 553
12/26/84*

*Rec'd
1/7/85*

METHYL BROMIDE CHRONIC
EXPERIMENT 840002

METHYL BROMIDE CHRONIC
EXPERIMENT 840002

170

SEE REVERSE SIDE FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS

The American Association for
Laboratory Accreditation
Chemical & Biological fields of testing

1166 400 7050

MAIN LABORATORY
2425 New Holland Pike. Lancaster, Pa 17601 • (717) 656-2301

FRANKLIN DIVISION
5424 Buchanan Trail East Waynesboro Pa 17268 • (717) 762-9132

Respectfully submitted
Lancaster Laboratories, Inc.

Reviewed and Approved by:
Valerie J. St. Clair B.S.
Group Ldr. - Food Microbiology

BROOKHAVEN NATIONAL LABORATORY
MEMORANDUM

DATE: January 28, 1985
TO: The Record
FROM: R. T. Drew
SUBJECT: NIH 07 Diet

I received a call from Dwight Cromer of Ziegler Brothers who informed me that:

- 1) In the newest milling of the diet the protein concentration is 2.5% low (within acceptable limits).
- 2) Dr. Rao authorized use of the diet, if necessary but wanted shipments withheld where possible.

After checking with Pete we have 15 bags and use 2 bags/week (7 1/2 weeks supply on hand). Therefore I informed Ziegler Brothers to withhold our monthly shipment. If we run low, we can always order a small amount of the recent milling late in February.

*WLB-qm
2/26/85*

RTD:pmc
cc: P. Bonti
J. Cardamone
P. Carr
S. B. Haber

58 2 2-1

2 - 6 - 25

35-553

NIH 07 **RAT and MOUSE** **RATION**

NET WT. 22.7 kg (50 lb.)

GUARANTEED ANALYSIS

Crude Protein	Min.	23.5%
Crude Fat	Min.	5.0%
Crude Fiber	Max.	4.5%
Ash	Max.	7.0%

INGREDIENTS

Dried Skim Milk, Fish Meal, Soybean Meal, Alfalfa Meal, Corn Gluten Meal, Shelled Corn, Ground Wheat, Wheat Middlings, Brewers Dried Yeast, Dry Molasses, Soybean Oil, Salt, Dicalcium Phosphate, Ground Limestone, Vitamin A Acetate, dl-Alpha-Tocopherol Acetate, Choline Chloride, Folic Acid, Calcium Pantothenate, Riboflavin, Thiamine Mononitrate, Pyridoxine HCL, Cobalt Carbonate, Copper Sulfate, Iron Sulfate, Manganous Oxide, Zinc Oxide, Calcium Iodate, D-Activated Animal Sterol, Cyanocobalamin, Menadione Sodium Bisulfite Complex, Biotin, Niacin.

MANUFACTURED BY

ZEIGLER

Zeigler Bros., Inc.
P. O. Box 95
Gardners, PA 17324

355-55

ALL INFORMATION CONTAINED
HEREIN IS UNCLASSIFIED
DATE 10-17-84 BY 340002

35-553

NIH 07 RAT and MOUSE RATION

NET WT. 22.7 kg (50 lb.)

GUARANTEED ANALYSIS

Crude Protein	Min.	23.5%
Crude Fat	Min.	5.0%
Crude Fiber	Max.	4.0%
	Max.	7.0%

INGREDIENTS

Dried Skim Milk, Fish Meal, Soybean Meal, Alfalfa Meal, Corn Gluten Meal, Shelled Corn, Ground Wheat, Wheat Middlings, Brewers Dried Yeast, Dry Molasses, Soybean Oil, Salt, Dicalcium Phosphate, Ground Limestone, Vitamin A Acetate, dl-Alpha-Tocopheryl Acetate, Choline Chloride, Folic Acid, Calcium Pantothenate, Riboflavin, Thiamine Mononitrate, Pyridoxine HCL, Cobalt Carbonate, Copper Sulfate, Iron Sulfate, Manganous Oxide, Zinc Oxide, Calcium Iodate, D-Activated Animal Sterol, Cyanocobalamin, Menadione Sodium Bisulfite Complex, Biotin, Niacin.

MANUFACTURED BY

Zeigler

Zeigler Bros., Inc.
P. O. Box 95
Gardners, PA 17324

355-55

METHYL BROMIDE CHRONIC
EXPERIMENT 840002

35-553

NIH 07

RAT and MOUSE RATION

NET WT. 22.7 kg (50 lb.)

GUARANTEED ANALYSIS

Crude Protein	Min.	23.5%
Crude Fat	Min.	5.0%
Crude Fiber	Max.	4.5%
Ash	Max.	7.0%

INGREDIENTS

Dried Skim Milk, Fish Meal, Soybean Meal, Alfalfa Meal, Corn Gluten Meal, Shelled Corn, Ground Wheat, Wheat Middlings, Brewers Dried Yeast, Dry Molasses, Soybean Oil, Salt, Dicalcium Phosphate, Ground Limestone, Vitamin A Acetate, dl-Alpha-Tocopheryl Acetate, Choline Chloride, Folic Acid, Calcium Pantothenate, Riboflavin, Thiamine Mononitrate, Pyridoxine HCL, Cobalt Carbonate, Copper Sulfate, Iron Sulfate, Manganous Oxide, Zinc Oxide, Calcium Iodate, D-Activated Animal Sterol, Cyanocobalamin, Menadione Sodium Bisulfite Complex, Biotin, Niacin.

MANUFACTURED BY

Zeigler

Zeigler Bros., Inc.
P. O. Box 95
Gardners, PA 17324

35-553

METHYL BROMIDE CHRONIC
EXPERIMENT 840002

15-6 85

6--4-25

35-553

NIH 07 **RAT and MOUSE** **RATION**

NET WT. 22.7 kg (50 lb.)

GUARANTEED ANALYSIS

Crude Protein	Min.	23.5%
Crude Fat	Min.	5.0%
Crude Fiber	Max.	4.5%
Ash	Max.	7.2%

INGREDIENTS

Dried Skim Milk, Fish Meal, Soybean Meal, Alfalfa Meal, Corn Gluten Meal, Shelled Corn, Ground Wheat, Wheat Middlings, Brewers Dried Yeast, Dry Molasses, Soybean Oil, Salt, Dicalcium Phosphate, Ground Lime-stone, Vitamin A Acetate, dl-Alpha-Tocopheryl Acetate, Choline Chloride, Folic Acid, Calcium Panthothenate, Riboflavin, Thiamine Mononitrate, Pyridoxine HCL, Cobalt Carbonate, Copper Sulfate, Iron Sulfate, Manganous Oxide, Zinc Oxide, Calcium Iodate, D-Activated Animal Sterol, Cyanocobalamin, Menadione Sodium Bisulfite Complex, Biotin, Niacin.

MANUFACTURED BY

Zeigler

Zeigler Bros., Inc.
P. O. Box 95
Gardners, PA 17324

35-553

**BROOKHAVEN NATIONAL LABORATORY
INTRA-LAB RECEIVING REPORT**

+-----+
| Purchase order number: 185139 |
+-----+

Bldg	Office	Deliver to	Hazard	Truck	Insp	Rec. no.
470		HABER, S. EXTN: 7112		Y		008506226

Buyer code: 25 Vendor name: ZEIGLER BROS.
Special directions:

Line	WC no.	Qty. ord.	Qty. rec.	Qty. open	Account/ILR	Date rec.
01	185139	120	10	14	0064287	08/06/85

Desc: 50 LBS./BAG, DIET ANIMAL FEED. PURGE Part#: NIH 07
Noun: FEED Adj: ANIMAL WO#: Reg. by: HABER, S. R.

*③ bags ripped
50 lbs*

35-553
**NIH 07
RAT and MOUSE
RATION**

NET WT. 22.7 kg (50 lb.)

GUARANTEED ANALYSIS	
Crude Protein	Min. 23.5%
Crude Fat	Max. 5.0%
Crude Fiber	Max. 4.5%
Ash	Max. 4.5%

INGREDIENTS
Dried Skim Milk, Fish Meal, Soybean Meal, Alfalfa Meal, Corn Gluten Meal, Shelled Corn, Ground Wheat, Wheat Middlings, Brewers Dried Yeast, Dry Molasses, Soybean Oil, Salt, Dicalcium Phosphate, Ground Lime stone, Vitamin A Acetate, dl-Alpha-Tocopheryl Acetate, Choline Chloride, Folic Acid, Calcium Pantothenate, Riboflavin, Thiamine Mononitrate, Pyridoxine HCL, Cobalt Carbonate, Copper Sulfate, Iron Sulfate, Manganese Oxide, Zinc Oxide, Calcium Iodate, D-Activated Animal Sterol, Cyanocobalamin, Monodione Sodium Disulfite Complex, Biotin, Niacin.

**METHYL BROMIDE CHRONIC
EXPERIMENT 840002**

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ESS-SE

8 8535-553

8-5-31

NIH 07

RAT and MOUSE RATION

NET WT. 22.7 kg (50 lb.)

GUARANTEED ANALYSIS

Crude Protein	Min.	23.5%
Crude Fat	Min.	5.0%
Crude Fiber	Max.	4.5%
Ash	Max.	7.0%

INGREDIENTS

Dried Skim Milk, Fish Meal, Soybean Meal, Alfalfa Meal, Corn Gluten Meal, Shelled Corn, Ground Wheat, Wheat Middlings, Brewers Dried Yeast, Dry Molasses, Soybean Oil, Salt, Dicalcium Phosphate, Ground Limestone, Vitamin A Acetate, dl-Alpha-Tocopheryl Acetate, Choline Chloride, Folic Acid, Calcium Pantothenate, Riboflavin, Thiamine Mononitrate, Pyridoxine HCL, Cobalt Carbonate, Copper Sulfate, Iron Sulfate, Manganous Oxide, Zinc Oxide, Calcium Iodate, D-Activated Animal Sterol, Cyanocobalamin, Menadione Sodium Bisulfite Complex, Biotin, Niacin.

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855-58

METHYL BROMIDE CHRONIC
EXPERIMENT 840002

35-553

NIH 07 RAT and MOUSE RATION

NET WT. 22.7 kg (50 lb.)

GUARANTEED ANALYSIS

Crude Protein	Min.	23.5%
Crude Fat	Min.	5.0%
Crude Fiber	Max.	4.5%
Ash	Max.	7.0%

INGREDIENTS

Dried Skim Milk, Fish Meal, Soybean Meal, Alfalfa Meal, Corn Gluten Meal, Shelled Corn, Ground Wheat, Wheat Middlings, Brewers Dried Yeast, Dry Molasses, Soybean Oil, Salt, D-Calcium Phosphate, Ground Limestone, Vitamin A Acetate, dl-Alpha-Tocopheryl Acetate, Choline Chloride, Folic Acid, Calcium Pantothenate, Riboflavin, Thiamine Mononitrate, Pyridoxine HCL, Cobalt Carbonate, Copper Sulfate, Iron Sulfate, Manganese Oxide, Zinc Oxide, Calcium Iodate, D-Activated Animal Sterol, Cyanocobalamin, Menadione-Sodium Disulfite Complex, Biotin, Nicotin.

MANUFACTURED BY

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ESS-58

METHYL BROMIDE CHRONIC
EXPERIMENT 840002

07.34

100985

0383

35-553

NIH 07 RAT and MOUSE RATION

NET WT. 22.7 kg (50 lb.)

GUARANTEED ANALYSIS

Crude Protein	Min.	23.5%
Crude Fat	Min.	5.0%
Crude Fiber	Max.	4.5%
Ash	Max.	7.0%

INGREDIENTS

Dried Skim Milk, Fish Meal, Soybean Meal, Alfalfa Meal, Corn Gluten Meal, Shelled Corn, Ground Wheat, Wheat Middlings, Brewers Dried Yeast, Dry Molasses, Soybean Oil, Salt, Dicalcium Phosphate, Ground Limestone, Vitamin A Acetate, dl-Alpha-Tocopheryl Acetate, Choline Chloride, Folic Acid, Calcium Pantothenate, Riboflavin, Thiamine Mononitrate, Pyridoxine HCL, Cobalt Carbonate, Copper Sulfate, Iron Sulfate, Manganese Oxide, Zinc Oxide, Calcium Iodate, D-Activated Animal Sterol, Cyanocobalamin, Menadione Sodium Bisulfite Complex, Biotin, Niacin.

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Gardners, PA 17324

ESS-SE 179

METHYL BROMIDE CHRONIC
EXPERIMENT 840002

11-6-85

35-553

NIH 07 RAT and MOUSE RATION

NET WT. 22.7 kg (50 lb.)

GUARANTEED ANALYSIS

Crude Protein	Min.	23.5%
Crude Fat	Min.	5.0%
Crude Fiber	Max.	4.5%
Ash	Max.	7.0%

INGREDIENTS

Dried Skim Milk, Fish Meal, Soybean Meal, Alfalfa Meal, Corn Gluten Meal, Shelled Corn, Ground Wheat, Wheat Middlings, Brewers Dried Yeast, Dry Molasses, Soybean Oil, Salt, Dicalcium Phosphate, Ground Limestone, Vitamin A Acetate, dl-Alpha-Tocopheryl Acetate, Choline Chloride, Folic Acid, Calcium Pantothenate, Riboflavin, Thiamine Mononitrate, Pyridoxine HCL, Cobalt Carbonate, Copper Sulfate, Iron Sulfate, Manganese Oxide, Zinc Oxide, Calcium Iodate, D-Activated Animal Sterol, Cyanocobalamin, Menadiene Sodium Bisulfite Complex, Biotin, Niacin.

MANUFACTURED BY

ZEIGLER

Zeigler Bros., Inc.
P. O. Box 95
Gardners, PA 17324

355-53

METHYL BROMIDE CHRONIC
EXPERIMENT 840002

1-7-86

Rec 10 Bags of Feed

1 Bag Broken

Leaves 9 Good Bags

Manufacturing ^{DB} Date 12-6-85
DB

M-HEXANE SUBCHRONIC
EXPERIMENT 850001

THURSTON MOTOR LINES, INC. 600 JOHNSTON ROAD CHARLOTTE, N.C. 28205 DUNS. 036995324				THUR. TRAILER NO. 5157 DATE 12-24-85		FREIGHT BILL NO. 036002-7	
BROOKHAVEN NATIONAL LABS BLDG. 490 UPTON NY 11973				ZEIGLER BROS. BOX 75 GARDENERS PA 17324			
SHIPPER B/L NUMBER	SALES CODE	SHIPPER'S ROUTING	ICC COMM.	PAGE	COPY	CUSTOMER ACCT. NUMBER	
04902	04-32270			01	10		
ORIGIN C/L WAYBILL NO.		ORIGIN C/L C&F	DELV C/L	DELV C/L C&F	TTL STD		12/30
					02-		
NO. PIECES				DESCRIPTION OF ARTICLES AND SPECIAL MARKS			
10 BAG ANIMAL FEED MHEC 57039				WEIGHT			
CLASS 50				RATE			
ALL ABOVE ON 1 SKID				CHARGES			
RATE 1-1004.443 T650				500 12.29 61.45			
DISCOUNT = 35 % 61.45				21.51			
TOTAL PIECES		SPECIAL INSTRUCTIONS		NET REVENUE		TOTAL WEIGHT	
10 P.O. # 495082						500	
RECEIVED GOODS SHOWN IN APPARENT GOOD CONDITION				CONSIGNEE		DATE	
				PER			

Manufacturing Date
12-6-85

35-553

NIH 07
RAT and MOUSE
RATION

NET WT. 22.7 kg (50 lb.)

GUARANTEED ANALYSIS	
Crude Protein	23.5%
Crude Fat	5.0%
Crude Fiber	4.5%
Ash	7.0%

INGREDIENTS

Dried Skim Milk, Fish Meal, Soybean Meal, Alfalfa Meal, Corn Gluten Meal, Shelled Corn, Ground Wheat, Wheat Middlings, Brewers Dried Yeast, Dry Molasses, Soybean Oil, Salt, Dicalcium Phosphate, Ground Linseed, Vitamin A Acetate, dl-Alpha-Tocopheryl Acetate, Choline Chloride, Folic Acid, Calcium Panthothenate, Riboflavin, Thiamine Mononitrate, Pyridoxine HCl, Cobalt Carbonate, Copper Sulfate, Iron Sulfate, Manganese Oxide, Zinc Oxide, Calcium Iodate, D-Activated Animal Sterol, Cyanocobalamin, Menadione Sodium Bisulfite Complex, Biotin, Nicotin.

MANUFACTURED BY

Zeigler

Zeigler Bros., Inc.
P. O. Box 95
Gardners, PA 17324

35-553

METHYL BROMIDE CHRONIC
EXPERIMENT 840002

MILL DATE - 1-8-86

35-553

NIH 07
RAT and MOUSE
RATION

NET WT. 22.7 kg (50 lb.)

GUARANTEED ANALYSIS

Crude Protein	Min.	23.5%
Crude Fat	Min.	5.0%
Crude Fiber	Max.	4.5%
Ash	Max.	7.0%

INGREDIENTS

Dried Skim Milk, Fish Meal, Soybean Meal, Alfalfa Meal, Corn Gluten Meal, Shelled Corn, Ground Wheat, Wheat Middlings, Brewers Dried Yeast, Dry Molasses, Soybean Oil, Salt, Dicalcium Phosphate, Ground Limestone, Vitamin A Acetate, dl-Alpha-Tocopheryl Acetate, Choline Chloride, Folic Acid, Calcium Pantothenate, Riboflavin, Thiamine Mononitrate, Pyridoxine HCL, Cobalt Carbonate, Copper Sulfate, Iron Sulfate, Manganese Oxide, Zinc Oxide, Calcium Iodate, D-Activated Animal Sterol, Cyanocobalamin, Menadione Sodium Bisulfite Complex, Biotin, Niacin.

MANUFACTURED BY

ZEIGLER

Zeigler Bros., Inc.
P. O. Box 95
Gardners, PA 17324

355-55

n-HEXANE SUBCHRONIC
EXPERIMENT 850001

METHYL BROMIDE CHRONIC
EXPERIMENT 840002

35-553

NIH 07
RAT and MOUSE
RATION

NET WT. 22.7 kg (50 lb.)

GUARANTEED ANALYSIS

Crude Protein	Min.	23.5%
Crude Fat	Min.	5.0%
Crude Fiber	Max.	4.5%
Ash	Max.	2.0%

INGREDIENTS

Dried Skim Milk, Fish Meal, Soybean Meal, Alfalfa Meal, Corn Gluten Meal, Shelled Corn, Ground Wheat, Wheat Middlings, Brewers Dried Yeast, Dry Molasses, Soybean Oil, Salt, Dicalcium Phosphate, Ground Lime-stone, Vitamin A Acetate, α -Tocopherol, Calcium Acetate, Choline Chloride, Folic Acid, Calcium Pantothenate, Riboflavin, Thiamine Mononitrate, Pyridoxine HCL, Cobalt Carbonate, Copper Sulfate, Iron Sulfate, Manganous Oxide, Zinc Oxide, Vitamin B₁₂, Iodate, D-Activated Animal Sterol, Cyanocobalamin, Menadione Sodium Bisulfite Complex, Biotin, Nicotinic

MANUFACTURED BY

ZEIGLER

Zeigler Bros., Inc.
P. O. Box 95
Gardners, PA 17324

35-553

2-27-86

Rec. 10 Bags

2 Broken

8 Good Bags

Manufacturing Date 2/4/86

Q/S

METHYL BROMIDE CHRONIC
EXPERIMENT 840002

n-HEXANE SUBCHRONIC
EXPERIMENT 850001

3/31/80 101

35-553 NIH 07 RAT and MOUSE RATION

NET WT. 22.7 Kg (50 Lbs.)

GUARANTEED ANALYSIS

Crude Protein	23.5% Min.
Crude Fat	5.0% Min.
Crude Fiber	4.5% Max.
Ash	7.0% Max.

INGREDIENTS

Dried Skim Milk, Fish Meal, Soybean Meal, Alfalfa Meal, Corn Gluten Meal, Shelled Corn, Ground Wheat, Wheat Middlings, Brewers Dried Yeast, Dry Molasses, Soybean Oil, Salt, Dicalcium Phosphate, Ground Limestone, Vitamin A Acetate, dl-Alpha-Tocopheryl Acetate, Choline Chloride, Folic Acid, Calcium Pantothenate, Riboflavin, Thiamine Mononitrate, Pyridoxine HCL, Cobalt Carbonate, Copper Sulfate, Iron Sulfate, Manganous Oxide, Zinc Oxide, Calcium Iodate, D-Activated Animal Sterol, Cyanocobalamin, Menadiol Sodium Bisulfite Complex, Biotin, Niacin.

MANUFACTURED BY:

ZEIGLER BROS., INC.

P.O. Box 95

Gardners, PA. 17324

METHYL BROMIDE CHRONIC
EXPERIMENT 840002

n-HEXANE SUBCHRONIC
EXPERIMENT 850001

35-553

NIH 07 RAT and MOUSE RATION

NET WT. 22.7 kg (50 lb.)

GUARANTEED ANALYSIS

Crude Protein	Min.	23.5%
Crude Fat	Min.	5.0%
Crude Fiber	Max.	4.5%
Ash	Max.	7.0%

INGREDIENTS

Dried-Skim Milk, Fish Meal, Soybean Meal, Alfalfa Meal, Corn Gluten Meal, Shelled Corn, Ground Wheat, Wheat Middlings, Brewers Dried Yeast, Dry Molasses, Soybean Oil, Salt, Dicalcium Phosphate, Ground Limestone, Vitamin A Acetate, α -Alpha-Tocopheryl Acetate, Choline Chloride, Folic Acid, Calcium Pantothenate, Riboflavin, Thiamine Mononitrate, Pyridoxine HCL, Cobalt Carbonate, Copper Sulfate, Iron Sulfate, Manganese Oxide, Zinc Oxide, Calcium Iodate, D-Activated Animal Sterol, Cyanocobalamin, Menadiene Sodium Bisulfite Complex, Biotin, Nicotin.

MANUFACTURED BY

ZEIGLER

Zeigler Bros., Inc.
P.O. Box 95
Gardners, PA-17324

ESS-SE

METHYL BROMIDE CHRONIC
EXPERIMENT 840002

BROOKHAVEN NATIONAL LABORATORY

INTRA-LAB RECEIVING REPORT

+-----+
 | Purchase order number: 196083 |
 +-----+

Bldg	Office	Deliver to	Hazard	Truck	Insp	Rec. no
490		HABER, S. EXTN: 7112		T		00860531

Buyer code: 55 Vendor name: ZEIGLER BROS.
 Special directions: PREVIOUS P.O. 185139

Line	WC no.	Qty. ord.	Qty. rec.	Qty. open	Account/ILR	Date rec
01	196083	120	10	20	006428/	05/28/86

Desc: 50 LBS. BAG, DIET ANIMAL FEED Part#: NIH 07
 Noun: FEED Adj: ANIMAL WO#: Req by: HABER, S.

5-28-86

Rec. 10 Bags
 manufacturing Date 5-2-86

Cj Bonts

on
①

Shed

METHYL BROMIDE CHRONIC
 EXPERIMENT 840002

6/4/86 4.0'

35-553 NIH 07 RAT and MOUSE RATION

NET WT. 22.7 Kg (50 Lbs.)

GUARANTEED ANALYSIS

Crude Protein	18.5% Min.
Crude Fat	5.0% Min.
Crude Fiber	4.5% Max.
Ash	7.0% Max.

INGREDIENTS

Dried Skim Milk, Fish Meal, Soybean Meal, Alfalfa Meal, Corn Gluten Meal, Shelled Corn, Ground Wheat, Wheat Middlings, Brewers Dried Yeast, Dry Molasses, Soybean Oil, Salt, Dicalcium Phosphate, Ground Limestone, Vitamin A Acetate, dl-Alpha-Tocopheryl Acetate, Choline Chloride, Folic Acid, Calcium Pantothenate, Riboflavin, Thiamine Mononitrate, Pyridoxine HCL, Cobalt Carbonate, Copper Sulfate, Iron Sulfate, Manganous Oxide, Zinc Oxide, Calcium Iodate, D-Activated Animal Sterol, Cyanocobalamin, Menadione Sodium Bisulfite Complex, Biotin, Niacin.

MANUFACTURED BY:

ZEIGLER BROS., INC.

P.O. Box 95

Gardners, PA. 17324

187

METHYL BROMIDE CHRONIC
EXPERIMENT 840002

NY
NEW YORK TESTING LABORATORIES, INC.
CALL BOX 1021, 75 URBAN AVENUE, WESTBURY, N.Y. 11590 • (516) 334-7770 • (212) 297-1449 TWX 510-222-0283

Lab. No. 84-72107
P.O. No. BNL 587626

REPORT OF ANALYSIS

FOR

BROOKHAVEN NATIONAL LABORATORIES
MEDICAL DEPARTMENT
UPTON, NEW YORK 11973

NEW YORK TESTING LABORATORIES, INC.

Page Contents

Lab No. 84-72107

TABLE OF CONTENTS

	<u>Page No.</u>
1.0 REFERENCES	1
2.0 TEST REQUIREMENTS	2
3.0 SAMPLE IDENTIFICATION	2
4.0 RESULTS	2 - 4
5.0 CONCLUSION	5
6.0 CERTIFICATION	6

NEW YORK TESTING LABORATORIES, INC.

Page 1.

Lab No. 84-72107

1.0 References

- 1.1 Client purchase order number: BNL 587626
- 1.2 Lab. No. 84-72107
- 1.3 Standard Methods for the Examination of Water & Wastewater, 14th edition, 1975
- 1.4 Handbook for analytical Quality Control in Water-Wastewater Laboratories - EPA-600/4-79-019, March, 1979.
- 1.5 Method for Organochlorine Pesticides, National Pollutant Discharge Elimination System, Appendix A, Fed. Reg. 38 No. 75 Pt. II.
- 1.6 Method for Chlorinated Phenoxy Acid Herbicides, National Pollutant Discharge Elimination System, Appendix A, Fed. Register, 38 No. 75 Pt.
- 1.7 The determination of Volatile Organic Compounds at the $\mu\text{g/l}$ level in water by Gas Chromatography EPA 670/4-74-009.

2.0 Test Requirements

- 1. Chemical and Metal Analysis
- 2. Organic Constituents

NEW YORK TESTING LABORATORIES, INC.

Page 2.

Lab No. 84-72107

3.0 Sample Identification: 5/2/84

Date sampled: 5/2/84

Collected by: Brookhaven National Laboratories

Date received by NYTL: 5/2/84

4.0 Results

4.1 Physical Analysis

4.2 Chemical and Metal Analysis

NEW YORK TESTING LABORATORIES, INC.

Page 3.

Lab No. 84-72107

4.2 Chemical & Metal Analysis

<u>Results in mg/l</u>	<u>Maximum Levels</u>	<u>Found</u>
BOD, 5 Day	-	3
COD	-	2
Total Organic Carbon	-	1
Alkalinity	-	26
Ammonia	2.0 max.	0.14
Fluoride	2.0 max.	0.50
Hardness	-	13
Dissolved Oxygen	-	8.2
Nitrate	10 max.	0.17
Nitrite	1.0 max.	< 0.01
Phosphate	-	0.04
Aluminum	-	< 0.10
Arsenic	0.05 max.	< 0.001
Beryllium	-	< 0.003
Barium	1.0 max.	< 0.05
Boron	-	< 1.0
Cadmium	0.010 max.	< 0.003
Chromium	0.05 max.	< 0.010
Copper	1.0 max.	0.386
Iron	0.3 max.	0.446
Lead	0.05 max.	0.050
Magnesium	-	2.87
Manganese	0.3 max.	0.013
Mercury	0.002 max.	< 0.0001
Nickel	-	< 0.020
Potassium	-	0.90
Selenium	0.01 max.	< 0.001
Silver	0.05 max.	< 0.006
Sodium	-	16.22
Zinc	5 max.	0.057
Sulfate	-	10

< = Less than

NEW YORK TESTING LABORATORIES, INC.

Page 4.

Lab No. 84-72107

4.3 Organic Constituents

	<u>RESULTS</u>		
	<u>Maximum Levels mg/l</u>	<u>Found mg/l</u>	<u>Test Method</u>
Endrin	0.0002	< 0.0001	1.5
Methoxychlor	0.1	< 0.05	1.5
Lindane	0.004	< 0.001	1.5
Toxaphene	0.005	< 0.001	1.5
2, 4, D	0.1	< 0.005	1.6
2, 4, 5 - TP (Silvex)	0.01	< 0.0005	1.6
Aldrin	0.001	< 0.0005	1.5
Chlordane	0.003	< 0.001	1.5
DDT's	0.050	< 0.001	1.5
Dieldrin	0.001	< 0.001	1.5
Heptachlor	0.001	< 0.0005	1.5
Heptachlor Epoxide	0.0001	< 0.00005	1.5
1, 1, 2 Trichloroethylene	0.050	< 0.002	1.7
Trifluoro-trichloroethane	0.050	< 0.002	1.7
Tetrachloroethylene	0.050	< 0.002	1.7
Chloroform	0.050	< 0.002	1.7
Carbon Tetrachloride	0.050	0.007	1.7
1, 1, 1 Trichloroethane	0.050	< 0.002	1.7
Benzene	-	< 0.005	1.7
Methylene Chloride	-	0.002	1.7

< = Less than

NEW YORK TESTING LABORATORIES, INC.

Page 5.

Lab No. 84-72107

5.0 CONCLUSION

Iron is too high.

6.0 CERTIFICATION

We certify that this report is a true report of results obtained from our tests of this material.

Respectfully submitted,

NEW YORK TESTING LABORATORIES, INC.

G. J. Horvitz, Chief Officer

Att: Dr. Robert T. Drew
Bldg. 490

eg

REPORT OF TESTS

Date: August 9, 1985

Lab. No.: 85-10845

Client	Brookhaven National Laboratory
Material	One (1) Water Sample
Identification	See The Following Pages (Sample Received 5/22/85)
Client's Order No.	BNL587626
Submitted for	<u>Chemical Analysis</u>

(For Results, see the following pages)

Report prepared by:

Remo Gigante
Laboratory DirectorWe certify that this report is a
true report of results obtained
from our tests of this material.

Respectfully submitted,

Nyttest Environmental Inc.

To:

Brookhaven National Laboratory
Medical Dept.
Upton, N.Y. 11973
G. Horvitz, Chief OfficerAtt: Dr. Robert T. Drew/
Robert Pech
Bldg. 490**METHYL BROMIDE CHRONIC
EXPERIMENT 840002**

jw

Report on sample(s) furnished by client applies to sample(s). Report on sample(s) obtained by us applies only to lot sampled. Information contained herein is not to be used for reproduction except by special permission. Sample(s) will be retained for thirty days maximum after date of report unless specifically requested otherwise by client. In the event that there are portions or parts of sample(s) remaining after Nytest has completed the required tests, Nytest shall have the option of returning such sample(s) to the client at the client's expense.

Page: 2

Lab. No. 85-10845

RESULTS

<u>Results in mg/l</u>	<u>Sample Identification</u>	
	<u>Max. Limits</u>	<u>Animal Water</u>
BOD, 5 Day	-	6
COD	-	8
Total Organic Carbon	-	1
Alkalinity	-	38
Ammonia	2.0	0.70
Flouride	2.0	0.05
Hardness as CaCO_3	-	23
Dissolved Oxygen	-	12.3
Nitrate	10	0.41
Nitrite	1.0	0.04
Phosphate	-	0.10
Aluminum	-	< 0.10
Arsenic	0.05	< 0.001
Beryllium	-	< 0.003
Barium	1.0	< 0.050
Boron	-	< 2.0
Cadmium	0.010	< 0.003
Chromium	0.05	< 0.010
Copper	1.0	0.49

< = Less than

TOTAL ANALYTICAL SERVICES FOR A SAFE ENVIRONMENT

nytest environmental inc.

Page: 3

Lab. No.: 85-10845

RESULTSSample Identification

<u>Results in mg/l</u>	<u>Max. Limits</u>	<u>Animal Water</u>
Iron	0.3	0.223
Lead	0.05	0.05
Magnesium	-	2.160
Manganese	0.3	< 0.010
Mercury	0.002	0.0154
Nickel	-	< 0.020
Potassium	-	0.71
Selenium	0.01	0.028
Silver	0.05	< 0.006
Sodium	-	18.84
Zinc	5	0.157
Sulfate	-	11

< = Less than

Page: 4

Lab. No.: 85-10845

RESULTSOrganic ConstituentsSample Identification Animal WaterRESULTS

	<u>Maximum Levels</u> <u>mg/l</u>	<u>Found</u> <u>mg/l</u>	<u>Test Method</u>
Endrin	0.0002	< 0.0001	1.5
Methoxychlor	0.1	< 0.001	1.5
Lindane	0.004	< 0.001	1.5
Toxaphene	0.005	< 0.001	1.5
2, 4, D	0.1	< 0.05	1.6
2, 4, 5 - TP (Silvex)	0.01	< 0.005	1.6
Aldrin	0.001	< 0.0005	1.5
Chlordane	0.003	< 0.001	1.5
DDT's	0.050	< 0.001	1.5
Dieldrin	0.001	< 0.0005	1.5
Heptachlor	0.001	< 0.0005	1.5
Heptachlor Epoxide	0.0001	< 0.00005	1.5
1, 1, 2-Trichloroethylene	0.050	< 0.001	1.7
Trifluoro-trichloroethane	0.050	< 0.001	1.7
Tetrachloroethylene	0.050	< 0.001	1.7
Chloroform	0.050	< 0.001	1.7
Carbon Tetrachloride	0.050	< 0.001	1.7
1, 1, 1-Trichloroethane	0.050	< 0.001	1.7
Benzene	0.050	< 0.001	1.7
Methylene Chloride	0.050	< 0.001	1.7

< = Less than

TOTAL ANALYTICAL SERVICES FOR A SAFE ENVIRONMENT

nytest environmental inc.

Page: 3

Lab. No.: 85-10845

RESULTSSample Identification

<u>Results in mg/l</u>	<u>Max. Limits</u>	<u>Animal Water</u>
Iron	0.3	0.223
Lead	0.05	0.05
Magnesium	-	2.160
Manganese	0.3	< 0.010
Mercury	0.002	< 0.0005
Nickel	-	< 0.020
Potassium	-	0.71
Selenium	0.01	0.003
Silver	0.05	< 0.006
Sodium	-	18.84
Zinc	5	0.157
Sulfate	-	11

< = Less than

METHYL BROMIDE CHRONIC
EXPERIMENT 840002

BROOKHAVEN NATIONAL LABORATORY
ASSOCIATED UNIVERSITIES, INC.

Upton, Long Island, New York 11973

Medical Department

(516) 282-
FTS 666-
3575

September 23, 1985

G. J. Horvitz, Chief Officer
Nytest Environmental Inc.
Call Box 1021
75 Urban Avenue
Westbury, NY 11590

Re: BNL 587626

Dear Mr. Horvitz,

On August 12, I received results from your laboratory documenting concentrations of a variety of contaminants in a sample of animal drinking water submitted to your laboratory for analysis. At that time your analysis indicated that mercury and selenium concentrations were 0.0154 and 0.028 mg/l, 7.7 and 2.8 times the maximum allowable limits respectively. I requested a reanalysis and recently received results indicating mercury and selenium concentrations of <0.005 and 0.003 respectively.

However, I received no explanation of why the results were different. What sort of quality control procedures are in effect at your laboratory? Are you certified by any national board? Can you tell me why the results from reanalysis were so different from the original results? Our research is sponsored by The National Toxicology Program and our laboratory must conform to Good Laboratory Practice regulations promulgated by the Environmental Protection Agency and the Food and Drug Administration. We cannot submit divergent results of drinking water analysis without some explanation.

Thank you for your cooperation in this matter.

Sincerely,

Robert T. Drew, Ph.D.

RTD:gc

cc H₂O analysis file

METHYL BROMIDE CHRONIC
EXPERIMENT 840002

TOTAL ANALYTICAL SERVICES FOR A SAFE ENVIRONMENT

nytest environmental inc.

October 25, 1985

Robert T. Drew, Ph.D.
Brookhaven National Laboratory
Associated Universities, Inc.
Upton, Long Island, N. Y. 11973

Dear Mr. Drew:

In response to your letter dated September 23, 1985 regarding the inconsistency of mercury and selenium results on the animal drinking water submitted by your laboratory, I would like to offer the following explanation.

After careful scrutiny of all data obtained, the error appears to be in the transcription of the results. The correct results were those of the re-analysis, that is a mercury concentration of < 0.0005 and a selenium concentration of 0.003 .

Nyttest Environmental Inc. employs a rigorous quality control program and our records are always available to any customers who request to see them. We are also certified by the States of New York and New Jersey to do drinking water analyses.

I hope this eliminates all problems regarding this matter and if I can be of any further assistance, please do not hesitate to contact me.

Sincerely,

Nyttest Environmental Inc.

Remo Gigante
Laboratory Director

RG/mg

METHYL BROMIDE CHRONIC
EXPERIMENT 840002

BROOKHAVEN NATIONAL LABORATORY

MEMORANDUM

DATE: October 30, 1985

TO: The Record

FROM: Dr. Robert T. Drew, Principal Investigator

SUBJECT: Water Analysis Report for 1985

Upon receipt of the results of the annual water analysis from NYtest Environmental, Inc., the reported concentrations of mercury and selenium were 0.0154 and 0.028 mg/l respectively, 7.7 and 2.8 times the maximum allowable limits. A reanalysis was requested and the new results for mercury and selenium were reported at concentrations of .005 and .003 respectively. A request for an explanation of the discrepancy uncovered an error in the transcription of the results. The testing laboratory has assured us that the concentrations of mercury and selenium are in fact well within the maximum allowable limits. All pertinent correspondence concerning this problem is now located in the NTP Archives.

RTD:sbh

nytest environmental inc.

REPORT OF TESTS

Date: July 29, 1986

Lab. No.: 86-12236

Client	Brookhaven National Labs.
Material	One (1) Water Sample
Identification	See the Following Pages (Sample Received 6/23/86)
Client's Order No.	274743
Submitted for	<u>Chemical Analysis</u>

(For Results, see the following pages)

Report prepared by:

Adrian D'Netto
GCMS Supervisor

Report reviewed by:

Peggy Sacks *PS*
Q.C. Manager

To:

Brookhaven National Labs.
Medical Dept.
Upton, N.Y. 11973

Att: Mr. Bob Peck

ef

CERTIFICATION

We certify that this report is a true report of results obtained from our tests of this material.

Respectfully submitted,

Nyttest Environmental Inc.

Remo Gigante, Laboratory Director
METHYL BROMIDE CHRONIC
EXPERIMENT 840002

Report on sample(s) furnished by client applies to sample(s). Report on sample(s) obtained by us applies only to lot sampled. Information contained herein is not to be used for reproduction except by special permission. Sample(s) will be retained for thirty days maximum after date of report unless specifically requested otherwise by client. In the event that there are portions or parts of sample(s) remaining after Nytest has completed the required tests, Nytest shall have the option of returning such sample(s) to the client at the client's expense.

Page: 2.

Lab. No.: 86-12236

Sample Identification: Water 6/23/86

<u>Results in mg/l</u>	<u>Maximum Levels</u>	<u>Found</u>
BOD, 5 Day	-	7
COD	-	4
Total Organic Carbon	-	15
Alkalinity	-	38
Ammonia	2.0 max.	< 0.04
Fluoride	2.0 max.	0.08
Hardness	-	21
Dissolved Oxygen	-	8.69
Nitrate	10 max.	0.93
Nitrite	1.0 max.	< 0.01
Phosphate	-	0.08
Aluminum	-	< 0.10
Arsenic	0.05 max.	< 0.002
Beryllium	-	< 0.003
Barium	1.0 max.	< 0.05
Boron	-	< 2.0
Cadmium	0.010 max.	< 0.003
Chromium	0.05 max.	< 0.010
*Copper	1.0 max.	1.86
Iron	0.3 max.	0.170
Lead	0.05 max.	< 0.025
Magnesium	-	2.59
Manganese	0.3 max.	0.017
Mercury	0.002 max.	< 0.0005
Nickel	-	< 0.020
Potassium	-	1.20
Selenium	0.01 max.	< 0.002
Silver	0.05 max.	< 0.006
Sodium	-	12.8
Zinc	5 max.	< 0.003
Sulfate	-	16

< = Less than

* Copper exceeds N.Y. State Requirements.

Page 3.

LOG # 86-12236

Organic ConstituentsDrinking WaterSample Identification:Water 6/23/86RESULTS

	<u>Maximum Levels</u> (mg/l)	<u>Detection Limit</u> (mg/l)	<u>Found</u> (mg/l)
Endrin	0.0002	0.0001	ND
Methoxychlor	0.1	0.001	ND
Lindane	0.004	0.001	ND
Toxaphene	0.005	0.001	ND
2,4,-D	0.1	0.05	ND
2,4,5 - TP (Silvex)	0.01	0.005	ND
Aldrin	0.001	0.0005	ND
Chlordane	0.003	0.001	ND
DDT's	0.050	0.001	ND
Dieldrin	0.001	0.0005	ND
Heptachlor	0.001	0.0005	ND
Heptachlor Enoxide	0.0001	0.00005	ND

ND = None Detected

Page. 4.

Lab. No. 86-12236

Organic Constituents

Drinking Water

Sample Identification:

Water 6/23/86

RESULTS

	<u>Maximum Levels</u> <u>(mg/l)</u>	<u>Detection Limit</u> <u>(mg/l)</u>	<u>Found</u> <u>(mg/l)</u>
1,1,2-Trichloroethylene	0.050	0.010	ND.
Trifluoro-trichloroethane	0.050	0.010	ND.
Tetrachloroethylene	0.050	0.010	ND.
Chloroform	0.050	0.010	ND.
Carbon Tetrachloride	0.050	0.010	ND.
1,1,1-Trichloroethane	0.050	0.010	ND.

ND = None Detected

BROOKHAVEN NATIONAL LABORATORY

MEMORANDUM

DATE: September 19, 1986
TO: File
FROM: R. B. Aronson *R. B. Aronson*
SUBJECT: VISIT TO NYTEST ENVIRONMENTAL, INC.

On Thursday, September 18, 1986 several members of BNL Staff visited NYTEST Labs to ascertain the type of quality assurance program conducted and the quality of operation. Members of this inspection team were:

- V. Gutierrez, Quality Insurance, BNL
- R. B. Aronson, Quality Insurance, Medical Department
- J. Steimers, Anal. Test Lab, S & EP Division
- E. Ferrari, Anal. Test Lab, DAS

We were all equally impressed that this Laboratory uses sound operating procedures, and carries out a documented quality assurance program. They continuously do both required and non-required testing, external and internal in origin. (NYS Department of Health 4/year; EPA: 4/year).

The incorrect mercury and selenium results which were the result of a clinical error were probably not caught during the final inspection of reports due to the sample having been labeled "Animal Water". The chance of it having been noticed would have been better if it had been labeled "drinking water" (which it was).

The latest analysis from our NTP Program sampling schedule showed a high value for copper. A second sample was collected and sent to our own Analytical Lab (DAS) as well as NYTEST for a re-analysis. The results were both below the MPL and agreed within 10%. I saw the data sheets for the copper analysis, the EPA standard runs, the duplicate values obtained, and the results for the unknown plus added internal standard, and see no explanation for the first test result error. It must be laid to contamination at some point, undetermined.

In general, I was satisfied with the operation, the laboratories, and the equipment and would not hesitate to send further samples to this Laboratory for testing.

RBA:mas
cc: V. Gutierrez
S. Haber

METHYL BROMIDE CHRONIC
EXPERIMENT 840002

REPORT OF TESTS

Date: September 30, 1986

Lab No.: 86-12629

Client Brookhaven National Labs.
Material Water Sample
Identification As Below
Client's Order No. 274746
Submitted for Copper Analysis

We find as follows:

<u>Sample Identification</u>	<u>Results in - (mg/l)</u>
9/11/86	Copper 0.527

Report reviewed by:

Peggy Sacks *PS*
Q.C. Manager

To:

Brookhaven National Labs.
Medical Dept. Bldg. 490
Upton, NY 11973

Att: Mr. R. Peck

ef

We certify that this report is a true
report of results obtained from our
tests of this material.

Respectfully submitted,

Nyttest Environmental Inc.

[Signature]
Remo Gigante, Laboratory Director

METHYL BROMIDE CHRONIC
EXPERIMENT 840002

Report on sample(s) furnished by client applies to sample(s). Report on sample(s) obtained by us applies only to lot sampled. Information contained herein is not to be used for reproduction except by special permission. Sample(s) will be retained for thirty days maximum after date of report unless specifically requested otherwise by client. In the event that there are portions or parts of sample(s) remaining after Nytest has completed the required tests, Nytest shall have the option of returning such sample(s) to the client at the client's expense.

APPENDIX C3

Temperature Record for Inhalation Chambers Used During the 104-Week
Mouse Study of Methyl Bromide

Chamber	Month/ Year	Temp Avg °C	S.D.	n ^a	n in Recommended Range
<u>Control Chamber</u>					
	10/84	23.5	0.48	36 ^b	36
	11/84	23.7	0.62	30	27
	12/84	23.6	0.27	31	31
	01/85	23.6	0.34	31	30
	02/85	23.6	0.32	28	27
	03/85	23.9	0.45	23 ^c	-- ^c
	04/85	24.0	0.28	30	30
	05/85	23.8	0.39	31	28
	06/85	23.6	0.49	29	29
	07/85	24.2	0.31	31	29
	08/85	24.3	0.51	31	24
	09/85	24.4	0.65	30	22
	10/85	24.0	0.75	29 ^d	-- ^c
	11/85	23.3	0.34	30	28
	12/85	22.9	0.56	31	20
	01/86	23.0	0.40	31	25
	02/86	23.0	0.24	28	24
	03/86	22.7	0.22	29	25
	04/86	23.1	0.14	30	29
	05/86	23.0	0.53	31	-- ^c
	06/86	23.1	0.54	30	-- ^c
	07/86	23.2	0.62	28 ^d	-- ^c
	08/86	23.2	0.46	31	-- ^c
	09/86	23.2	0.74	26	-- ^c
<u>Study Summary</u>		23.5	0.47	715	

^a n = days recorded^b Included 09/26/84 - 09/30/84^c Information unavailable due to sensor malfunction; tempscribe records indicate that temperature was in normal range.^d Data missing due to computer malfunction; tempscribe records indicate that temperature was in normal range.

Temperature Record for Inhalation Chambers Used During the 104-Week
Mouse Study of Methyl Bromide
(Cont'd)

Chamber	Month/ Year	Temp Avg °C	S.D.	n ^a	n in Recommended Range
10 PPM	10/84	23.3	0.41	36 ^b	36
	11/84	23.5	0.62	30	25
	12/84	23.3	0.37	31	29
	01/85	23.2	0.31	31	30
	02/85	23.3	0.43	28	26
	03/85	23.7	0.32	10 ^c	10 ^c
	04/85	23.9	0.20	30	30
	05/85	23.6	0.41	31	29
	06/85	23.7	0.34	29	29
	07/85	24.1	0.30	31	31
	08/85	24.0	0.32	31	30
	09/85	23.7	0.37	30	29
	10/85	23.5	0.34	29 ^d	-- ^c
	11/85	23.5	0.25	30	30
	12/85	22.9	0.56	31	19 ^c
	01/86	22.9	0.33	31	26
	02/86	23.3	0.30	28	27
	03/86	23.4	0.25	29	29
	04/86	23.0	0.24	30	28
	05/86	23.2	0.46	31	27
	06/86	23.1	0.61	30	17 ^c
	07/86	23.3	0.59	28	21
	08/86	23.2	0.51	31	22
	09/86	23.5	0.85	26	20
Study Summary		23.4	0.32	702	

^a n = days recorded

^b Included 09/26/84 - 09/30/84

^c Information unavailable due to sensor malfunction; tempscribe records indicate that temperature was in normal range.

^d Data missing due to computer malfunction; tempscribe records indicate that temperature was in normal range.

Temperature Record for Inhalation Chambers Used During the 104-Week
Mouse Study of Methyl Bromide
(Cont'd)

Chamber	Month/ Year	Temp Avg °C	S.D.	n ^a	n in Recommended Range
<u>33 PPM</u>	10/84	23.6	0.39	36 ^b	36
	11/84	23.8	0.57	30	30
	12/84	23.6	0.38	31	29
	01/85	23.5	0.22	31	30
	02/85	23.7	0.39	28	28
	03/85	24.0	0.28	10 ^c	9 ^c
	04/85	24.3	0.20	30	28
	05/85	24.0	0.39	31	29
	06/85	23.9	0.31	29	28
	07/85	24.4	0.26	31	29
	08/85	24.3	0.29	31	30
	09/85	23.9	0.45	30	27
	10/85	23.9	0.40	29 ^d	-- ^c
	11/85	23.6	0.28	30	30
	12/85	23.3	0.40	31	29
	01/86	23.1	0.36	31	26
	02/86	23.5	0.27	28	28
	03/86	23.5	0.32	29	29
	04/86	23.1	0.20	30	28
	05/86	23.4	0.37	31	28
	06/86	23.2	0.58	30	21
	07/86	23.4	0.54	28 ^c	24 ^c
	08/86	23.3	0.44	31	29
	09/86	23.6	0.78	26	20
<u>Study Summary</u>		23.7	0.37	702	

^a n = days recorded

^b Included 09/26/84 - 09/30/84

^c Information unavailable due to sensor malfunction; tempscribe records indicate that temperature was in normal range.

^d Data missing due to computer malfunction; tempscribe records indicate that temperature was in normal range.

Temperature Record for Inhalation Chambers Used During the 104-Week
Mouse Study of Methyl Bromide
(Cont'd)

Chamber	Month/ Year	Temp Avg °C	S.D.	n ^a	n in Recommended Range
100 PPM	10/84	23.6	0.42	36 ^b	35
	11/84	23.5	0.60	30	25
	12/84	23.2	0.26	31	25
	01/85	22.9	0.21	31	24
	02/85	22.6	0.31	28	11 ^c
	03/85	23.2	0.51	23 ^c	-- ^c
	04/85	23.2	0.22	30	29
	05/85	23.2	0.39	31	27
	06/85	23.1	0.48	29	22
	07/85	23.3	0.28	31	30
	08/85	22.9	0.28	31	24
	09/85	22.9	0.48	30	22
	10/85	24.3	0.61	28 ^d	-- ^c
	11/85	23.6	0.33	30	29
	12/85	22.8	0.61	31	30
	01/86	22.3	0.30	31	15 ^c
	02/86	22.6	0.17	28	18 ^c
	03/86	22.6	0.21	29	13 ^c
	04/86	22.3	0.17	30	-- ^c
	05/86	22.4	0.43	31	-- ^c
	06/86	22.5	0.58	30	-- ^c
	07/86	22.5	0.55	28 ^c	-- ^c
	08/86	22.5	0.44	31	-- ^c
	09/86	22.6	0.53	26	17 ^c
Study Summary		22.9	0.50	714	

^a n = days recorded

^b Included 09/26/84 - 09/30/84

^c Information unavailable due to sensor malfunction; tempscribe records indicate that temperature was in normal range.

^d Data missing due to computer malfunction; tempscribe records indicate that temperature as in normal range.

APPENDIX C4

Relative Humidity Record for Chamber Room Used During the 104-Week Mouse Study of Methyl Bromide

Area	Month/ Year	RH Avg. %	S.D.	n ^a	RH Max %	RH Min %
<u>Chamber Room A</u>						
	10/84	53.1	4.62	5	80 ^b	38
	11/84	59.2	4.07	5	85 ^c	38
	12/84	62.5	2.54	4	75	50
	01/85	54.2	10.48	4	74	11 ^d
	02/85	50.5	2.78	5	62	40
	03/85	48.6	1.86	4	70	34
	04/85	48.2	2.80	4	72	37
	05/85	51.3	5.78	5	70	31
	06/85	55.3	1.90	4	76	45
	07/85	56.9	0.83	4	75	47
	08/85	57.6	1.44	5	72	50
	09/85	59.0	0.94	5	76	46
	10/85	53.5	3.93	4	72	36
	11/85	52.1	3.90	4	76	38
	12/85	50.5	1.18	4	62	42
	01/86	49.2	1.78	5	64	42
	02/86	47.4	1.67	5	64	44
	03/86	49.2	1.34	4	64	40
	04/86	49.1	1.68	4	64	38
	05/86	53.6	7.05	5	73	32
	06/86	56.7	2.41	4	74	48
	07/86	57.2	2.11	4	70	50
	08/86	57.3	3.24	4	72	44
	09/86	56.2	2.64	4	72	40
<u>Study Summary</u>		53.7	4.12	105	85 ^c	11 ^d

^a n = weeks recorded^b Power failure on night of 09/25/84, week of 10/29/84 and 11/05/84.^c Unacceptable levels; difficulty in regulating chillers.^d Building humidifier malfunctioned on week of 01/18/85.

Relative Humidity Record for Animal Chamber Used During the 104-Week Mouse Study of
Methyl Bromide

(Cont'd)

Area	Month/ Year	RH Avg. %	S.D.	n ^a	RH Max %	RH Min %
<u>Control Chamber</u>						
	10/84	65.2	6.36	5	90 ^b	36
	11/84	61.9	3.83	5	76	51
	12/84	56.9	3.18	5	85	43
	01/85 ^c	51.0	1.80	4	74	22 ^d
	02/85	55.0	2.89	5	76	41
	03/85	54.4	2.24	4	78	41
	04/85	56.2	3.11	4	80	44
	05/85	63.4	5.95	4	82	42
	06/85	60.6	1.13	5	80	48
	07/85	64.6	2.20	4	80	52
	08/85	66.7	1.55	5	83	55
	09/85	65.4	1.52	5	80	45
	10/85	54.6	4.36	4	74	35
	11/85	55.5	0.87	4	78	34
	12/85	49.5	4.69	4	69	38
	01/86	50.4	4.65	5	70	40
	02/86 ^e	49.1	3.51	5	66	40
	03/86	48.5	2.61	4	66	38
	04/86	49.2	4.08	4	70	40
	05/86	57.3	3.14	5	71	38
	06/86	54.9	3.50	4	72	37
	07/86	59.2	1.28	4	72	50
	08/86	57.9	4.60	4	74	46
	09/86	57.3	2.38	4	71	44
<u>Study Summary</u>		56.9	5.63	106	90 ^b	22 ^d

^a n = weeks recorded

^b Power failure on night of 09/25/84.

^c Weeks of 01/07/85, 01/14/85, 01/21/85, hygrometer was taken out of chamber several times for calibration.

^d Week of 01/21/85, building humidifier malfunctioned; repaired following week.

^e Week of 01/27/86, average taken over 5 days.
Week of 02/03/86, average taken over 4 days.

PROTOCOL

1.0 Study Title

Two Year Chronic Inhalation Toxicity and Carcinogenicity Studies of Methyl Bromide in B6C3F1 Mice.

2.0 Purpose of Study

The purpose of this study is to assess the chronic toxicity and carcinogenicity of methyl bromide.

3.0 Management of Study3.1 Sponsor's Name and Address:

National Toxicology Program
National Institute of Environmental Health Sciences
P.O. Box 12233
Research Triangle Park, NC 27709

3.2 Sponsor's Project Officer and Chemical Manager:

Project Officer: Dr. Raymond S. H. Yang
Chemical Manager: Dr. Raymond S. H. Yang

3.3 Testing Laboratory's Name and Address:

Brookhaven National Laboratory
Medical Department
Upton, NY 11973
Study Room: Inhalation Toxicology Facility, Chamber Room A

3.4 Supervisory Personnel Assigned to the Study:

Principal Investigator: Robert T. Drew, Ph.D., DABT
Study Director: Sonja B. Haber, Ph.D.
Laboratory Animal Veterinarian: Darrel D. Joel, D.V.M., Ph.D.
Pathologist: Scheduled Necropsies, Scot Eustis, D.V.M. (EPL)
 Unscheduled Necropsies, Merrill R. Osheroff, Ph.D.
Neurobehavioral Toxicologist: Sonja B. Haber, Ph.D.
Hematologist: Eugene P. Cronkite, M.D.
Analytical Chemist: Max A. Schmaeler, M.S.

3.5 Quality Assurance Officer:

Lawrence V. Hanks, Ph.D.

3.6 Study Schedule:

Test Material Receipt: December 15, 1982
Dosage Analysis: September 10, 1984
Animals Arrive: September 12, 1984
Exposures Commence: September 26, 1984

Unless otherwise stated this study will follow the NTP General Statement of Work, January, 1984.

Six Month Sacrifice: March 27, 1985
Interim Report: May 27, 1985
Fifteen Month Sacrifice: January 1, 1986
Interim Report: March 3, 1986
Exposures Completed: September 16, 1986
Necropsy Commences: September 22, 1986
Report to Sponsor: April 16, 1987

3.7 Good Laboratory Practices

This study will be conducted in accordance with EPA and FDA Good Laboratory Practice regulations and will be monitored under provisions of the Medical Department's Quality Assurance Program.

4.0 Test and Control Material Data

4.1 Test Material

Identification: Methyl Bromide (CH_3Br)
Matheson Lot/Batch No.: EZ1-1012-00 (MFG)
MRI Lot No.: M102882, batch no. 2.
CAS No.: 74-83-9
NTP No.: C04148B
Physical State: Gas
Color: Colorless
Molecular Weight: 94.95
Purity: at least 98%
Melting Point: -93.66°C
Boiling Point: 4.5°C
Flammability: Not flammable
Stability: Stable when stored in cylinders
Solubility: Soluble in most organic solvents and water
Source: Midwest Research Institute, Kansas City, MO

4.2 Control Material:

Identification: Filtered Room Air

5.0 Personnel Health and Safety

5.1 Routes of Exposure: Absorbed by inhalation

TLV: 5 ppm
STEL (Short Term Exposure Limit): 15 ppm
(defined by American Conference of Governmental Industrial Hygienists, Inc.)

5.2 Sites of Biological Effects:

1. Lung (irritation, edema)
2. Nervous System (paralysis, convulsion, coma, brain damage, psychological disturbance)
3. Skin (erythema, blisters)
4. Kidney (uremia)

5.3 Emergency and First Aid Procedures:

Move immediately to fresh air.

Keep under observation of medical personnel as required.

6.0 Test Animal Specifications

6.1 Test Animal

Species: Mus musculus

Strain: B6C3F1

Source: Frederick Cancer Research Facility, Frederick, Maryland

Age at Start of Study: 6-7 weeks

Weight Range at Start of Study: 15-25 g

Number on Study: 359 males, 359 females

Identification: Unique toe clipping by group and number except for neurobehavioral animals which will be identified by unique ear tags in accordance with SOP No. 4.3.0.

Justification of Test System: B6C3F1 mice are one of the selected rodent strains for evaluation of toxicity and carcinogenicity by NTP.

6.2 Husbandry

Housing: One mouse per cage, 30 per cage pack, sexes separately caged

Caging: Stainless steel hanging wire cages.

Bedding: Cage board bedding supplied by Shephard Specialty Co. to be used only on weekends.

Sanitization:

Cages: Changed weekly, sanitized in accordance with SOP No. 4.2.0.

Food Hoppers: Changed once weekly, sanitized in accordance with SOP No. 4.2.0.

Food: NIH 07 pelleted diet, ad libitum during non-exposure hours. Supplied by Ziegler Bros., Inc., copy of analysis provided with each lot. Sponsor and testing laboratory are responsible for accepting each lot of feed based on contaminants found and nutritional composition. Each mill date used and the corresponding analyses will be specified in the final report.

Water: Ad libitum from automatic watering system. Water is obtained from wells and treated with chlorine. Periodic analyses will be made at least once yearly according to USEPA drinking water standards. Analysis report will be submitted when analyses are completed.

Light: 12-hour light/dark cycle (lights on 7 a.m. to 7 p.m.). Fluorescent lighting is used in rooms, corridors and chambers.

Temperature: $75 \pm 3^{\circ}\text{F}$, measured in the chambers.

Relative Humidity: $55 \pm 15\%$, measured in the chambers.

Air Flow: Fifteen $\pm$ 2 complete changes of 100% fresh air hourly.

Cage Pack Rotation: Once every week in accordance with SOP No.

4.2.1.

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6.3 Quarantine Period

Duration: Ten to 14 days.

Selection: All animals will be examined and signed released by a laboratory animal veterinarian for clinical signs of disease prior to the initiation of dosing (SOP No. 4.1.0). In addition, five animals of each sex will be sacrificed, necropsied and the viscera examined for gross signs of disease.

Quarantine Room: Animal rooms 12-01 and 12-03 in the Inhalation Toxicology Facility.

7.0 Test Agent Characterization

7.1 Generation: Methyl bromide will be generated by metering the neat gas from the head space of a cylinder directly into the air-stream of the inhalation chambers according to SOP No. 8.1.1. The cylinder is enclosed in a vented box and a shrouded delivery tube carries the neat gas to a distribution plenum mounted inside another vented box. The plenum has five ports, three attached to rotometers which control the flow to each chamber, one as a gauge for plenum pressure and one as an inlet port for the plenum.

7.2 Detection: The methyl bromide concentration in each chamber and room air will be monitored at one hour intervals using a Miran 80 Infra-red spectrophotometer according to SOP No. 8.3.1. Biweekly use of a second independent method, gas chromatography, will serve as a cross check on the primary monitor.

8.0 Bulk Chemical Reanalysis

8.1 The methyl bromide cylinders to be used in the study will be re-analyzed for purity within 30 days before the start of the study, every 4 months on test, and within 30 days after terminal sacrifice. The analysis procedure, gas chromatography using a flame ionization detector, is described in SOP No. 8.3.3. The results of this analysis are compared to results obtained from previous analyses using the same procedure.

8.2 Determinations made from earlier methyl bromide studies, indicate that each full cylinder of methyl bromide should last approximately 50 weeks.

9.0 Experimental Design

9.1 Test Groups:

	Number of Animals (Males/Females) Per Dosage Group			
	<u>Concentration</u>			
Endpoint	0 ppm	10 ppm	33 ppm	100 ppm
Sentinel	30 (15/15)			
6 mo sacrifice	20 (10/10)	20 (10/10)	20 (10/10)	20 (10/10)
15 mo sacrifice	20 (10/10)	20 (10/10)	20 (10/10)	20 (10/10)
24 mo sacrifice	100 (50/50)	100 (50/50)	100 (50/50)	100 (50/50)
Neurobehavior	32 (16/16)	32 (16/16)	32 (16/16)	32 (16/16)
TOTALS	202(101/101)	172 (86/86)	172 (86/86)	172 (86/86)

Endpoints include a 6 month sacrifice, 15 month sacrifice, terminal sacrifice, and neurobehavioral evaluation.

- 9.2 Duration of Study: 103 weeks of treatment and one week of observation for most animals with 6 and 15 month interim sacrifices.
- 9.3 Route of Administration of Control and Test Substance: Inhalation. This route of exposure is chosen because CH_3Br is a volatile compound (1420 mm/Hg at 20°C) and inhalation is the primary route for potential human exposure.
- 9.4 Frequency of Administration: Daily, week days only, except on observed holidays. Exposure time will be T90 (time necessary to reach 90% of target concentrations) plus 6 hours per day.
- 9.5 Randomization for Experimental Groups: The animals will first be assigned to weight classes and all outliers removed. Then they will be assigned to cages according to the random number procedure described in SOP No. 4.13.0. Cages are randomly assigned to treatment groups according to the same procedure described in SOP No. 4.13.0. These procedures are carried out towards the end of the quarantine period.
- 9.6 Procedure Outline:
1. All animals are received, inspected and placed in quarantine.
 2. After assessment of health at the end of the quarantine period as described in Section 6.3, all animals are assigned to treatment groups following the procedures described in Section 9.5.
 3. All individual animals are weighed to the nearest tenth of a gram on the day before exposure is to begin. When rounding a number, any number below five is rounded to the nearest lower number and any number five or above is rounded to the nearest higher number.
 4. Each animal will be formally examined for clinical signs of toxicity at four week intervals and these observations will be reported on the Experiment Information System (EIS). Signs of toxicity detected at times other than the formal four week observation should be noted and recorded on EIS.
 5. All animals are exposed according to the schedule in Section 9.4 by inhalation and observed twice daily, morning and afternoon, five days per week, for moribundity or mortality according to the NTP General Statement of Work, January, 1984. On weekends animals are observed once daily in the morning until clinical signs are observed and then twice daily, seven days a week. Starting in the second year of the study (September 26, 1985) animals will be observed twice daily seven days a week. All animals are observed for clinical signs, moribundity and mortality when they are weighed (SOP No. 4.6.0). Signs of neurotoxicity will be recorded with the time of appearance and disappearance recorded. Signs observed at times other than the scheduled observation will be noted.

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6. Animals will be weighed weekly for the first 13 weeks and every 4 weeks thereafter. At the appearance of potentially life threatening tumors or a significant number of deaths, the animals will be weighed every two weeks. (This change will be made with the approval of the NTP Project Officer.) Animals will be weighed every two weeks for the final thirteen weeks of the chronic test. The animals will be weighed at the time exposures cease and again at necropsy. The EIS will be used for each animal group weighing.
7. Serum samples from five females and five males will be taken from the sentinel group at six, twelve and eighteen months and in the controls and high or intermediate dose group at terminal sacrifice. These samples are for screening for the presence of antibodies to the murine virus. The sampling procedures and the murine viruses for mice are detailed in the NTP General Statement of Work, January, 1984. All serum specimens will be submitted to the NTP designated diagnostic laboratory.
8. Animals in the neurobehavior endpoint group will be tested on the behavioral battery (SOP Nos. 7.6.0-7.6.4) as specified in the special-studies protocol (NTP General Statement of Work, January, 1984). Animals for neuromorphological evaluation in this group will be sacrificed at the same time intervals (6, 15 and 24 months) as other sacrifices.
9. Any animal found dead will be necropsied as soon after it is found as possible, but in no case later than four hours after the corpse is found. The dead animal will be refrigerated if immediate necropsy is not possible.
10. Animals whose condition makes it unlikely that they will survive until the next observation, based upon criteria established by the Principal Investigator in concert with the veterinary staff and toxicologist, should be sacrificed immediately, necropsied, and slides prepared for possible histopathologic examination within ten work days. The NTP Project Officer shall be notified immediately of perceived potential threats to the health of the colony. The moribund sacrifices and early death necropsies will be supervised by the pathologist assigned to unscheduled necropsies. Probable cause of moribundity or probable cause of death will be determined whenever possible.
11. Blood smears will be taken from all surviving animals just before necropsy, according to standard procedure. The blood smears will be stained with Romanovsky stain, cover slipped, labelled and forwarded to the pathologist for diagnosis.
12. Ten mice per sex per exposure group will be sacrificed at six and fifteen months and processed as described in the NTP General Statement of Work, January, 1984. The following parameters will be evaluated: 1) body weight, 2) organ weights, 3) mortality, 4) hematology (including RBC, HCT, HGB, MCV, MCH, MCHC, WBC, Diff. Count, RETIC count and PLAT count), 5) complete necropsy and gross examination on all animals, and 6) complete histopathology on high dose and control animals. There will be no observation/recovery period at 6 and 15 month interim sacrifices. All scheduled

necropsies and all histopathology work will be done by Experimental Pathology Laboratories, Inc. (EPL) under a subcontract with Brookhaven National Laboratory; Dr. Scot Eustis of EPL is the assigned pathologist.

13. All animals at interim and terminal sacrifice will be euthanitized with pentobarbital and weighed to the nearest 0.1 gram.
14. At necropsy of all animals, an external examination of the body and all orifices is made. The following tissues and organs are examined and fixed in 10% buffered formalin:

Gross lesions	Tissue masses or suspect
Skin	tumors and regional
Mandibular and mesenteric	lymph nodes
Ileum	Ileum
Bronchial and Mediastinal	Colon
lymph nodes	Cecum
Mammary glands	Rectum
Salivary glands	Liver
Thigh muscle	Gall bladder (mice)
Sciatic nerve	Pancreas
Sternebrae, femur, or vertebrae	Spleen
including marrow	Kidneys
Costochondral junction, rib	Adrenals
Thymus	Urinary bladder
Oral cavity, larynx and	Seminal vesicles
pharynx	Prostate
Trachea	Testes, epididymis, vaginal
Lungs and Bronchi	tunics of the testis and
Heart and aorta	scrotal sac
Thyroid	Ovaries
Parathyroids	Uterus
Esophagus	Nasal cavity and nasal
Stomach	turbinates
Duodenum	Brain
Jejunum	Pituitary
Tongue	Spinal Cord
	Eyes
	Preputial or clitoral
	glands
	Zymbals' glands (auditory)
	sebaceous glands)

15. At interim sacrifices, the liver, right kidney, heart, brain and lungs of all animals will be weighed to the nearest 0.1 g prior to fixation. The thymus and right testicle will be weighed to the nearest 0.01 g prior to fixation.
16. All tissues and/or organs will be examined in situ, then dissected from the carcass, re-examined, including cut surfaces, and fixed in 10% neutral buffered formalin. Tissues will be fixed at a thickness not to exceed 0.5 cm except as stated in the NTP General Statement of Work, January, 1984. Ears and/or feet that have been used in any way for animal identification during the in-life phase of the studies will be saved in formalin. If ear tags or neck tags are used for any reason, these too will be saved.

17. All gross lesions will be recorded on the appropriate PEIS form in narrative, descriptive (non-diagnostic) terms including location, size in millimeters or centimeters, number, shape, color, texture, and consistency.
18. There will be no distinction between the way tissues are handled any time during the 104 week chronic study. All early death animals and all scheduled sacrifice animals will be handled in the same manner. All gross lesions and all tissues required for histopathology by the contract governing the study will be trimmed, embedded, and H and E stained slides prepared. This applies to all doses in the chronic study in both sexes.
19. The tissues of the groups of animals to be examined microscopically for the complete histopathologic examination are in accordance with the NTP General Statement of Work, January, 1984, with the latest pathology modifications incorporated.

10.0 Data and Records to be Maintained

1. Protocol and Amendments (if any).
2. Animal Receipt; supplier.
3. Animal health examination and certification; animal husbandry.
4. Randomization sequences and results.
5. Individual animal survival, body weights, clinical observations, necropsy observations, organ weights and histopathology observations.
6. Chemical inventory.
7. Vapor generation and analysis.
8. Food and water analysis.
9. Test substance and vehicle characterization and stability.
10. Environmental records.
11. Serology Data - sentinel animals.
12. Personnel Training; Accident Records.
13. Equipment Records.
14. Storage data for study material. During the course of the study, the data will be kept in the Inhalation Toxicology Facility Archives. All PEIS, slides, blocks, wet tissues, original data and the final report will be shipped to the sponsor at the completion of the study.

11.0 Reports to be Submitted

- 11.1 Monthly Progress Report.
- 11.2 Interim Reports (Format to be provided by the NTP).
- 11.3 At the completion of this study a final report will be prepared containing the following information:
 1. Name and address of the facility performing the study and the dates on which the study was initiated and completed.
 2. Objectives and procedures stated in the approved protocol, including any changes in the original protocol.

3. The test and control articles identified by name, chemical abstracts number or code number, strength, purity, and composition, or other appropriate characteristics.
4. Stability of the test and control articles under the conditions of administration.
5. A description of the methods used.
6. A description of the test system used. Where applicable, the final report shall include the number of animals used, sex, body weight range, source of supply, species, strain, age, and procedure used for identification.
7. A description of the dose, dose regimen, route of administration, and duration.
8. A description of all circumstances that may have affected the quality or integrity of the data.
9. The name of the Principal Investigator, the names of other scientists or professionals, and the names of all supervisory personnel involved in the study.
10. The signed and dated reports of each of the individual scientists or other professionals involved in the study.
11. The locations where all specimens, raw data, and the final reports are to be stored.
12. A statement prepared and signed by the quality assurance unit.

12.0 Alterations of Study Design

Alterations of this protocol may be made as the study progresses. No changes in the protocol will be made without the consent of the Sponsor. In the event the Sponsor authorizes a protocol change verbally, such change will be subsequently documented and signed by the Principal Investigator, Study Director, Quality Assurance Officer, Chemical Manager and Project Officer and will be maintained with the protocol. These protocol amendments will be included in the final report.

13.0 BNL, Inhalation Toxicology Facility Standard Operating Procedures (SOPs)

Because of the large volume of SOPs involved, they are not appended to this protocol distribution. A complete set of SOPs has been provided to NTP (Project Officer, August 10, 1984) for reference. All detailed information concerning the experimental procedures are available in these SOPs.

14.0 Protocol Approval

14.1 By Robert G. Drew

Title Principal Investigator

Date Nov 1, 1984

14.2 By Angela B. Horan

Title Study Director

Date Nov 1, 1984

14.3 Sponsor

By Raymond S. H. Yang

Title Project Officer and Chemical Manager

Date November 13, 1984

14.4 Quality Assurance Unit

By Laurence V. Hambes

Title Quality Assurance Officer

Date Nov 1, 1984 1300 hrs

14.5 Sponsor Verbal Approval

By Dr. Raymond S. H. Yang Ray Y

Title Project Officer

Date September 25, 1984

AMENDMENTS TO THE PROTOCOL FOR THE TWO YEAR CHRONIC INHALATION TOXICITY AND
CARCINOGENICITY STUDIES OF METHYL BROMIDE IN B6C3F1 MICE

Original Protocol Items Changed and Description of the Changes (Underlined):

- I. Page 5 of 10, Item 9.6.5, 2nd line: add a period after "by inhalation" and add a sentence; As of February 14, 1985 methyl bromide exposure in the 100 ppm group is terminated and animals in the 100 ppm chamber are exposed to filtered air only. 2nd line, drop "and" after "inhalation," start new sentence with "Animals are observed twice..."
- II. Page 6 of 10, Item 9.6.6, 4th line: change "every two weeks" to "every week."
- III. Page 6 of 10, Item 9.6.7, 2nd line: add "and/or control" after "the sentinel." Change "group" to "groups."
- IV. Page 6 of 10, Item 9.6.8, 4th line: add sentence after "...January, 1984)." Four of the sixteen animals of each sex in each exposure group assigned for neurobehavioral assessment will be sacrificed for neuropathology. 6th line: add sentence, "The four remaining animals of each sex in each exposure group will be sacrificed after the last neuropathological evaluation and properly disposed of."
- V. Page 6 of 10, Item 9.6.12, 1st line: Change "...per exposure group" to "in the control, low, and intermediate exposure groups." 2nd line: add a period after "... fifteen months" and add the sentence, "These scheduled interim sacrifices will not be carried out in the 100 ppm males, but the 15 month sacrifice may be performed on the 100 ppm females; the decision for the 100 ppm females will be made prior to the scheduled 15 month sacrifice following review of the mortality data." 2nd line: delete "and" before processed and add, "All animals from these sacrifices will be ..."
- VI. Page 7 of 10, Item 9.6.15, 1st line: add "spleen" after "...heart, brain."

Reasons for the Amendments (Roman numerals correspond to the above sections).

- I. At the request of the testing laboratory and with the approval of the sponsor (memorandum dated February 13, 1985 from the Chemical Manager and Project Officer), methyl bromide exposures were terminated in the 100 ppm chamber because of the high mortality rate in the males of this group. The survivors of the 100 ppm group (male and female) are to be maintained under similar conditions (except exposure) to the other dosage groups and observed for chronic toxicity and/or carcinogenicity.
- II. Due to the sudden and unexpected mortality in the 100 ppm group shortly before the weekly weighing procedure was to be terminated, it was decided to continue weighing these animals on a weekly basis to monitor their physical condition. This weekly weighing continued even after termination of exposures to assess the status and recovery of these animals. Evidence of recovery by body weight gain will determine when the 4 week weighing regimen will be started in the 100 ppm group.

METHYL BROMIDE CHRONIC
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Amendments to Protocol

III. Nine early deaths in this study occurred prior to or immediately following the first day of exposure. The exact causes of these deaths are unknown but they were probably due to the light weight of some of the animals used as well as problems with new cages and feeders. Six out of the total of 9 of these deaths were animals designated for the control group. Since sentinel animals are housed in the control chamber as well and are used only for gross examination and viral serology, it was decided, with the verbal approval of the Project Officer, to utilize some of these sentinels as control animals. The animals would still be bled for viral serology, but would also be treated at sacrifice as control animals. Not all of the 6 month designated sentinels to be used are replacing 6 month interim sacrifice control animals and therefore in order to have the appropriate number of serum samples (5 of each sex) for sentinel screening, some of the control animals will be bled for viral serology prior to full necropsy. Specifically, at the 6 month interim sacrifice, 3 control females (40302, 40303, 40304) were used as sentinels and two 6 month sentinel males (40287, 40288) were used as controls. For the 15 month interim sacrifice, 1 female sentinel (40388) will be used as a control animal and for the 24 month sacrifice 2 female sentinels (40389, 40390) will be included as controls.

IV. Clarification of experimental design.

V. In order to maintain an appropriate number of animals for toxicity and carcinogenicity observation in the 100 ppm group, it was decided not to sacrifice any more animals in that group at the 6 month interim sacrifice. Histopathological information will be provided by the early death animals.

VI. The spleen has always been weighed in all previous work with methyl bromide and has provided some interesting data in the past.

 Sonja B. Haber, Study Director 5/2/85
Date

 Robert T. Drew, Principal Investigator 5/6/85
Date

Sponsor Approved:

 Raymond S. H. Yang May 10, 1985
Date
 Project Officer/Chemical Manager

AMENDMENTS TO THE PROTOCOL FOR THE TWO YEAR CHRONIC INHALATION TOXICITY AND
CARCINOGENICITY STUDIES OF METHYL BROMIDE IN B6C3F1 MICE

Original Protocol Items Changed and Description of the Changes (Underlined):

- I. Page 1 of 10, Item 3.4, 5th line: change "Scheduled Necropsies, Scot Eustis, D.V.M. (EPL)" to "Scheduled Necropsies, Gary Riley, D.V.M. (EPL)."
- II. Page 1 of 10, Item 3.4, 6th line: change "Unscheduled Necropsies, Merrill R. Osherooff, Ph.D." to "Unscheduled Necropsies, Darrel D. Joel, D.V.M., Ph.D./ Martine O'Connor, M.A."
- III. Page 2 of 10, Item 3.6, 3rd line: change "January 1, 1986" to "January 2-3, 1986."
- IV. Page 7 of 10, Item 9.6.12, 3rd and 4th line: change "Dr. Scot Eustis" to "Dr. Gary Riley."

Reasons for the Amendments (Roman numerals correspond to the above sections).

- I. Dr. Scot Eustis is no longer employed by the subcontractor, Experimental Pathology Laboratories, Inc. (EPL), and with the approval of the Sponsor, Dr. Gary Riley was assigned as the Study Pathologist.
- II. Dr. Merrill Osherooff is no longer employed by the testing laboratory and with the approval of the Sponsor, Dr. Darrel Joel and/or Ms. Martine O'Connor will perform the unscheduled necropsies.
- III. Since January 1, 1986 is a scheduled holiday, the 15 month interim sacrifice will be conducted on January 2nd and 3rd, 1986.
- IV. Same reason as Item I.

Sonja B. Haber, Study Director 12/9/85
Date

Robert T. Drew, Principal Investigator 12/9/85
Date

Sponsor Approved:

Raymond S. H. Yang 12/30/85
Project Officer/Chemical Manager Date

BROOKHAVEN NATIONAL LABORATORY
M E M O R A N D U M

DATE: March 15, 1985

TO: The Record

FROM: Dr. S. B. Haber, Study Director

SUBJECT: TDMS Failure

On Thursday, March 14, 1985, while weighing the 100 ppm animals of the two-year chronic methyl bromide study (experiment no. 840002) on the TDMS terminal, the primary census diskette crashed, erasing all the data previously obtained. One-half of the animals from the chamber had already been weighed, and when the data were not retrievable, it was decided to reweigh those animals and the remaining ones on the inhalation toxicology facility's weigh station (used previously in this study) the next day, Friday, March 15, 1985. Since the 100 ppm chamber is no longer being exposed to methyl bromide, the chamber was opened during exposure hours on the 15th and the animals were weighed then. The data collected from the weigh station will be entered manually on TDMS to keep that system current. In addition, the monthly weighing scheduled for March 18-21, 1985 will be done on the weigh station and entered manually on TDMS later when the TDMS problem is resolved and new disks are available.

SBH:jw

c: Dr. Raymond S. H. Yang

APPENDIX F1

Terminal Sacrifice
Methyl Bromide Chronic Mouse Study
Individual Organ Weight Data (gms)

Group:	Animal No.	Body Wt.	Brain	Heart	R.Kidney	Liver	Lung	Spleen	R.Testis	Thymus
Males Control	221	43.7	.49	.26	.47	2.59	.29	.10	.13	.02
	222	49.5	.49	.25	.47	2.27	.36	.14	.11	.04
	223	50.1	.48	.28	.44	2.43	.24	.12	.11	.08
	224	47.6	.50	.33	.61	4.21	.32	.18	.11	.02
	225	40.6	.48	.24	.47	3.05	.63	.13	.12	.03
	226	39.1	.48	.28	.49	1.98	.23	.11	.11	.01
	227	50.9	.52	.28	.45	2.85	.22	.09	.11	.06
	228	51.3	.50	.34	.51	2.18	.24	.10	.12	.07
	229	30.1	.44	.24	.38	4.70	.28	.29	.07	.02
	231	28.2	.42	.25	.28	3.66	.35	.13	.09	.02
	232	43.0	.48	.19	.37	1.71	.25	.07	.14	.05
	233	45.5	.45	.22	.38	1.81	.23	.12	.11	.06
	234	48.0	.50	.30	.47	4.44	.19	.15	.12	.04
	236	44.4	.45	.25	.45	2.21	.29	.14	.12	.07
	237	47.5	.54	.20	.41	2.05	.32	.08	.12	.08
	238	45.9	.46	.27	.44	1.66	.22	.07	.10	.05
	239	47.6	.48	.25	.46	2.04	.23	.09	.12	.07
	240	47.1	.49	.26	.45	1.89	.28	.09	.12	.08
	241	37.0	.46	.32	.37	3.96	.36	.23	.09	MISSING
	242	53.0	.46	.25	.51	3.76	.30	.09	.12	.08
	243	50.5	.49	.24	.49	2.88	.24	.11	.12	.19
	244	36.6	.46	.25	.44	1.68	.22	.08	.12	.03
	246	52.8	.47	.24	.38	2.20	.26	.10	.09	.09
	247	30.3	.47	.24	.32	8.18	.36	.30	.07	MISSING
	248	50.8	.46	.27	.41	2.01	.20	.09	.12	.09
	251	53.6	.47	.26	.46	2.44	.30	.07	.13	.07
	253	45.4	.49	.32	.15	3.31	.27	.16	.12	.05
	254	48.4	.48	.27	.47	2.14	.21	.07	.15	.03
	255	51.5	.45	.23	.43	2.23	.23	.07	.12	.10
	257	48.3	.46	.24	.50	3.49	.31	.10	.11	.10
	258	39.3	.45	.28	.41	7.74	.36	.21	.33	.03
	261	36.8	.44	.24	.41	3.21	.24	.13	.11	MISSING
	262	43.9	.48	.24	.47	1.81	.23	.07	.13	MISSING
	263	46.1	.50	.28	.40	2.35	.26	.12	.11	.07
	264	51.1	.47	.29	.57	2.45	.26	.10	.12	.05
	266	52.0	.46	.26	.42	2.07	.27	.08	.11	.11
	267	54.5	.48	.27	.45	2.16	.23	.13	.12	.04
	268	39.5	.45	.26	.46	2.93	MISSING	.12	.10	.04
	269	44.7	.48	.29	.41	2.04	.21	.09	.11	.01
	270	48.3	.50	.23	.41	2.16	.23	.12	.12	.03
Males 10 PPM	425	52.7	.52	.26	.46	2.66	.45	.08	.04	.13
	427	49.5	.49	.25	.49	2.26	.28	.09	.09	.12
	428	46.7	.48	.23	.45	2.32	.30	.19	.07	.09
	429	51.3	.53	.29	.47	2.46	.27	.13	.05	.08
	431	34.2	.43	.26	.40	6.69	.31	.30	MISSING	.09
	433	60.5	.47	.23	.40	1.94	.22	.31	.03	.13
	434	42.7	.52	.22	.45	2.12	.25	.08	.06	.12
	435	44.8	.44	.22	.39	1.56	.29	.07	.06	.10
	436	33.1	.47	.28	.45	4.92	.38	.34	MISSING	.10
	437	47.8	.47	.24	.46	3.25	.28	.20	.04	.12
	438	46.6	.46	.25	.49	2.41	.39	.09	.04	.12
	439	48.6	.48	.23	.50	2.32	.27	.07	.21	.05
	440	49.2	.46	.25	.43	2.24	.36	.13	.07	.12
	441	46.5	.50	.20	.42	1.86	.34	.09	.06	.14
	443	35.4	.48	.21	.43	1.94	.27	.59	.02	.07
	444	36.5	.50	.34	.48	3.86	.31	.20	.02	.13
	447	49.8	.50	.25	.44	2.39	.24	.18	.07	.14
	449	43.4	.47	.32	.51	2.98	.32	.18	.05	.12
	450	47.3	.46	.27	.42	3.46	.30	.20	.11	.03
	451	36.5	.45	.22	.34	1.62	.20	.06	.10	.01
	454	38.3	.48	.22	.46	1.81	.24	.06	.16	MISSING
	455	42.5	.46	.33	.47	4.25	.26	.13	.11	.03
	456	48.1	.54	.29	.45	2.94	.21	.09	.12	.06
	457	48.3	.46	.26	.43	4.16	.53	.10	.13	.03
	458	43.6	.49	.22	.41	2.19	.23	.11	.09	.03
	459	50.0	.48	.28	.52	3.55	.27	.09	.13	.02
	460	41.6	.45	.22	.43	4.27	.29	.18	.10	.02

Group:	Animal No.	Body Wt.	Brain	Heart	R.Kidney	Liver	Lung	Spleen	R.Testis	Thymus
<u>Males</u>	461	43.9	.44	.21	.37	2.45	.19	.09	.10	.03
10 PPM	462	41.7	.46	.27	.39	3.22	.28	.11	.11	.02
Cont'd	463	51.3	.49	.25	.45	4.39	MISSING	3.51	.12	.33
	464	52.0	.48	.25	.45	2.37	.26	.11	.13	.19
	465	46.2	.46	.23	.48	1.95	.25	.16	.12	.03
	466	52.2	.47	.21	.39	3.22	.28	.13	.12	.08
	467	45.8	.48	.24	.39	1.99	.30	.09	.11	.05
	469	48.9	.49	.28	.59	4.86	.35	.12	.13	.07
	470	41.5	.46	.26	.43	3.51	.29	.16	.12	.01
	472	51.1	.48	.24	.46	2.53	.29	.10	.12	.13
<u>Males</u>	595	41.6	.50	.30	.54	2.42	.29	.09	.11	.05
33 PPM	596	42.9	.47	.20	.40	1.95	.25	.13	.10	.05
	597	50.5	.52	.30	.53	1.99	.27	.23	.17	.04
	598	55.6	.51	.31	.59	2.68	.32	.10	.14	.03
	603	41.1	.45	.23	.35	1.61	.28	.06	.09	MISSING
	604	36.8	.46	.22	.39	1.63	.32	.08	.13	.06
	605	43.5	.49	.23	.44	1.93	.26	.13	.13	.05
	606	50.6	.50	.24	.48	2.33	.23	.13	.12	.07
	607	32.5	.45	.19	.35	1.32	.24	.07	.10	.02
	608	39.2	.47	.24	.37	5.50	.33	.17	.10	.03
	609	46.4	.50	.28	.45	1.89	.21	.07	.11	.05
	610	49.1	.46	.20	.40	1.80	.24	.07	.12	.06
	611	46.1	.52	.26	.49	1.69	.30	.09	.14	.04
	612	45.8	.47	.18	.46	1.97	.27	.12	.12	MISSING
	613	47.2	.51	.23	.44	3.33	.35	.28	.13	.04
	614	45.3	.46	.28	.41	1.94	.31	.06	.11	.05
	617	39.7	.49	.22	.42	1.54	.28	.13	.11	.05
	618	48.3	.49	.23	.45	3.40	.27	.09	.11	.10
	619	48.6	.50	.24	.44	2.37	.28	.09	.14	.11
	620	46.1	.46	.23	.33	1.78	.23	.08	.11	.05
	621	49.6	.46	.26	.48	2.43	.30	.09	.12	.09
	622	50.0	.45	.27	.44	2.07	.43	.10	.11	.04
	623	42.4	.45	.21	.37	3.49	.33	.07	.11	.04
	624	43.3	.49	.23	.42	2.74	.19	.08	.10	.06
	625	36.2	.47	.30	.43	6.96	.27	.15	.11	.02
	626	44.6	.47	.29	.45	2.18	.26	.11	.13	.06
	627	45.2	.49	.24	.49	2.65	.30	.60	.15	.02
	628	42.9	.53	.22	.41	2.76	.24	.06	.11	.11
	629	52.1	.49	.22	.41	2.50	.20	.07	.12	.08
	630	43.8	.49	.33	.47	5.93	.32	.17	.11	.05
	633	25.8	.43	.22	.30	3.06	.29	.17	.08	.03
	634	48.4	.49	.25	.49	3.39	.34	.12	.12	.10
	635	50.1	.47	.20	.39	2.05	.49	.17	.12	.13
	636	35.7	.44	.32	.43	4.38	.29	.27	.11	.02
	637	42.1	.51	.26	.45	2.70	.38	.33	.13	.02
	638	32.5	.46	.26	.38	5.94	.57	1.76	.04	.04
	639	54.3	.42	.22	.39	1.93	.24	.08	.12	.11
	641	46.5	.48	.23	.44	1.85	.26	.08	.13	.07
	643	46.2	.44	.24	.42	2.16	.23	.06	.13	.08
	644	54.5	.47	.26	.45	2.64	.30	.11	.14	.06
<u>Males</u>	753	31.1	.45	.19	.36	1.54	.21	.07	.12	.02
100 PPM	757	27.1	.45	.14	.31	1.48	.20	.04	.10	.01
	758	31.1	.45	.28	.40	2.75	.23	.12	.09	MISSING
	759	29.6	.46	.20	.34	1.44	.17	.07	.11	.03
	763	36.0	.53	.22	.33	1.48	.18	.44	.11	MISSING
	767	34.2	.48	.23	.38	1.64	.21	.07	.12	.02
	769	30.6	.45	.25	.31	1.49	.21	.06	.11	.05
	775	26.1	.41	.17	MISSING	1.10	.17	.04	.14	MISSING
	788	27.1	.48	.21	.33	1.41	.22	.07	.10	.03
	790	39.2	.47	.29	.44	2.63	.30	.10	.12	.01
	792	32.3	.40	.23	.40	1.65	.20	.07	.10	.02
	797	34.0	.50	.17	.36	2.02	.26	.10	.11	.02
	799	24.1	.46	.21	.29	4.24	.21	.10	.07	.02
	801	26.1	.43	.18	.27	1.35	.19	.05	MISSING	.02
	810	27.2	.45	.16	.32	1.95	.20	.03	MISSING	.01
	816	28.1	.46	.18	.35	1.47	.30	.08	.11	MISSING

Terminal Sacrifice
Methyl Bromide Chronic Mouse Study
Individual Organ Weight Data (gms)

Group:	Animal No.	Body Wt.	Brain	Heart	R.Kidney	Liver	Lung	Spleen	R.Testis	Thymus
<u>Females</u>	325	50.5	.49	.23	.41	2.44	.38	.20		.04
<u>Control</u>	326	45.7	.49	.21	.26	1.81	.28	.22		.06
	327	37.2	.48	.21	.30	1.92	.26	.13		.03
	328	47.7	.52	.21	.29	1.78	.28	.15		.08
	329	42.6	.46	.18	.27	1.78	.28	.23		.08
	330	36.6	.52	.23	.34	2.57	.39	1.37		.05
	332	40.6	.50	.22	.29	1.66	.25	.14		.03
	333	39.5	.50	.24	.27	1.78	.25	.12		.07
	334	32.9	.49	.16	.26	1.59	.29	.11		.03
	335	39.8	.50	.20	.23	1.57	.26	.14		.06
	336	44.5	.49	.22	.27	1.74	.22	.44		.06
	337	46.4	.48	.23	.28	1.87	.25	.12		.06
	339	52.7	.49	.18	.27	1.58	.21	.21		.13
	340	60.7	.53	.25	.38	2.40	.21	.71		.11
	341	51.4	.48	.23	.28	1.92	.27	.28		.07
	342	47.9	.49	.18	.31	2.16	.26	.15		.04
	343	54.2	.50	.25	.38	2.93	.24	.29		.07
	344	58.4	.46	.20	.35	1.83	.27	.12		.15
	345	39.9	.49	.13	.37	2.33	.30	.30		.07
	346	51.8	.49	.21	.28	1.68	.20	.17		.05
	347	49.8	.47	.18	.30	1.94	.24	.31		.21
	349	35.0	.48	.20	.30	2.07	.25	.92		.07
	351	44.3	.49	.21	.28	1.90	.23	.17		.02
	352	49.6	.49	.25	.28	1.72	.27	.14		.05
	353	45.2	.48	.23	.34	2.78	.22	.24		.05
	357	46.2	.52	.22	.33	1.81	.25	.18		.04
	358	52.1	.48	.20	.33	1.88	.21	.14		.06
	359	38.9	.47	.20	.27	2.02	.26	.16		.04
	360	34.3	.49	.21	.28	2.05	.25	.15		.05
	361	33.8	.53	.21	.32	1.82	.25	.21		.05
	362	38.1	.48	.20	.31	2.11	.29	.10		.05
	364	37.9	.49	.24	.30	1.51	.25	.11		.03
	367	31.6	.54	.19	.28	1.56	.21	.16		.04
	368	44.1	.49	.22	.27	1.89	.23	.33		.08
	389	46.5	.51	.20	.35	2.31	.28	.42		.06
	390	46.8	.51	.25	.34	1.98	.25	.14		.09
 <u>Females</u>	510	38.4	.50	.20	.31	1.85	.32	.11		.03
<u>10 PPM</u>	511	43.9	.48	.24	.30	2.76	.23	.36		.03
	512	48.1	.47	.21	.34	2.22	.29	.16		.06
	513	37.0	.48	.20	.25	1.65	.23	.14		.02
	514	39.8	.51	.23	.34	1.72	.24	.21		.03
	515	23.4	.50	.20	.62	1.98	.83	.19		MISSING
	516	46.9	.50	.20	.32	2.03	.28	.41		.07
	517	26.5	.47	.31	.31	5.49	.26	.24		.04
	518	49.4	.45	.21	.28	1.86	.17	.12		.06
	519	22.5	.46	.21	.26	1.44	.23	.13		MISSING
	521	38.6	.48	.19	.29	1.90	.27	.14		.05
	522	39.3	.51	.15	.26	1.69	.19	.14		.08
	524	44.2	.49	.20	.29	1.90	.25	.17		.04
	525	43.1	.46	.21	.27	1.76	.23	.17		.04
	526	52.7	.49	.21	.29	1.75	.23	.13		.06
	527	46.0	.52	.31	.18	1.94	.23	.14		.05
	528	46.2	.51	.20	.26	1.57	.24	.15		.06
	529	37.5	.53	.27	.35	3.50	.29	1.23		.13
	531	41.6	.53	.18	.30	1.66	.29	.14		.05
	532	40.9	.49	.21	.32	2.39	.25	.19		MISSING
	533	41.4	.50	.23	.33	1.81	.23	.13		.07
	534	47.2	.50	.26	.35	2.07	.37	.52		.03
	536	57.9	.48	.37	.32	2.03	.30	.16		.06
	537	28.0	.49	.19	.24	1.28	.23	.15		MISSING
	538	54.6	.47	.21	.37	1.88	.30	.24		.09
	539	41.7	.55	.18	.28	2.56	.22	.18		.08
	540	39.6	.50	.20	.25	1.58	.24	.12		.05
	541	30.2	.50	.28	.36	2.26	.21	.15		.05
	543	42.1	.49	.18	.33	1.92	.27	.12		.06
	544	47.4	.49	.17	.31	1.64	.23	.29		.09
	545	40.5	.49	.26	.31	1.99	.28	.16		.03

Group:	Animal No.	Body Wt.	Brain	Heart	R.Kidney	Liver	Lung	Spleen	R.Testis	Thymus
Females	546	41.9	.50	.21	.27	1.75	.26	.13		.05
10 PPM	547	41.7	.50	.20	.34	2.07	.30	.34		.03
Cont'd	548	36.1	.48	.17	.24	1.83	.21	.25		.03
	549	39.7	.49	.20	.31	2.08	.27	.13		.03
	550	31.0	.49	.17	.27	1.72	.21	.22		.01
	553	40.1	.46	.21	.29	7.44	.27	.92		.01
	554	46.8	.50	.19	.30	2.10	.25	.09		.06
	555	46.3	.48	.22	.31	1.73	.24	.13		.07
	557	39.2	.44	.24	.29	3.60	.24	.14		.03
	558	42.7	.48	.22	.33	1.97	2.18	.12		.02
Females	681	35.2	.51	.24	.29	1.55	.37	.27		.02
33 PPM	682	53.6	.49	.25	.40	2.96	.26	.22		.03
	683	45.9	.50	.19	.28	1.69	.24	.09		.05
	684	34.1	.50	.18	.30	1.71	.32	.36		.03
	685	38.2	.52	.20	.29	4.40	.76	2.93		.05
	686	31.0	.48	.18	.25	1.41	.20	.15		.06
	687	38.9	.48	.21	.28	1.82	.26	.15		.04
	689	41.4	.49	.23	.34	2.08	.26	.17		.06
	690	34.8	.47	.16	.23	1.55	.21	.26		.05
	691	44.4	.46	.19	.30	1.84	.23	.11		.03
	692	35.0	.50	.25	.27	1.97	.31	.11		.03
	693	40.0	.47	.22	.27	1.93	.25	.14		.02
	694	43.2	.49	.21	.25	1.72	.23	.16		.03
	696	42.0	.50	.17	.27	1.82	.21	.14		.03
	697	43.0	.49	.22	.40	2.16	.30	.37		.05
	698	41.8	.49	.18	.27	1.94	.20	.21		.05
	699	28.9	.48	.16	.25	1.30	.72	.14		.03
	700	41.3	.51	.20	.25	1.65	.26	.19		.05
	701	39.9	.46	.21	.25	1.65	.23	.13		.05
	703	33.6	.51	.21	.32	1.88	.25	.22		.03
	705	43.2	.54	.18	.29	1.80	.22	.14		.03
	706	57.9	.51	.19	.29	1.82	.25	.13		.06
	707	53.3	.50	.21	.29	1.92	.20	.12		.12
	708	40.8	.50	.24	.26	1.58	.25	.16		.02
	709	34.2	.47	.20	.26	1.53	.20	.11		.03
	710	38.4	.45	.19	.23	1.47	.24	.34		.05
	711	32.1	.47	.25	.30	1.57	.22	.12		.02
	712	43.3	.47	.20	.24	1.43	.23	.12		.04
	713	47.2	.43	.23	.29	2.05	.29	1.07		.03
	714	40.0	.52	.29	.29	1.94	.23	.13		.10
	715	55.7	.46	.24	.35	3.40	.26	.22		.09
	716	47.4	.50	.20	.31	1.90	.24	.18		.05
	717	51.4	.48	.20	.31	1.83	.23	.28		.08
	718	42.7	.48	.25	.30	2.07	.24	.15		.05
	719	31.7	.51	.25	.23	1.48	.18	.10		.03
	720	41.3	.50	.20	.29	1.90	.27	.20		.03
	721	43.2	.50	.21	.32	2.07	.23	.26		.04
	722	50.8	.53	.27	.34	2.27	.27	.21		.08
	724	42.0	.49	.20	.28	1.51	.21	.13		.07
	725	43.4	.49	.17	.29	1.80	.26	.38		.07
	726	37.1	.49	.19	.28	2.07	.23	.14		.03
	727	41.8	.46	.20	.93	11.72	.42	2.90		.02
	728	28.9	.46	.20	.24	1.56	.23	.13		.02
	729	24.8	.43	.21	.21	1.14	.20	.08		MISSING
	730	35.5	.48	.20	.27	1.82	.24	.31		.07

Group:	Animal No.	Body Wt.	Brain	Heart	R.Kidney	Liver	Lung	Spleen	R.Testis	Thymus
Females	833	32.4	.47	.22	.24	1.79	.24	.11		.02
100 PPM	834	32.2	.47	.17	.26	1.53	.25	.16		.02
	835	26.4	.48	.19	.27	1.41	.19	.20		.02
	837	38.0	.51	.19	.28	1.84	.25	.42		.02
	838	29.5	.49	.20	.26	1.63	.27	.11		.02
	841	28.7	.47	.23	.25	1.51	.22	.14		.02
	842	32.2	.50	.19	.28	2.93	.28	.15		.03
	854	28.7	.47	.21	.26	1.44	.22	.11		.03
	855	29.9	.46	.21	.26	1.56	.25	.10		.02
	856	28.1	.44	.22	.24	1.49	.20	.11		.02
	858	26.4	.42	.21	.44	1.38	.19	.08		MISSING
	860	26.3	.44	.18	.26	1.50	.21	.11		.03
	861	22.9	.45	.17	.23	1.08	.14	.04		.02
	863	25.3	.46	.18	.24	1.61	.25	.12		.02
	864	27.0	.49	.18	.24	1.43	.25	.14		MISSING
	865	41.2	.49	.22	.29	2.11	.26	.18		.04
	866	31.2	.48	.19	.27	1.40	.22	.12		.03
	867	44.9	.45	.21	.36	2.14	.34	.21		.05
	868	38.4	.48	.16	.24	1.82	.27	.15		.03
	869	30.1	.48	.18	.28	1.81	.20	.10		.02
	871	31.6	.48	.21	.29	1.58	.17	.11		.04
	872	31.0	.47	.20	.27	1.63	.21	.14		.02
	874	33.0	.47	.16	.27	1.73	.26	.09		.02
	875	24.8	.41	.22	.25	1.21	.18	.09		.02
	876	36.3	.49	.22	.28	1.83	.23	.16		.03
	877	28.2	.47	.23	.28	3.37	.22	.14		MISSING
	881	30.8	.51	.15	.27	1.45	.26	.15		.04
	882	31.4	.51	.16	.25	1.45	.24	.10		.07
	883	31.1	.49	.20	.31	2.49	.24	.12		.01
	884	29.0	.45	.24	.24	1.63	.23	.69		.02
	885	30.4	.46	.20	.33	1.82	.46	.19		MISSING
	887	32.5	.50	.31	.29	1.93	.28	.50		.11
	888	24.3	.47	.31	.23	1.21	.34	.10		.03
	889	24.6	.44	.26	.23	1.34	.24	.03		.04
	890	32.0	.45	.20	.25	1.77	.20	.09		.03
	892	28.4	.44	.25	.31	1.62	.20	.13		.02
	894	33.4	.50	.19	.26	1.89	.23	.45		.04
	895	34.1	.49	.22	.26	1.43	.19	.18		.05
	896	34.6	.50	.18	.29	1.55	.21	.12		.06
	900	26.8	.43	.15	.24	1.58	.20	.10		.04

APPENDIX G1

Terminal Sacrifice Methyl Bromide Chronic Mouse Study Individual Hematology Data

Group:	Animal No.	RBC ₃ (per mm ³ x10 ⁶)	WBC ₃ (per mm ³ x10 ³)	HGB (gm %)	HCT (%)	MCV	MCH	MCHC	Platelets ₃ (per mm ³ x10 ³)	Retics (%)	Neutrophils (%)	Lymphocytes (%)	Monocytes (%)	Eosinophils (%)
Controls	243	9.0	5.1	13.9	41.9	46.6	15.4	33.1	1490	1.69	16.0	79.5	2.5	1.0
	237	9.5	6.0	15.1	44.2	46.5	15.9	34.2	1510	1.02	18.0	77.5	3.5	1.0
Males	248	9.5	5.8	14.7	44.9	47.3	15.5	32.7	1660	1.11	18.0	74.0	6.5	1.5
	267	9.4	4.7	14.5	43.4	46.2	15.4	33.4	1290	1.27	21.5	72.0	5.5	1.0
	236	9.8	10.1	15.2	45.9	46.8	15.5	33.1	1350	0.98	12.5	74.0	9.5	4.0
	225	10.8	5.5	16.3	48.4	44.8	15.1	33.7	1290	2.07	12.5	82.0	3.5	2.0
	255	9.4	7.3	14.8	44.8	47.7	15.7	33.0	1450	1.45	24.0	65.0	10.0	1.0
	268	10.6	6.6	16.6	48.9	46.1	15.7	34.0	1790	1.16	18.9	71.1	9.5	0.5
	254	9.3	6.3	14.8	43.9	47.2	15.9	33.7	1680	1.36	22.0	63.5	14.0	0.5
	233	11.4	4.5	16.2	49.8	43.7	14.2	32.5	MISSING	1.97	30.0	60.5	5.5	4.0
	226	8.9	9.3	13.9	41.0	46.1	15.6	33.9	1860	0.90	36.5	57.5	5.5	0.5
	239	9.8	7.0	15.4	46.1	47.0	15.7	33.4	1630	1.36	16.0	72.0	11.5	0.5
	270	9.2	4.9	14.7	43.8	47.6	16.0	33.6	1360	0.86	28.5	66.5	4.0	1.0
	247	14.6	12.7	19.0	59.1	40.5	13.0	32.1	447	5.29	64.5	31.5	2.5	1.5
	234	9.3	8.4	13.5	40.5	43.6	14.5	33.3	1840	2.33	26.5	64.5	7.5	1.0
	232	10.3	8.2	15.6	47.3	45.9	15.1	33.0	1270	0.95	23.0	68.0	8.0	1.0
	241	13.0	10.1	20.4	61.0	46.9	15.7	33.5	1470	1.78	35.5	62.0	2.5	0.0
	240	9.3	6.5	14.5	43.5	46.8	15.6	33.3	1670	1.49	37.0	55.0	6.0	2.0
	257	10.5	11.7	15.8	47.7	45.4	15.0	33.1	1310	1.62	22.0	70.0	7.5	0.5
	238	8.7	6.2	14.0	41.8	48.1	16.1	33.5	1500	1.79	24.0	72.5	3.0	0.5
	269	8.0	4.3	12.6	37.7	47.1	15.8	33.4	1830	2.42	26.5	68.5	3.5	1.5
	262	9.2	3.7	14.9	43.8	47.6	16.2	34.0	1470	1.42	29.0	63.0	7.0	1.0
	228	10.1	6.2	15.5	46.7	46.2	15.3	33.2	1440	0.95	34.3	51.2	12.4	2.0
	258	13.0	8.5	16.0	47.8	36.8	12.3	33.4	MISSING	3.36	28.0	61.0	11.0	0.0
	266	9.3	7.9	14.8	44.1	47.4	15.9	33.6	1530	1.51	26.0	64.0	9.5	0.5
	221	9.7	5.8	14.9	44.2	45.6	15.4	33.7	1730	1.28	17.5	76.5	6.0	0.0
	264	9.4	4.8	14.6	43.4	46.2	15.5	33.6	1550	0.96	13.5	81.0	4.0	1.5
	253	MISSING	MISSING	MISSING	MISSING	MISSING	MISSING	MISSING	MISSING	1.14	13.5	77.0	9.0	0.5
	229	14.4	10.4	21.8	67.2	46.7	15.1	32.4	1334	4.04	79.5	20.0	0.5	0.0
	263	9.5	8.9	14.6	43.9	46.2	15.4	33.3	1650	1.44	24.0	64.0	10.0	2.0
	227	9.2	5.6	14.5	43.1	46.8	15.8	33.7	1450	1.34	29.0	63.5	6.5	1.0
	246	9.6	7.7	14.9	45.3	47.2	15.5	32.9	1380	0.74	15.5	73.0	9.5	2.0
	224	10.8	6.0	16.1	48.0	44.4	14.9	33.6	1210	0.65	58.3	38.2	3.5	0.0
	261	13.3	6.4	19.1	58.8	44.2	14.4	32.5	1320	1.90	29.0	64.0	6.5	0.5
	223	7.9	4.6	12.4	37.3	47.2	15.7	33.3	1820	2.19	45.0	38.5	15.5	1.0
	251	9.6	8.1	14.9	44.7	46.6	15.5	33.3	1370	1.39	19.0	71.5	6.0	3.5
	222	9.1	9.4	13.8	41.3	45.4	15.2	33.4	1530	1.92	36.5	50.0	12.0	1.5
	242	9.7	8.6	14.9	45.1	46.5	15.4	33.0	1120	2.04	10.5	82.0	7.0	0.5
	231	15.3	6.0	22.8	67.5	44.1	14.9	33.8	1040	1.83	56.0	40.0	4.0	0.0
	244	9.5	6.7	14.9	44.8	47.2	15.7	33.2	1630	1.61	33.0	64.0	2.0	1.0

Group:	Animal No.	RBC _C (per mm ³ x10 ⁶)	WBC _C (per mm ³ x10 ³)	HGB (gm %)	HCT (%)	MCV	MCH	MCHC	Platelets _C (per mm ³ x10 ³)	Retics (%)	Neutrophils (%)	Lymphocytes (%)	Monocytes (%)	Eosinophils (%)
10 PPM Males	461	10.4	6.8	15.8	47.0	45.2	15.2	33.6	1540	1.60	28.0	65.0	7.0	0.0
	462	11.0	7.1	16.4	48.6	44.2	14.9	33.7	1670	1.51	29.0	63.5	7.0	0.5
	469	10.6	5.5	15.3	46.0	43.4	14.4	33.3	1710	1.96	33.2	57.6	8.8	0.5
	436	16.4	5.3	20.2	63.0	38.4	12.3	32.1	31	2.16	35.0	57.0	7.5	0.0
	443	8.0	9.0	12.8	37.8	47.3	16.0	33.8	800	2.94	45.0	36.5	17.5	1.0
	449	13.8	10.4	19.3	58.7	42.5	14.0	32.9	870	1.64	50.0	46.0	3.5	0.5
	472	9.4	6.5	14.9	44.4	47.2	15.9	33.6	1530	2.30	24.0	65.0	10.0	1.0
	456	10.1	7.2	15.0	45.8	45.3	14.9	32.8	1860	1.24	12.5	77.0	5.5	3.0
	463	7.0	9.2	10.9	33.0	47.1	15.6	33.1	380	3.00	26.0	24.5	11.0	0.0
	470	10.6	9.2	15.5	47.0	44.3	14.6	33.0	1030	1.88	32.0	55.0	12.5	0.5
	464	9.0	7.3	14.6	43.2	48.0	16.2	33.8	1360	1.59	30.5	64.0	5.0	0.5
	439	9.8	5.1	15.2	45.5	46.4	15.5	33.4	1560	1.22	26.0	66.0	6.5	1.5
	465	9.3	4.3	15.2	44.5	47.9	16.3	34.1	1550	0.74	26.0	68.5	4.5	1.0
	429	9.2	5.5	14.7	43.4	47.2	16.0	33.9	1540	1.02	26.5	69.0	3.0	1.5
	441	9.8	4.1	15.2	45.3	46.2	15.5	33.6	1520	0.86	29.5	65.0	4.5	1.0
	459	9.7	7.0	14.3	43.2	44.5	14.7	33.1	1610	1.85	24.5	67.0	8.0	0.5
	460	9.7	7.2	15.0	45.1	46.5	15.5	33.3	1820	4.54	21.5	69.0	9.0	0.5
	458	8.4	6.6	11.9	36.6	43.6	14.2	32.5	1980	1.59	36.0	56.6	6.0	1.5
	427	9.0	6.2	14.5	43.1	47.9	16.1	33.6	1360	1.73	26.0	67.5	6.0	0.5
	450	14.6	6.1	20.7	63.4	43.4	14.2	32.7	1160	2.47	28.5	58.5	11.5	1.5
	440	9.6	6.4	14.8	44.4	46.3	15.4	33.3	1640	1.34	34.0	54.5	10.0	1.0
	435	8.5	6.0	14.2	42.2	49.6	16.7	33.7	1750	2.41	22.0	70.0	6.5	1.0
	466	9.1	3.8	14.4	42.7	46.9	15.8	33.7	1590	1.16	13.0	78.0	8.5	0.5
	455	10.6	8.0	16.1	48.0	45.3	15.2	33.5	1810	2.28	21.5	68.5	10.0	0.0
	434	9.8	6.9	15.2	45.8	46.7	15.5	33.2	1340	1.43	18.0	78.0	3.5	0.5
	457	10.2	9.1	14.6	44.1	43.2	14.3	33.1	1700	2.04	18.0	72.0	8.0	2.0
	433	7.0	9.9	12.2	36.5	52.1	17.4	33.5	2000	10.40	17.5	79.0	3.0	0.5
	454	9.7	11.1	15.3	46.0	47.4	15.8	33.3	1720	0.70	16.5	78.0	4.0	1.5
	428	9.4	6.8	14.4	42.9	45.6	15.3	33.6	1450	1.44	8.5	86.5	5.0	0.0
	444	15.9	7.6	22.0	66.5	41.8	13.8	33.1	980	1.91	42.3	50.2	7.0	0.5
	467	9.6	7.9	14.7	45.3	47.2	15.3	32.4	950	1.43	34.0	61.0	4.5	0.5
	451	9.4	5.5	14.7	44.4	47.2	15.6	33.1	1790	1.83	31.0	62.5	5.5	0.0
	438	9.8	9.8	15.4	46.2	47.1	15.7	33.4	1540	1.36	27.2	63.1	6.7	3.1
	425	10.4	6.2	16.2	48.0	46.2	15.6	33.7	1480	1.72	26.0	66.5	5.5	2.0
	431	12.5	9.2	16.6	51.2	41.0	13.3	32.4	600	2.95	31.0	55.5	13.0	0.5
	437	7.9	4.8	11.0	33.1	41.9	13.9	33.2	1140	13.00	27.5	64.0	8.5	0.0
	447	7.9	5.7	12.9	39.0	49.4	16.3	33.1	1910	5.12	25.0	66.5	6.5	1.5

Group:	Animal No.	RBC (per mm ³ x10 ⁶)	WBC (per mm ³ x10 ³)	HGB (gm %)	HCT (%)	MCV	MCH	MCHC	Platelets (per mm ³ x10 ³)	Retics (%)	Neutrophils (%)	Lymphocytes (%)	Monocytes (%)	Eosinophils (%)
33 PPM Males	621	9.6	8.6	15.0	44.8	46.7	15.6	33.5	1450	1.49	33.0	64.5	1.5	1.0
	595	10.0	6.2	15.6	46.5	46.5	15.6	33.5	1830	1.35	24.0	67.5	7.5	1.0
	641	9.0	3.7	14.0	41.9	46.6	15.6	33.4	1650	0.89	30.5	65.5	3.5	0.5
	609	9.4	4.5	14.5	43.1	45.9	15.4	33.6	1770	1.56	26.0	69.0	2.5	2.5
	639	9.3	5.4	14.8	44.4	47.7	15.9	33.4	1350	1.95	20.5	75.0	3.0	1.5
	622	9.0	7.3	14.4	43.5	48.3	16.0	33.1	1380	1.36	17.5	75.5	6.0	0.5
	603	9.0	3.8	14.0	41.8	46.5	15.6	33.5	1800	1.25	39.0	57.0	4.0	0.0
	624	10.0	3.8	15.3	46.2	46.2	15.3	33.1	1980	1.69	20.5	74.0	5.5	0.0
	628	10.4	5.7	15.3	46.2	44.4	14.7	33.1	1790	2.33	24.5	67.5	7.0	1.0
	613	7.9	16.6	11.0	33.3	42.2	13.9	33.0	2480	2.20	83.5	5.0	3.0	0.0
	610	10.1	8.2	15.9	47.6	47.1	15.7	33.4	1360	1.62	26.5	62.0	9.5	1.5
	597	8.9	8.3	14.2	41.8	47.0	16.0	33.9	1380	0.85	30.0	61.5	8.5	0.0
	617	9.5	3.4	14.8	44.5	46.8	15.6	33.3	1510	1.04	24.0	70.0	5.0	1.0
	608	13.9	6.8	19.9	60.2	43.3	14.3	33.1	1590	2.24	37.5	54.5	7.5	0.5
	638	14.9	13.4	19.1	58.4	39.2	12.8	32.7	1280	3.33	65.0	20.0	10.5	0.0
	604	9.3	5.6	14.8	42.9	46.1	15.9	34.5	1540	2.14	25.0	71.5	3.5	0.0
	629	9.7	4.0	15.3	46.1	47.5	15.8	33.2	1590	2.04	17.5	73.0	8.0	1.5
	619	10.0	5.0	15.7	46.9	46.9	15.7	33.5	1760	1.12	18.5	72.0	7.5	2.0
	596	8.9	6.4	15.1	44.3	49.8	17.0	34.1	630	1.15	18.5	71.0	8.0	1.0
	636	13.6	8.8	19.3	60.0	44.1	14.2	32.2	850	2.98	63.5	32.0	4.0	0.5
	612	9.5	4.4	15.1	44.7	47.1	15.9	33.7	1190	1.79	75.5	13.5	6.5	2.5
	605	10.2	10.8	15.4	46.0	45.1	15.1	33.5	1930	1.42	35.0	58.0	5.5	1.5
	611	9.4	6.4	14.8	45.0	47.9	15.7	32.9	1590	1.15	18.0	77.5	3.0	1.5
	620	9.5	5.9	14.7	44.2	46.5	15.5	33.3	1570	1.05	17.0	66.5	13.5	2.5
	606	9.2	9.2	14.7	44.1	47.9	16.0	33.4	1660	1.67	15.5	71.0	11.5	2.0
	634	11.0	8.7	16.3	49.0	44.5	14.8	33.3	1490	1.19	27.0	63.0	9.0	1.0
	625	14.3	10.0	19.2	57.6	40.3	13.4	33.3	1820	2.24	18.5	76.5	4.5	0.5
	614	9.2	6.0	14.7	44.3	48.1	16.0	33.2	1790	0.87	21.0	75.5	2.0	1.5
	627	9.2	17.7	13.7	40.7	44.2	14.9	33.7	150	2.18	40.0	33.0	24.5	2.5
	607	9.7	7.7	15.1	45.2	46.6	15.6	33.4	1600	1.11	21.5	72.5	4.0	2.0
	644	9.1	6.6	14.3	42.4	46.6	15.7	33.7	1600	2.21	25.5	64.0	10.0	0.5
	630	13.0	8.1	15.0	56.4	43.4	14.4	33.1	1570	1.59	33.6	53.9	12.0	0.5
	618	10.4	8.1	15.3	45.8	44.0	14.7	33.4	1490	1.20	26.0	61.0	13.0	0.0
	623	9.0	5.0	14.2	42.2	46.9	15.8	33.6	2130	0.99	19.0	77.0	4.0	0.0
	633	14.3	6.2	19.6	58.8	41.1	13.7	33.3	1630	2.34	45.0	41.0	14.0	0.0
	637	7.6	5.3	10.8	32.8	43.2	14.2	32.9	MISSING	3.34	40.5	50.0	9.0	0.0
	626	9.6	2.7	15.0	44.7	46.6	15.6	33.5	1530	1.74	46.5	37.5	15.5	0.5
	635	9.9	4.3	15.2	45.3	45.8	15.4	33.5	1250	1.31	30.0	59.0	10.5	0.5
	598	9.4	2.3	14.6	43.7	46.5	15.5	33.4	1700	0.85	26.0	66.0	6.5	1.5
	643	9.1	4.6	14.5	42.5	46.7	15.9	34.1	1630	1.29	21.5	71.0	5.5	2.0
100 PPM Males	797	10.1	6.0	12.5	44.8	44.4	12.4	27.9	1080	1.59	18.5	72.5	6.0	3.0
	792	9.7	4.8	15.3	45.9	47.3	15.8	33.3	1540	2.13	28.5	62.0	7.5	2.0
	757	10.6	5.9	16.5	49.1	46.3	15.6	33.6	1490	1.11	42.5	48.5	7.5	1.5
	753	MISSING	MISSING	MISSING	MISSING	MISSING	MISSING	MISSING	MISSING	1.49	23.0	67.5	5.0	4.5
	759	9.8	10.6	14.8	44.8	45.7	15.1	33.0	1570	0.73	65.5	25.0	8.0	1.5
	801	10.4	3.3	16.1	49.2	47.3	15.5	32.7	1410	2.50	28.5	62.5	7.0	2.0
	775	10.0	5.6	15.5	47.2	47.2	15.5	32.8	1380	1.78	48.5	49.5	1.5	0.0
	790	10.2	11.0	15.9	47.0	46.1	15.6	33.8	1600	1.20	19.0	70.0	10.5	0.5
	799	15.4	4.8	19.2	58.7	38.1	12.5	32.7	MISSING	1.94	55.0	28.0	15.5	1.5
	763	2.1	20.1	4.4	14.6	69.7	21.0	30.1	430	35.60	77.1	21.9	0.4	1.0
	816	10.5	2.2	16.3	49.2	46.9	15.5	33.1	1650	0.67	34.5	60.5	5.0	0.0
	810	10.3	7.5	16.9	49.6	48.2	16.4	34.0	930	1.32	17.5	69.0	4.5	9.0
	758	15.4	5.8	21.7	64.8	42.1	14.1	33.5	1170	1.19	39.0	55.0	5.5	0.5
	769	9.7	6.1	14.8	45.7	47.1	15.3	32.4	1390	1.41	22.0	70.5	4.0	3.5
	767	9.7	5.6	15.3	46.0	47.4	15.8	33.3	1930	1.28	24.0	64.5	7.5	4.0

Terminal Sacrifice
Methyl Bromide Chronic Mouse Study
Individual Hematology Data

Group:	Animal No.	RBC ₃ (per mm ³ x10 ⁶)	WBC ₃ (per mm ³ x10 ³)	HGB (gm %)	HCT (%)	MCV	MCH	MCHC	Platelets (per mm ³ x10 ³)	Retics (%)	Neutrophils (%)	Lymphocytes (%)	Monocytes (%)	Eosinophils (%)
Controls Females	335	9.5	5.4	14.9	43.9	46.2	15.7	33.9	1170	1.20	18.0	72.0	8.0	1.5
	340	8.2	4.4	13.2	39.8	48.5	16.1	33.2	910	3.58	37.5	50.0	11.5	0.0
	362	8.8	4.4	14.9	42.6	48.4	16.9	35.0	1100	1.09	29.6	55.3	12.1	3.0
	360	10.3	4.7	16.2	47.7	46.3	15.7	34.0	990	1.62	28.0	62.5	8.5	1.0
	351	9.8	5.1	15.7	46.1	47.0	16.0	34.1	1080	1.78	27.0	63.5	6.0	3.5
	344	10.2	2.9	16.1	47.0	46.1	15.8	34.2	1120	1.10	27.5	67.0	5.0	0.5
	337	9.4	2.1	15.3	44.5	47.3	16.3	34.4	1020	1.19	26.0	67.0	4.5	2.0
	339	10.0	4.1	15.3	45.8	45.8	15.3	33.4	1120	1.18	20.0	64.5	12.5	2.0
	336	5.8	16.0	11.1	34.5	59.5	19.1	32.2	1050	0.72	26.0	68.5	5.0	0.5
	326	9.6	3.6	15.3	45.2	47.1	15.9	33.8	1020	2.30	23.5	70.5	5.0	1.0
	389	8.8	6.1	14.5	42.5	48.3	16.5	34.1	890	2.06	42.0	47.0	10.5	0.5
	329	9.5	4.5	15.1	45.1	47.5	15.9	33.5	980	0.98	21.5	75.0	3.0	0.5
	343	10.4	5.2	16.7	48.0	46.2	16.1	34.8	970	1.77	33.5	57.5	8.0	1.0
	333	10.0	6.4	16.1	47.5	47.5	16.1	33.9	890	1.85	24.0	65.0	10.0	1.0
	368	10.1	2.7	11.6	44.9	44.5	11.5	25.8	780	1.29	25.5	67.5	7.0	0.0
	325	9.4	3.9	15.9	46.3	49.3	16.9	34.3	1180	1.84	26.0	69.0	3.5	1.5
	352	9.7	3.3	15.1	45.1	46.5	15.6	33.5	1220	1.58	31.0	65.0	3.5	0.5
	341	8.2	2.3	14.0	41.2	50.2	17.1	34.0	1220	3.15	27.5	56.5	11.5	2.0
	332	9.6	4.8	15.7	46.0	47.9	16.4	34.1	1230	1.60	19.0	75.5	3.5	2.0
	346	9.3	2.5	14.9	43.8	47.1	16.0	34.0	1170	1.09	29.0	65.0	5.0	1.0
	349	6.6	9.3	9.7	29.1	44.1	14.7	33.3	1020	5.58	78.5	12.5	8.5	0.5
	359	9.7	2.4	14.1	44.9	46.3	14.5	31.4	1340	1.42	21.0	71.0	6.5	1.5
	364	10.1	5.6	15.9	46.8	46.3	15.7	34.0	1140	1.00	18.0	73.0	5.0	4.0
	361	10.3	5.0	16.5	48.4	47.0	16.0	34.1	890	1.77	16.5	74.5	8.5	0.5
	357	10.1	4.4	16.0	47.0	46.5	15.8	34.1	1080	1.07	20.5	62.5	14.0	2.5
	353	10.5	4.0	15.3	46.2	44.0	14.6	33.1	1270	1.91	17.4	75.9	6.7	0.0
	347	9.6	2.0	15.2	44.7	46.6	15.8	34.0	1010	1.58	21.5	69.5	7.0	2.0
	334	9.4	5.8	14.9	44.4	47.2	15.9	33.6	1260	2.08	15.5	79.0	5.5	0.0
	390	9.6	6.3	15.2	45.5	47.4	15.8	33.4	980	2.02	17.0	70.0	10.0	3.0
	358	9.6	3.1	15.3	45.3	47.2	15.9	33.8	900	1.64	39.0	46.5	14.0	0.5
	342	9.4	3.0	14.9	43.6	46.4	15.9	34.2	1320	1.05	40.0	40.0	16.0	3.5
	327	9.8	5.1	15.6	46.2	47.1	15.9	33.8	1050	1.14	24.0	65.5	10.5	0.0
	328	9.8	4.8	15.5	46.1	47.0	15.8	33.7	1270	1.01	18.0	66.5	13.0	2.5
	345	10.5	6.3	15.2	44.1	42.0	14.5	34.5	1080	1.62	23.5	69.0	5.5	0.5
	367	9.1	2.9	14.5	42.5	46.7	15.9	34.1	1080	1.59	30.5	60.0	8.0	1.5
	330	9.8	6.4	15.8	47.4	48.4	16.1	33.3	330	4.02	29.5	49.5	12.5	1.0

Group:	Animal No.	RBC (per mm ³ x 10 ⁶)	WBC (per mm ³ x 10 ³)	HGB (gm %)	HCT (%)	MCV	MCH	MCHC	Platelets (per mm ³ x 10 ³)	Retics (%)	Neutrophils (%)	Lymphocytes (%)	Monocytes (%)	Eosinophils (%)
10 PPM Females	518	9.5	4.4	15.6	46.4	48.8	16.4	33.6	1200	1.85	18.5	69.5	8.5	3.5
	549	9.7	3.7	15.2	44.2	45.6	15.7	34.4	980	0.93	22.0	69.5	7.0	1.5
	540	9.6	3.1	15.3	45.3	47.2	15.9	33.8	1220	0.91	26.5	66.3	6.0	1.0
	543	9.4	3.6	15.1	44.5	47.3	16.1	34.0	1020	1.15	26.0	67.5	5.5	1.0
	545	10.2	2.6	15.6	45.8	44.9	15.3	34.1	1190	1.58	35.0	51.0	12.5	1.5
	548	9.7	6.0	15.0	43.7	45.1	15.5	34.3	1290	1.29	11.5	83.5	4.0	1.0
	512	10.0	5.3	15.8	46.4	46.4	15.8	34.1	1350	0.97	34.5	62.0	2.5	0.5
	519	9.3	13.2	14.6	41.4	44.5	15.7	35.3	40	1.92	40.5	17.5	38.5	0.0
	513	10.0	3.4	15.5	46.0	46.0	15.5	33.7	1030	1.50	27.5	69.5	2.5	0.5
	546	9.4	3.5	15.1	44.5	47.3	16.1	34.0	1200	0.83	28.5	64.0	6.0	1.5
	526	9.5	4.3	15.3	45.2	47.6	16.1	33.8	1130	1.78	29.5	54.0	12.0	1.5
	524	9.5	5.1	14.9	43.6	45.9	15.7	34.2	1250	1.19	11.5	86.0	2.0	0.5
	553	2.3	20.6	5.2	15.3	66.7	22.6	33.9	150	9.59	18.5	69.0	6.5	0.0
	525	9.6	2.9	14.8	43.2	45.0	15.4	34.3	950	1.06	16.5	72.0	10.5	1.0
	527	9.2	2.6	14.7	43.1	46.9	16.0	34.1	1100	2.15	37.0	56.0	4.0	3.0
	521	9.5	3.7	15.5	45.4	47.8	16.3	34.1	1250	1.10	30.0	58.0	11.0	1.0
	554	9.8	3.7	16.0	46.4	47.3	16.3	34.5	1400	1.04	21.5	69.0	8.5	1.0
	528	10.0	3.9	15.5	45.9	45.9	15.5	33.8	1230	2.21	15.5	76.0	7.0	1.5
	558	9.5	2.4	15.6	45.5	47.9	16.4	34.3	990	1.76	25.0	65.5	9.5	0.0
	555	9.5	2.6	15.6	44.6	46.9	16.4	35.0	1050	1.38	21.0	68.5	9.5	1.0
	538	9.4	2.8	14.7	43.8	46.6	15.6	33.6	1220	1.79	21.5	73.0	4.0	1.5
	537	9.9	2.0	15.1	44.8	45.3	15.3	33.7	950	0.69	29.0	66.5	3.0	1.5
	534	7.7	3.7	13.8	41.2	53.5	17.9	33.5	1380	1.39	17.0	77.0	5.0	1.0
	517	17.5	7.8	21.6	66.5	38.0	12.3	32.5	MISSING	4.49	56.0	38.5	5.5	0.0
	529	9.2	2.8	14.9	44.5	48.4	16.2	33.5	840	2.04	30.0	57.0	12.5	0.5
	516	9.0	2.5	14.1	40.9	45.4	15.7	34.5	1030	1.83	33.5	56.5	8.0	2.0
	530	10.3	3.1	15.3	46.1	44.8	14.9	33.2	1440	3.09	22.5	70.0	5.5	1.0
	536	9.3	6.7	15.1	44.5	47.8	16.2	34.0	1040	1.58	21.5	72.5	5.0	1.0
	515	9.2	8.1	14.9	46.4	50.4	16.2	32.1	280	7.68	56.5	31.0	12.5	0.0
	547	9.6	4.4	15.0	44.0	45.8	15.6	34.1	990	2.11	35.0	60.0	4.5	0.5
	544	9.7	5.0	15.0	44.9	46.3	15.5	33.4	1020	1.15	36.0	53.5	10.0	0.5
	522	9.9	9.3	15.2	45.0	45.5	15.4	33.7	710	2.06	23.5	71.0	4.5	1.0
	533	9.7	4.5	15.3	45.0	46.4	15.8	34.0	1220	0.97	19.1	74.4	3.0	3.5
	514	9.3	4.7	14.3	42.6	45.8	15.4	33.6	1180	1.85	38.0	43.0	12.0	2.0
	550	8.9	6.8	13.8	41.0	46.1	15.5	33.6	920	0.99	40.0	42.5	15.0	1.0
	511	10.0	8.3	15.2	44.4	44.4	15.2	34.2	1210	1.94	27.5	62.0	9.0	1.5
	532	12.3	3.8	18.5	55.2	44.9	15.0	33.5	440	1.35	31.0	59.5	8.5	1.0
	510	9.7	5.5	15.2	45.5	46.9	15.7	33.4	1060	1.36	32.0	64.0	3.0	1.0
	531	9.5	2.7	15.2	44.9	47.3	16.0	33.8	1950	1.59	26.6	65.5	6.5	1.5
	557	12.0	5.0	16.6	50.4	42.0	13.8	32.9	1590	5.92	34.5	58.0	6.5	1.0

Group:	Animal No.	RBC (per mm ³ x10 ⁶)	WBC (per mm ³ x10 ³)	HGB (gm %)	HCT (%)	MCV	MCH	MCHC	Platelets (per mm ³ x10 ³)	Retics (%)	Neutrophils (%)	Lymphocytes (%)	Monocytes (%)	Eosinophils (%)
33 PPM Females	722	10.0	4.9	16.1	46.9	46.9	16.1	34.3	920	1.20	27.0	65.0	7.0	1.0
	689	9.8	5.4	15.4	45.7	46.6	15.7	33.7	1170	2.68	23.0	66.5	9.5	1.0
	694	9.4	5.0	15.4	45.7	48.6	16.4	33.7	1060	0.94	16.5	68.5	12.5	1.0
	707	9.5	2.7	15.0	44.5	46.8	15.8	33.7	1260	1.05	30.0	51.5	15.5	2.5
	709	9.4	5.2	14.8	44.1	46.9	15.7	33.6	1200	1.61	20.5	74.0	4.0	1.5
	703	10.0	3.6	14.9	44.5	44.5	14.9	33.5	1180	2.41	27.0	65.0	6.5	1.5
	727	7.6	20.2	2.6	38.0	50.0	3.4	6.8	490	9.70	15.5	37.5	2.5	0.0
	711	10.2	3.8	15.4	46.0	45.1	15.1	33.5	1220	1.51	20.0	71.5	61.0	2.5
	681	9.9	MISSING	15.2	45.3	45.8	15.4	33.5	1180	0.96	8.0	89.5	2.5	0.0
	729	9.0		15.3	42.6	47.3	17.0	35.9	1100	2.44	37.5	58.5	3.5	0.5
	721	9.2	2.8	15.1	43.7	47.5	16.4	34.6	1150	1.26	31.5	62.0	6.0	0.5
	706	9.3	2.9	15.3	45.2	48.6	16.5	33.9	1130	1.37	24.5	66.0	7.5	2.0
	696	9.5	2.6	15.4	45.3	47.7	16.2	34.0	1150	1.40	20.0	75.5	2.5	2.0
	716	10.0	5.2	16.0	47.0	47.0	16.0	34.0	1060	1.23	24.5	67.0	7.5	1.0
	697	13.9	5.6	22.1	66.6	47.9	15.9	33.2	200	1.51	31.5	54.5	14.0	0.0
	687	10.0	1.7	16.1	48.0	48.0	16.1	33.5	1010	2.19	33.0	58.0	8.0	1.0
	699	10.4	3.8	16.6	48.9	47.0	16.0	34.0	1190	2.09	33.5	64.0	2.0	0.5
	725	9.4	10.9	15.4	44.9	47.8	16.4	34.3	770	1.59	9.5	88.5	1.5	0.5
	698	9.0	3.5	14.7	44.1	49.0	16.3	33.3	1170	1.98	40.5	44.5	13.5	1.5
	682	11.2	5.1	16.8	49.7	44.4	15.0	33.8	1260	1.69	18.0	69.5	8.5	4.0
	724	9.7	2.8	15.3	44.7	46.1	15.8	34.2	1210	1.63	36.0	56.5	4.5	2.5
	708	9.3	2.9	15.0	43.8	47.1	16.1	34.2	990	1.48	36.5	54.0	7.0	2.5
	684	9.4	18.5	14.4	43.5	46.3	15.3	33.1	900	2.56	18.5	80.5	0.0	1.0
	705	9.6	4.7	15.0	45.0	46.9	15.6	33.3	1250	1.70	21.5	75.0	2.5	1.0
	700	9.4	3.9	15.0	44.4	47.2	16.0	33.8	1170	2.19	20.5	69.5	7.5	2.0
	714	10.1	10.3	16.3	47.4	46.9	16.1	34.4	1150	2.10	53.5	40.5	4.0	2.0
	717	9.0	7.0	14.5	42.3	47.0	16.1	34.3	770	1.61	11.0	83.0	6.0	0.0
	701	9.1	3.2	14.8	43.8	48.1	16.3	33.8	920	1.35	22.5	61.5	13.5	2.5
	728	9.7	3.5	15.5	44.9	46.3	16.0	34.5	1300	1.49	28.0	67.5	4.5	0.0
	713	8.0	5.0	12.3	37.7	47.1	15.4	32.6	760	4.30	34.0	51.0	14.0	0.5
	726	8.9	1.9	14.6	42.4	47.6	16.4	34.5	1220	1.18	45.5	47.0	6.0	1.5
	715	14.1	3.4	20.6	60.8	43.1	14.6	33.9	970	0.97	28.5	57.0	12.5	0.5
	693	9.4	3.3	15.2	44.9	47.8	16.2	33.8	1200	1.78	33.0	49.5	14.5	3.0
	710	9.2	3.3	13.8	41.8	45.4	15.0	33.0	1150	2.31	20.0	76.3	3.0	0.5
	719	9.6	3.2	14.9	44.3	46.1	15.5	33.7	1250	1.87	23.5	74.0	1.5	1.0
	691	9.8	3.9	15.1	45.3	46.2	15.4	33.4	1210	1.42	27.5	66.0	5.5	1.0
	683	9.0	2.9	14.7	43.3	48.1	16.3	34.0	1180	1.18	42.0	44.0	4.5	9.5
	686	9.7	4.7	15.5	45.5	46.9	16.0	34.1	1190	1.54	34.5	50.5	10.0	5.0
	692	9.6	4.3	15.3	45.1	47.0	15.9	33.9	1340	1.28	20.0	66.5	10.5	3.0
	712	9.3	3.1	15.1	44.4	47.7	16.2	34.0	1130	1.46	24.5	73.0	1.5	0.5
	685	5.4	17.4	10.6	39.0	72.3	19.6	27.2	180	10.90	8.5	73.0	14.0	0.0
	718	9.3	1.7	15.2	44.0	47.3	16.3	34.6	1400	1.26	42.0	46.0	8.5	3.5
	690	9.7	2.8	15.4	46.4	47.8	15.9	33.2	970	2.09	20.5	66.0	13.0	0.0
	730	8.8	2.7	14.1	41.2	46.8	16.0	34.2	1070	1.80	61.0	24.0	11.5	2.5
	720	9.6	2.3	15.0	44.0	45.8	15.6	34.1	1120	1.48	30.0	61.5	7.5	1.0

Group:	Animal No.	RBC ₃ (per mm ³ x 10 ⁶)	WBC ₃ (per mm ³ x 10 ³)	HGB (gm %)	HCT (%)	MCV	MCH	MCHC	Platelets (per mm ³ x 10 ³)	Retics (%)	Neutrophils (%)	Lymphocytes (%)	Monocytes (%)	Eosinophils (%)
100 PPM Females	855	10.1	5.7	15.7	46.8	46.3	15.5	33.6	1120	1.01	20.0	74.5	4.0	1.5
	896	9.9	3.9	15.4	45.4	45.9	15.6	33.9	1180	0.91	20.0	73.0	4.0	3.0
	833	9.5	10.9	15.1	44.7	47.0	15.9	33.8	910	1.19	23.5	68.0	7.5	1.0
	874	9.9	5.7	16.4	47.3	47.8	16.6	34.7	1050	0.73	48.5	45.0	6.0	0.5
	842	11.4	5.5	16.5	48.7	42.7	14.5	33.9	1390	1.93	26.0	70.5	3.0	0.5
	884	9.7	3.5	14.6	43.7	45.1	15.1	33.4	870	1.03	35.0	57.5	4.0	3.5
	866	8.7	4.9	14.0	42.0	48.3	16.1	33.3	1460	1.53	33.0	53.5	10.5	2.0
	834	10.4	5.6	15.7	46.5	44.7	15.1	33.8	1370	1.12	25.0	66.0	6.5	2.5
	877	12.7	2.6	17.1	52.2	41.1	13.5	32.8	1410	1.01	43.3	52.7	3.5	0.4
	856	10.3	5.2	15.6	46.8	45.4	15.1	33.4	1170	0.74	32.5	57.5	5.5	4.5
	860	9.6	4.8	15.2	44.7	46.6	15.8	34.0	1290	0.92	19.0	76.0	4.0	1.0
	864	9.0	5.3	13.3	40.1	44.6	14.8	33.1	1360	2.90	57.0	31.5	11.0	0.5
	895	9.4	4.6	14.6	43.3	46.1	15.5	33.7	1310	1.81	26.0	63.5	6.5	4.0
	871	10.1	2.9	15.5	46.9	46.4	15.3	33.1	1490	1.52	27.0	7.0	2.0	1.0
	841	10.0	6.7	15.8	47.2	47.2	15.8	33.5	1200	1.23	39.5	44.0	16.0	0.5
	867	9.4	4.8	15.1	44.4	47.2	16.1	34.0	1320	1.46	32.0	50.5	16.5	1.0
	868	9.6	2.1	15.1	44.0	45.8	15.7	34.3	1190	1.33	29.0	60.5	5.5	5.0
	900	10.1	2.6	15.5	45.7	45.2	15.3	34.0	1330	1.00	33.5	60.5	4.0	2.0
	888	11.1	6.8	17.2	50.8	45.8	15.5	33.8	700	0.93	46.5	44.0	2.5	7.0
	872	9.8	4.5	15.3	45.3	46.2	15.6	33.8	1050	1.27	17.0	69.0	9.5	4.5
	835	8.5	13.3	13.1	38.8	45.6	15.4	33.8	1570	1.43	49.5	39.5	10.0	1.0
	875	10.5	2.5	16.1	47.6	45.3	15.3	33.8	1030	1.48	26.5	72.0	1.0	0.5
	838	8.8	12.5	14.2	41.7	47.4	16.1	34.0	990	3.20	21.5	68.0	8.0	2.0
	883	10.0	5.5	15.2	46.1	46.1	15.2	33.0	1530	2.95	46.0	42.5	9.0	2.5
	889	MISSING	MISSING	MISSING	MISSING	MISSING	MISSING	MISSING	MISSING	1.22	14.5	74.5	3.5	7.0
	892	9.8	3.8	15.2	44.7	45.6	15.5	34.0	1170	1.34	21.0	73.5	4.5	1.0
	894	9.9	4.8	15.5	45.3	45.8	15.7	34.2	910	1.34	27.5	62.5	8.5	1.5
	881	10.2	4.5	15.5	46.4	45.5	15.2	33.4	1410	0.99	39.5	57.5	2.5	0.5
	858	9.6	5.5	14.4	43.6	45.4	15.0	33.0	1000	2.02	32.5	52.0	9.5	6.0
	890	9.1	4.3	15.0	44.0	48.3	16.5	34.1	910	2.65	29.0	59.0	9.0	3.0
	861	10.7	2.4	14.4	48.6	45.4	13.5	29.6	1150	1.94	39.5	49.5	11.0	0.0
	876	9.6	4.9	15.0	44.1	45.9	15.6	34.0	1130	2.03	29.0	65.0	4.5	1.5
	854	9.6	5.9	15.1	45.0	46.9	15.7	33.5	1070	1.75	17.5	74.5	6.0	2.0
	865	9.7	6.4	15.2	45.2	46.6	15.7	33.6	1160	1.26	17.5	69.5	12.5	0.5
	885	9.5	7.4	15.0	44.4	46.7	15.8	33.8	1390	1.74	43.0	46.5	9.5	1.0
	869	9.5	4.5	14.9	44.6	46.9	15.7	33.4	1220	1.88	12.0	71.0	12.0	4.5
	863	9.8	8.2	14.1	44.6	45.5	14.4	31.6	1080	2.11	31.0	61.5	7.0	0.5
	837	9.4	6.0	15.0	44.2	47.0	16.0	34.0	630	1.76	14.0	79.0	7.0	0.0
	882	9.7	4.0	15.1	45.2	46.6	15.6	33.4	950	2.37	22.0	69.0	7.0	0.5

APPENDIX G2

WHITE BLOOD CELL COUNT DISCREPANCIES

Animal No.	Dosage		Coulter WBC Count	Manual WBC Count
	Group	Sex		
40522	10 ppm	F	9.3	<2.0
40684	33 ppm	F	18.5	<2.0
49553	10 ppm	F	20.6	<2.0
40433	10 ppm	M	9.9	~3.0
40763	100 ppm	M	20.1	~2.0
40833	100 ppm	F	10.9	<2.0
40336	0 ppm	F	16.0	~2.0
40838	100 ppm	F	12.5	~2.0
40627	33 ppm	M	17.7	<2.0

APPENDIX H1

Methyl Bromide Chronic Study
Individual Behavioral Measurements
Baseline Data

Group:	Animal No.	Body Wt.	Latnov	Novt	Cross	Locoact	Resamp	Reslat	ForeGp	HindGp	Hotlat	Footspl
Control Males	271	20.9	15	85	6	199	260.7	278.8	35.0	13.3	8.5	5.6
	272	21.7	11	99	15	182	296.7	229.0	70.0	23.3	7.9	5.4
	273	18.9	6	92	8	134	157.2	448.4	46.7	37.5	5.9	6.4
	274	19.6	27	90	9	146	168.0	439.9	45.0	10.0	10.5	6.5
	275	19.4	17	103	8	140	181.7	400.9	48.3	23.3	6.0	5.7
	276	20.0	14	100	12	187	126.6	442.2	53.3	30.0	8.9	5.2
	277	19.5	13	105	7	200	174.2	432.0	55.0	25.0	9.2	5.8
	278	20.0	20	88	6	202	194.5	363.2	43.3	26.7	8.5	5.5
	279	22.5	1	121	10	184	229.5	303.7	75.0	37.5	8.0	5.8
	280	21.7	21	104	11	205	324.7	197.3	106.7	23.3	5.5	5.2
	281	22.9	38	89	7	192	188.5	304.8	91.7	90.0	7.0	5.3
	282	22.0	22	91	9	208	241.4	348.1	78.3	20.0	6.3	5.3
	283	23.4	5	100	11	185	249.8	240.6	123.3	36.7	11.4	4.9
	284	20.9	27	80	13	199	196.7	351.4	86.7	45.0	4.7	5.8
	285	20.6	10	112	7	178	289.4	178.9	66.7	21.7	9.5	5.5
	286	24.0	14	105	8	199	178.9	428.7	31.7	7.5	10.9	5.4
10 PPM Males	473	21.8	24	99	6	186	158.3	392.1	30.0	15.0	5.2	4.8
	474	21.7	1	142	2	181	242.7	257.6	81.7	20.0	5.3	5.5
	475	19.2	23	106	8	203	152.5	438.3	63.3	41.7	8.5	5.2
	476	19.1	11	93	6	200	175.6	397.9	68.3	25.0	8.4	5.4
	477	19.1	28	82	7	170	196.6	395.3	30.0	MISSING	10.7	4.8
	478	20.8	14	123	11	160	179.9	346.7	55.0	13.3	12.1	5.3
	479	20.4	7	105	9	200	139.2	484.0	66.7	10.0	9.9	5.1
	480	20.7	11	110	9	171	239.0	350.6	35.0	21.7	16.0	5.7
	481	22.1	18	103	7	197	212.2	281.1	43.3	27.5	4.7	5.0
	482	22.8	11	75	8	192	177.0	392.2	71.7	46.7	7.6	5.5
	483	22.9	10	103	9	189	179.5	391.7	66.7	62.5	5.2	4.3
	484	23.1	11	96	11	185	232.5	349.8	101.7	46.7	6.4	4.9
	485	22.5	10	97	11	196	189.1	438.3	68.3	41.7	5.2	MISSING
	486	20.2	2	120	6	220	238.8	335.5	45.0	36.7	5.0	6.0
	487	21.2	47	107	5	186	242.7	305.6	85.0	57.5	7.9	5.6
	488	23.2	44	72	6	168	189.4	408.3	72.5	70.0	17.0	5.2
33 PPM Males	645	21.8	38	95	3	152	229.3	302.7	56.7	26.7	11.4	5.5
	646	21.3	5	79	7	139	184.3	463.2	50.0	7.5	10.0	5.4
	647	18.2	6	108	9	168	209.8	411.8	58.3	21.7	11.9	5.5
	648	19.3	10	128	6	178	107.0	484.2	27.5	17.5	6.1	5.9
	649	18.9	10	96	15	209	188.9	398.0	63.3	20.0	MISSING	5.5
	650	20.9	14	93	7	167	175.2	412.4	63.3	25.0	6.4	5.6
	651	19.9	11	118	8	MISSING	221.9	234.5	55.0	20.0	5.6	4.7
	652	20.3	11	95	8	187	145.9	483.9	53.3	20.0	7.5	5.6
	653	22.0	6	99	14	211	271.7	228.6	51.7	20.0	5.0	3.7
	654	22.8	12	86	9	175	300.2	259.8	35.0	23.3	5.4	4.8
	655	22.9	23	97	9	184	174.3	440.2	95.0	23.3	5.4	4.6
	656	22.9	5	102	14	190	289.9	253.6	78.3	70.0	7.8	5.6
	657	22.7	26	125	10	181	257.3	301.2	121.7	55.0	7.5	4.3
	658	22.7	20	103	7	192	178.4	443.1	61.7	45.0	9.8	4.4
	659	20.8	4	87	7	185	265.3	264.6	63.3	65.0	5.8	4.9
	660	23.2	1	122	12	168	253.8	311.7	63.3	26.7	4.9	4.6
100 PPM Males	817	22.2	21	99	7	179	275.9	210.0	43.3	31.7	10.2	4.4
	818	21.7	10	106	12	216	133.7	482.8	64.0	13.3	15.3	4.8
	819	18.9	11	114	8	181	215.3	306.8	51.7	10.0	6.9	5.0
	820	19.5	19	105	8	166	195.4	315.9	31.7	31.7	6.4	5.1
	821	19.3	5	104	11	203	131.4	438.0	65.0	21.7	8.4	6.5
	822	19.9	17	133	5	155	286.2	301.2	50.0	MISSING	8.7	5.9
	823	19.8	6	114	8	178	178.6	352.0	65.0	16.7	6.5	5.4
	824	22.0	17	111	7	212	206.6	346.9	78.3	38.3	7.9	5.6
	825	22.0	15	87	8	187	320.9	297.8	70.0	45.0	4.6	5.5
	826	23.6	6	75	16	227	209.7	422.5	37.5	23.3	5.2	5.4
	827	21.2	15	85	8	159	186.2	345.9	98.3	26.7	9.3	5.1
	828	23.0	19	94	7	166	266.9	307.5	96.7	45.0	8.3	5.0
	829	22.3	16	90	13	210	206.6	366.3	85.0	40.0	7.5	4.5
	830	17.3	11	104	9	179	181.2	374.2	71.7	30.0	5.2	4.6
	831	21.8	20	98	10	194	235.1	393.2	31.7	77.5	8.1	4.7
	832	24.7	14	87	8	172	186.9	391.3	95.0	70.0	7.3	5.7

Methyl Bromide Chronic Study
Individual Behavioral Measurements
3-Month Testing

Group:	Animal No.	Body Wt.	Latnov	Novt	Cross	Locoact	Resamp	Reslat	ForeGp	HindGp	Hotlat	Footspl
Control Males	271	29.0	7	100	7	180	187.0	438.4	50.0	63.3	9.3	5.3
	272	33.0	28	65	7	199	224.6	309.2	95.0	80.0	7.4	5.4
	273	28.3	7	92	6	189	164.4	438.7	36.7	43.3	10.3	5.3
	274	32.2	9	119	13	213	198.3	394.3	95.0	50.0	11.9	4.9
	275	28.4	14	118	7	202	191.0	347.7	120.0	36.7	7.0	5.5
	276	30.6	17	120	5	188	157.6	465.0	100.0	81.7	12.6	5.7
	277	27.5	8	138	5	187	175.1	373.9	123.3	36.7	12.4	4.7
	278	30.2	29	120	5	170	113.6	484.8	145.0	80.0	7.7	5.4
	279	30.0	20	110	7	167	264.5	299.5	123.3	60.0	9.1	5.8
	280	31.9	19	108	9	188	138.8	484.6	123.3	66.7	9.1	5.8
	281	32.1	10	109	16	191	179.9	440.1	138.3	85.0	10.7	5.0
	282	27.8	29	98	8	212	233.3	329.5	61.7	45.0	11.9	5.8
	283	29.7	33	108	4	172	182.2	437.8	76.7	35.0	5.3	5.1
	284	33.0	19	89	8	202	154.5	396.3	111.7	50.0	10.6	5.5
	285	27.0	15	120	10	MISSING	242.0	337.4	56.7	40.0	8.9	4.9
	286	30.0	28	102	7	179	236.3	345.1	100.0	63.3	8.5	6.4
10 PPM Males	473	32.6	2	125	6	198	261.9	323.4	101.7	43.3	5.3	5.3
	474	34.2	34	146	2	130	192.7	392.6	73.3	40.0	4.9	5.6
	475	28.2	23	107	9	197	158.5	484.5	95.0	50.0	12.9	6.4
	476	28.9	7	112	11	197	252.7	365.6	86.7	56.7	14.4	MISSING
	477	31.0	38	100	8	191	258.1	352.0	88.3	21.7	8.6	5.2
	478	32.7	10	100	7	184	453.2	208.0	106.7	60.0	10.2	5.9
	479	31.5	26	122	4	195	198.7	392.3	32.5	15.0	6.0	4.6
	480	37.6	22	92	4	137	204.7	394.1	106.7	63.3	18.4	5.2
	481	30.5	6	139	9	170	186.2	378.7	100.0	70.0	6.2	5.6
	482	33.5	19	121	6	177	186.0	438.7	70.0	63.3	11.4	5.7
	483	29.9	12	95	8	189	309.9	165.1	71.7	83.3	4.5	5.3
	484	31.5	30	94	10	194	143.5	440.4	121.7	86.7	12.8	6.1
	485	31.9	9	149	7	158	243.7	206.7	110.0	55.0	8.1	5.5
	486	30.5	24	126	5	174	190.1	393.6	96.7	33.3	12.9	4.5
	487	30.5	2	136	12	180	201.6	371.9	106.7	65.0	12.1	4.8
	488	33.8	18	94	7	170	196.8	415.7	106.7	40.0	16.3	5.3
33 PPM Males	645	30.4	33	108	5	203	185.6	393.0	88.3	46.7	18.3	5.3
	646	29.9	26	149	7	160	268.6	256.4	105.0	52.5	6.2	6.0
	647	30.0	23	119	4	194	194.5	347.0	123.3	68.3	15.6	5.5
	648	33.9	21	105	11	209	123.9	484.8	65.0	33.3	13.1	5.5
	649	30.5	41	97	6	189	300.9	261.2	120.0	50.0	17.0	5.2
	650	32.4	9	99	9	21	204.2	355.2	75.0	95.0	5.0	6.0
	651	31.4	13	122	7	161	258.8	258.2	120.0	43.3	10.1	6.3
	652	31.6	22	125	11	219	291.4	128.5	75.0	28.3	12.1	4.6
	653	29.3	24	105	6	180	221.5	336.2	72.5	27.5	7.2	5.0
	654	32.7	33	124	3	162	179.7	446.8	101.7	71.7	5.7	5.2
	655	30.7	25	98	9	189	248.5	396.8	78.3	63.3	6.3	MISSING
	656	29.9	45	91	7	186	193.9	396.6	143.3	53.3	5.0	4.8
	657	32.5	70	110	1	166	193.1	349.6	93.3	50.0	4.4	5.3
	658	37.4	28	71	8	169	188.1	390.1	118.3	63.3	9.6	6.0
	659	29.1	12	116	8	202	268.4	253.5	116.7	66.7	7.8	5.5
	660	31.2	4	148	9	169	260.4	262.2	78.3	60.0	9.6	5.4
100 PPM Males	817	28.9	20	77	3	128	250.9	259.0	138.3	56.7	36.7	MISSING ^a
	818	31.1	33	77	5	152	275.3	270.1	93.3	45.0	17.5	MISSING
	820	30.4	35	120	5	196	252.7	262.4	143.3	95.0	19.2	MISSING
	821	28.7	2	111	5	139	242.4	279.3	103.3	60.0	10.1	MISSING
	822	28.2	180	0	0	65	446.9	261.1	96.7	50.0	15.6	MISSING
	823	23.8	180	0	0	52	327.8	308.1	120.0	50.0	MISSING	MISSING
	824	31.8	21	90	2	174	191.6	394.2	103.3	90.0	7.3	MISSING
	826	32.6	52	125	4	168	364.3	240.7	115.0	86.7	13.3	MISSING
	827	27.5	25	78	6	125	452.2	214.5	121.7	105.0	15.1	MISSING
	829	26.6	180	0	0	10	221.8	268.7	88.3	83.3	12.5	MISSING
	830	28.0	30	100	4	153	268.8	277.3	118.3	65.0	10.1	MISSING
	831	27.5	180	0	0	41	255.8	305.7	116.7	85.0	10.0	MISSING
	832	27.0	180	0	0	46	440.5	123.3	111.7	96.7	18.7	MISSING

^a Animals in this group unable to perform task due to neurologic dysfunction.

Methyl Bromide Chronic Study
Individual Behavioral Measurements
6-Month Testing

Group:	Animal No.	Body Wt.	Latnov	Novt	Cross	Locoact	Resamp	Reslat	ForeGp	HindGp	Hotlat	Footspl
Control Males	271	33.3	10	80	5	185	236.9	372.5	96.7	65.0	9.1	5.4
	272	40.0	18	95	8	190	239.3	271.5	116.7	56.7	12.1	6.1
	274	39.5	11	125	9	178	217.2	304.8	96.7	53.3	18.3	6.0
	275	35.9	58	105	3	200	228.1	412.2	133.3	86.7	12.3	5.9
	276	36.8	13	117	7	198	204.5	365.2	95.0	91.7	12.8	5.4
	277	31.7	12	75	5	197	178.3	379.9	113.3	58.3	9.3	6.1
	278	34.3	7	133	6	181	161.3	453.6	133.3	113.3	7.9	5.7
	279	31.2	15	128	6	182	172.2	347.3	113.3	76.7	10.2	6.0
	281	38.8	22	111	6	159	198.9	421.4	90.0	50.0	5.1	6.6
	282	32.3	2	116	7	178	207.5	383.8	93.3	46.7	6.9	5.5
	283	35.9	8	134	9	192	158.2	437.9	90.0	66.7	7.4	5.1
	284	38.2	22	82	7	149	232.6	353.6	96.7	68.3	7.2	5.9
	285	30.8	18	103	8	200	151.0	437.8	58.3	60.0	4.8	6.4
10 PPM Males	473	35.8	17	106	5	193	301.7	200.9	100.0	33.3	3.2	5.6
	474	38.2	122	55	2	8	181.4	391.9	73.3	41.7	15.2	7.6
	475	33.5	15	124	8	169	176.7	391.7	111.7	83.3	7.2	5.9
	476	33.3	18	140	7	159	212.8	346.4	96.7	61.7	7.8	5.9
	477	38.1	18	133	5	169	159.4	394.6	76.7	73.3	10.0	5.6
	478	37.5	17	126	9	188	205.4	385.1	85.0	47.5	17.3	5.0
	479	38.4	9	144	5	172	224.5	259.9	111.7	70.0	3.4	5.0
	480	43.5	20	120	3	155	226.9	337.0	118.3	106.7	12.8	5.7
	481	35.5	10	112	10	145	180.4	470.6	106.7	83.3	7.2	5.8
	482	37.3	23	131	6	169	218.0	363.1	103.3	83.3	13.3	5.4
	483	33.1	15	86	8	146	281.3	340.5	98.3	55.0	8.1	4.9
	484	36.7	16	71	6	199	209.1	347.1	118.3	56.7	8.8	5.7
	485	36.2	10	133	5	173	225.4	286.2	133.3	56.7	10.7	4.5
	486	35.0	12	128	7	144	158.7	470.0	98.3	48.3	10.1	5.0
	487	35.7	43	89	5	150	181.2	392.4	113.3	55.0	12.0	5.3
	488	37.3	20	90	7	141	207.0	332.4	93.3	83.3	7.9	6.1
33 PPM Males	645	36.6	34	99	4	178	190.8	366.7	48.3	43.3	15.5	5.8
	646	35.0	60	83	3	147	189.9	373.7	126.7	75.0	11.4	6.0
	647	33.2	28	82	5	161	156.8	439.6	120.0	101.7	13.3	6.6
	648	39.3	15	135	7	167	148.4	484.1	115.0	58.3	18.4	6.5
	649	35.3	8	125	9	176	231.0	255.3	138.3	76.7	7.8	6.3
	650	41.1	11	131	6	159	179.8	360.3	113.3	53.3	10.0	5.6
	651	38.7	24	113	5	165	227.7	298.9	106.7	60.0	7.0	5.3
	652	38.0	13	113	8	164	218.0	401.8	105.0	96.7	11.5	4.6
	653	32.7	15	125	4	174	251.2	344.2	76.7	56.7	8.7	5.5
	654	36.0	15	128	7	134	170.6	484.0	110.0	101.7	12.6	6.7
	655	33.0	9	82	6	172	208.4	428.7	105.0	36.7	5.8	5.7
	656	32.8	25	105	2	155	155.9	483.9	81.7	41.7	7.1	4.9
	657	35.2	135	45	1	117	156.9	439.6	115.0	53.3	5.0	4.8
	658	40.6	10	131	5	137	206.7	383.3	103.3	63.3	9.6	5.6
	659	33.6	17	95	4	158	205.5	335.6	85.0	41.7	4.6	5.7
	660	35.8	12	118	6	158	213.4	378.2	103.3	58.3	9.5	6.6

Methyl Bromide Chronic Study
Individual Behavioral Measurements
9-Month Testing

Group:	Animal No.	Body Wt.	Latnov	Novt	Cross	Locoact	Resamp	Reslat	ForeGp	HindGp	Hotlat	Footspl
Control Males	274	48.1	7	161	3	160	194.0	393.2	101.7	61.7	8.1	4.8
	275	41.0	5	145	6	144	127.2	440.0	123.3	30.0	2.6	5.0
	276	44.6	12	157	3	150	160.7	437.8	93.3	100.0	6.8	6.2
	277	38.6	24	126	3	170	201.0	349.3	73.3	80.0	6.9	5.7
	278	39.6	114	66	1	125	123.7	483.6	141.7	105.0	6.6	5.9
	281	42.0	14	155	5	99	164.4	438.3	83.3	75.0	4.9	6.0
	282	34.5	17	70	6	153	76.5	484.0	85.0	98.3	5.1	5.7
	283	41.5	31	98	2	163	217.7	345.0	88.3	56.7	9.7	5.0
	284	42.7	22	110	7	170	159.7	441.7	110.0	80.0	6.5	5.8
	285	35.4	15	73	5	134	196.2	346.0	96.7	88.3	15.9	6.2
10 PPM Males	474	45.6	20	73	6	178	449.0	248.5	91.7	56.7	8.6	5.1
	475	38.5	11	145	3	120	211.9	322.6	108.3	83.3	9.8	6.5
	476	38.0	107	60	2	150	83.0	484.0	108.3	73.3	8.0	5.5
	477	41.8	15	105	6	150	65.4	483.9	58.3	90.0	8.9	5.0
	479	44.5	13	124	9	189	248.1	288.4	96.7	87.5	10.0	5.1
	480	49.6	7	90	6	134	350.8	250.9	106.7	91.7	7.8	5.9
	482	42.6	59	94	3	169	173.0	368.5	96.7	75.0	5.7	4.7
	483	33.9	22	92	6	151	277.3	210.1	111.7	66.7	5.5	5.8
	485	42.3	19	102	8	MISSING	332.2	246.5	101.7	90.0	6.3	6.7
	486	41.5	2	102	7	154	209.9	302.8	101.7	76.7	5.4	5.9
	487	42.0	14	102	8	136	86.8	483.9	105.0	75.0	4.5	5.0
	488	45.5	18	120	4	173	209.3	301.3	86.7	90.0	9.5	5.2
33 PPM Males	646	39.0	16	88	8	146	176.5	418.4	76.7	56.7	5.3	6.1
	647	39.9	17	131	4	142	171.9	390.5	121.7	61.7	7.9	6.3
	648	41.1	19	142	3	150	153.5	443.5	116.7	66.7	6.4	5.5
	649	39.5	17	128	5	183	152.2	415.5	90.0	108.3	9.4	5.6
	650	45.5	1	168	3	107	253.9	255.6	90.0	58.3	3.4	5.7
	651	41.3	8	135	3	126	175.0	438.1	106.7	60.0	7.8	6.1
	653	35.2	16	85	8	164	222.4	303.6	70.0	65.0	4.9	5.3
	655	38.2	23	135	7	139	162.2	483.6	66.7	86.7	6.6	5.9
	656	38.3	12	95	8	137	134.6	437.7	95.0	88.3	10.5	5.2
	657	38.3	28	68	4	134	112.3	483.8	96.7	61.7	3.6	5.2
	659	39.3	13	92	8	187	82.6	439.6	91.7	75.0	4.5	5.0
	660	43.5	1	76	2	109	263.1	345.9	115.0	95.0	9.8	6.6

Methyl Bromide Chronic Study
Individual Behavioral Measurements
12-Month Testing

Group:	Animal No.	Body Wt.	Latnov	Novt	Cross	Locoact	Resamp	Reslat	ForeGp	HindGp	Hotlat	Footspl
Control Males	274	50.1	7	160	3	155	269.5	208.9	101.7	103.3	7.7	5.6
	275	45.9	1	147	7	154	193.8	390.0	81.7	108.3	2.0	5.1
	276	48.0	7	154	4	163	157.5	442.6	106.7	98.3	5.9	6.5
	277	40.9	24	116	5	192	73.0	484.4	83.3	90.0	5.2	4.8
	278	42.1	1	135	9	224	169.1	423.0	95.0	106.7	5.1	5.4
	281	46.6	2	156	3	119	203.0	377.9	88.3	91.7	9.0	5.0
	282	37.9	10	87	9	160	191.3	408.8	111.7	110.0	8.4	5.0
	283	47.1	5	110	5	149	187.4	460.4	110.0	95.0	4.5	5.8
	284	45.6	26	154	1	115	184.1	390.3	60.0	96.7	6.6	5.0
	285	39.0	15	99	9	210	187.5	395.7	85.0	96.7	11.3	5.7
10 PPM Males	474	42.1	29	116	5	163	193.2	399.6	108.3	110.0	4.2	5.9
	475	42.4	22	109	4	140	231.9	300.7	78.3	93.3	3.8	6.8
	476	38.1	22	117	7	194	216.6	383.4	85.0	101.7	7.1	5.6
	477	45.2	57	104	3	166	156.7	438.2	81.7	85.0	9.7	5.5
	479	44.5	47	116	3	179	66.6	484.4	65.0	85.0	4.1	4.9
	480	49.8	38	102	3	141	233.8	303.5	91.7	95.0	4.3	6.9
	482	47.0	2	91	4	133	170.4	449.5	136.7	101.7	3.8	6.1
	483	37.8	32	117	6	181	265.8	259.9	106.7	61.7	4.9	5.7
	485	45.6	10	80	3	141	208.9	371.5	90.0	90.0	8.7	6.4
	486	44.9	12	115	4	141	185.2	392.2	88.3	75.0	9.7	5.6
	487	46.5	8	76	4	119	224.0	274.7	120.0	100.0	6.1	4.5
	488	46.7	3	144	4	153	242.1	371.5	78.3	93.3	15.2	6.1
33 PPM Males	646	42.6	49	131	1	128	304.7	194.9	80.0	66.7	5.8	6.4
	647	42.6	25	120	7	159	196.3	354.2	108.3	101.7	6.2	6.2
	648	40.8	11	152	3	189	60.0	484.5	56.7	86.7	2.1	6.2
	649	42.0	45	114	2	188	209.5	408.7	73.3	93.3	6.9	5.5
	650	48.4	12	142	3	136	230.4	348.8	90.0	55.0	7.7	5.6
	651	44.0	6	105	7	160	278.9	333.6	91.7	73.3	9.1	6.2
	653	39.0	1	92	6	179	249.9	300.0	46.7	41.7	4.8	5.3
	655	43.4	47	84	7	162	173.5	437.9	72.5	83.3	8.6	6.1
	656	43.5	45	76	3	137	152.1	451.5	118.3	76.7	5.3	5.1
	657	43.7	55	60	2	73	446.8	121.6	96.7	106.7	10.5	5.0
	659	44.2	20	100	6	138	251.6	281.1	98.3	85.0	3.4	5.8
	660	47.5	1	126	7	158	331.6	226.8	76.7	78.3	10.6	6.8

Methyl Bromide Chronic Study
Individual Behavioral Measurements
15-Month Testing

Group:	Animal No.	Body Wt.	Latnov	Novt	Cross	Locoact	Resamp	Reslat	ForeGp	HindGp	Hotlat	Footspl
Control Males	274	52.6	MISSING	53	1	141	70.4	484.2	93.3	50.0	6.2	6.4
	275	47.2	12	148	7	142	124.9	438.5	96.7	71.7	3.6	5.6
	276	49.4	18	141	5	194	91.3	484.1	88.3	93.3	10.7	7.0
	277	44.7	6	123	7	169	201.3	403.1	85.0	15.0	3.0	5.4
	278	43.8	16	93	8	185	206.6	341.6	113.3	106.7	3.4	4.9
	281	51.8	15	148	3	113	167.0	479.3	98.3	76.7	6.5	6.2
	282	38.7	20	116	6	145	158.2	455.2	53.3	63.3	4.4	5.8
	283	47.7	30	119	5	144	139.6	454.3	61.7	55.0	10.1	5.6
	284	46.2	12	103	8	165	196.3	368.5	80.0	86.7	4.0	5.7
	285	39.0	10	128	4	150	172.8	475.0	68.3	51.7	9.5	6.4
10 PPM Males	474	51.1	28	118	7	174	510.4	23.2	116.7	80.0	7.0	6.5
	475	45.4	18	97	6	170	183.6	462.8	86.7	66.7	6.4	6.8
	476	42.0	16	141	4	180	168.1	439.3	100.0	86.7	3.4	5.2
	477	46.7	19	42	2	70	271.8	307.8	75.0	63.3	11.1	5.4
	479	46.5	10	160	3	89	199.4	342.9	81.7	30.0	3.1	5.8
	480	53.5	82	65	2	111	95.5	484.1	115.0	85.0	10.0	6.1
	482	46.6	4	127	4	119	155.5	398.5	90.0	75.0	6.2	4.6
	483	36.0	25	100	4	160	203.6	379.6	65.0	56.7	8.1	5.5
	485	47.5	9	127	5	143	171.6	398.9	110.0	71.7	10.4	6.2
	486	45.9	32	68	5	139	225.2	392.3	110.0	93.3	7.3	5.9
33 PPM Males	487	47.7	16	140	5	115	230.9	257.4	110.0	95.0	11.4	5.8
	488	49.5	15	153	4	70	74.0	483.8	110.0	48.3	8.0	5.6
	646	46.6	17	89	6	142	229.5	326.7	82.5	45.0	5.2	6.2
	647	45.0	16	66	4	129	230.1	393.3	108.3	66.7	6.8	6.0
	648	39.1	16	144	3	170	167.2	421.6	113.3	83.3	12.1	7.3
	649	46.1	25	107	6	172	125.8	483.9	98.3	68.3	8.5	5.8
	650	48.7	22	158	1	67	131.9	438.1	66.7	55.0	5.1	5.5
	651	47.5	25	116	5	142	218.8	337.7	106.7	51.7	6.3	5.5
	653	39.0	1	70	6	158	293.1	188.2	50.0	32.5	5.2	MISSING
	655	43.5	15	95	9	162	170.5	445.3	60.0	32.5	3.9	6.2
	656	43.2	28	99	4	133	235.7	396.2	106.7	53.3	9.4	5.2
	657	45.0	5	94	3	55	371.6	160.4	83.3	90.0	5.3	5.4
	659	44.6	14	135	6	139	310.2	254.0	100.0	83.3	4.3	6.2
	660	50.0	7	105	6	121	252.9	282.7	125.0	98.3	7.5	6.3

Methyl Bromide Chronic Study
Individual Behavioral Measurements
18-Month Testing

Group:	Animal No.	Body Wt.	Latnov	Novt	Cross	Locoact	Resamp	Reslat	ForeGp	HindGp	Hotlat	Footspl
Control Males	274	54.6	29	138	3	117	313.7	276.4	95.0	85.0	12.7	5.6
	276	51.4	4	161	3	156	185.7	419.9	126.7	80.0	15.2	7.4
	278	38.8	12	137	9	165	168.5	422.9	121.7	78.3	6.9	5.3
	282	37.3	15	86	6	128	172.1	392.1	75.0	95.0	5.4	5.1
	283	49.7	13	102	7	146	157.5	471.7	68.3	56.7	4.2	6.0
	285	40.3	16	127	7	131	177.8	348.9	93.3	70.0	9.0	6.8
10 PPM Males	474	50.9	8	126	9	186	149.5	483.4	98.3	91.7	8.4	6.2
	475	46.1	13	61	4	151	96.8	484.0	108.3	85.0	8.1	6.8
	476	42.4	8	110	7	175	194.7	392.7	86.7	60.0	5.7	6.2
	480	56.2	21	125	5	134	202.5	329.2	93.3	96.7	8.9	6.4
	482	45.3	23	113	4	142	120.4	438.5	106.7	68.3	5.6	5.6
	486	47.1	24	126	5	128	162.3	394.5	75.0	55.0	12.5	6.2
	487	46.9	13	87	3	128	125.6	483.5	90.0	71.7	6.1	6.2
	488	49.2	75	66	2	133	175.7	367.1	76.7	75.0	10.9	6.4
33 PPM Males	647	44.3	2	142	7	186	231.2	334.8	101.7	66.7	8.5	6.4
	648	40.3	10	151	2	176	96.0	483.9	93.3	73.3	4.0	6.0
	649	48.4	22	62	4	135	130.6	483.5	100.0	86.7	6.0	6.6
	651	48.6	13	153	3	101	164.0	437.9	113.3	80.0	9.7	6.5
	655	41.4	57	118	3	50	82.4	483.9	36.7	53.3	6.4	5.7
	656	41.4	14	133	5	95	283.9	211.6	106.7	73.3	12.0	5.1
	660	48.9	44	85	5	159	238.3	316.6	101.7	101.7	7.4	6.8

Methyl Bromide Chronic Study
Individual Behavioral Measurements
21-Month Testing

Group:	Animal No.	Body Wt.	Latnov	Novt	Cross	Locoact	Resamp	Reslat	ForeGp	HindGp	Hotlat	Footspl
Control Males	274	55.7	16	143	5	162	139.3	445.6	93.3	115.0	9.8	6.5
	276	52.4	30	150	1	85	203.2	392.2	106.7	80.0	8.0	6.9
	278	43.7	20	102	5	142	76.9	484.3	116.7	115.0	5.7	6.2
	282	37.6	5	118	6	111	149.4	442.4	88.3	73.3	2.9	5.4
	283	49.7	10	107	4	132	166.9	483.8	60.0	61.7	10.5	6.2
	285	41.6	12	131	7	143	214.8	332.8	93.3	75.0	7.1	5.7
10 PPM Males	474	46.4	7	141	5	149	372.7	23.2	133.3	66.7	7.5	5.4
	475	45.2	27	94	3	147	233.7	389.5	123.3	121.7	7.0	6.2
	476	42.4	15	129	5	157	281.3	344.3	115.0	96.7	9.9	5.7
	480	57.7	15	160	3	86	235.3	345.4	103.3	70.0	14.6	5.6
	482	39.9	14	86	7	135	56.4	484.2	66.7	90.0	5.3	4.7
	486	48.8	16	93	6	168	156.6	484.0	MISSING	58.3	5.4	MISSING
	487	49.4	16	141	4	113	238.9	299.1	108.3	58.3	4.6	5.4
	488	50.9	57	123	1	160	159.0	442.1	81.7	86.7	6.8	6.5
33 PPM Males	647	43.2	15	161	2	142	313.4	173.3	110.0	90.0	10.6	6.9
	648	38.4	9	171	1	147	205.1	363.0	76.7	63.3	9.4	5.7
	649	47.8	22	114	5	175	221.6	267.7	93.3	65.0	6.8	6.8
	651	52.3	13	127	5	114	225.5	368.7	136.7	93.3	3.6	5.1
	655	40.0	11	95	8	134	173.8	431.2	60.0	43.3	6.6	6.4
	660	48.9	11	131	7	165	64.8	484.2	103.3	95.0	6.1	6.9

Methyl Bromide Chronic Study
Individual Behavioral Measurements
24-Month Testing

Group:	Animal No.	Body Wt.	Latnov	Novt	Cross	Locoact	Resamp	Reslat	ForeGp	HindGp	Hotlat	Footspl
Control Males	274	49.9	32	129	3	122	185.5	394.3	81.7	51.7	17.4	5.1
	276	47.2	18	104	4	142	167.1	436.8	85.0	90.0	6.7	6.2
	278	45.1	2	148	7	170	208.6	354.1	108.3	75.0	9.2	5.1
	282	37.5	26	115	7	132	176.3	438.6	116.7	75.0	6.1	5.3
	283	51.8	7	97	8	122	201.4	360.7	101.7	91.7	6.1	6.1
	285	41.2	25	106	4	118	87.6	484.5	108.3	71.7	18.0	6.0
10 PPM Males	474	48.6	13	86	3	149	270.6	165.7	76.7	58.3	11.1	6.3
	475	47.2	20	123	4	147	67.7	484.5	90.0	85.0	6.8	6.3
	476	43.0	21	130	5	155	237.3	300.1	93.3	71.7	4.7	5.3
	480	55.7	60	120	1	116	244.4	265.5	78.3	53.3	5.0	6.2
	482	39.0	55	78	3	137	163.7	435.2	86.7	98.3	6.3	5.8
	486	44.5	36	144	1	136	156.2	438.5	60.0	40.0	7.5	4.5
	487	51.8	15	165	1	114	187.4	438.9	128.3	110.0	5.6	6.1
	488	50.8	20	121	5	127	152.4	484.3	71.7	100.0	7.4	5.9
33 PPM Males	647	40.5	41	124	5	158	138.4	484.2	108.3	80.0	11.3	6.7
	648	37.8	8	172	1	120	179.7	393.4	73.3	55.0	8.8	5.8
	649	49.3	9	109	3	148	333.0	77.2	90.0	81.7	6.7	5.9
	651	53.1	27	102	6	119	101.9	484.7	95.0	105.0	3.9	5.7
	655	37.3	19	149	3	95	146.7	437.6	105.0	83.0	4.8	6.3
	660	46.1	21	87	4	104	75.9	484.4	98.3	131.7	5.4	6.5
Control Females	373	38.3	13	123	7	147	107.9	484.2	106.7	66.7	6.2	4.1
	377	36.5	9	115	3	106	70.0	484.4	98.3	91.7	7.3	4.6
	378	41.7	12	168	1	131	200.1	404.7	96.7	60.0	7.1	4.0
	380	41.4	18	158	3	144	161.6	426.5	101.7	113.3	9.9	5.4
	382	38.4	6	134	5	126	213.1	347.3	113.3	93.3	8.6	3.6
	384	41.2	13	142	3	122	139.5	483.9	98.3	101.7	8.8	5.8
10 PPM Females	561	46.6	14	134	5	152	248.3	240.1	103.3	81.7	6.3	4.4
	563	57.9	30	136	3	148	124.7	484.3	103.3	80.0	7.8	4.0
	566	38.8	61	104	3	93	195.0	306.2	88.3	71.7	7.5	4.9
	568	48.0	11	169	1	85	77.0	484.4	91.7	63.3	7.6	5.4
	571	38.7	15	163	3	166	193.5	402.6	81.7	88.3	6.9	4.8
	573	40.9	13	98	8	157	284.7	176.8	88.3	73.3	6.3	5.4
	574	53.0	32	148	1	72	209.2	335.9	81.7	103.3	10.1	5.6
33 PPM Females	734	41.6	11	99	7	152	365.7	205.1	88.3	91.7	8.4	5.6
	737	38.1	8	157	3	145	200.3	317.9	85.0	58.3	5.7	5.3
	738	32.8	8	93	6	151	194.7	396.2	111.7	68.3	5.6	5.1
	740	40.4	3	146	6	150	70.8	484.5	110.0	110.0	5.7	4.8
	742	34.9	10	78	7	153	206.2	392.4	93.3	108.3	7.6	4.7
	743	34.7	9	87	4	149	201.3	394.8	111.7	101.7	4.4	4.7
100 PPM Females	904	27.7	12	96	6	139	639.5	31.0	103.3	56.7	3.5	MISSING ^a
	906	25.8	54	88	4	111	277.4	178.4	123.3	80.0	7.8	MISSING
	910	43.9	13	165	3	93	102.5	439.4	123.3	88.3	8.5	4.5
	911	34.5	20	117	6	109	270.9	252.2	91.7	121.7	6.5	MISSING
	915	36.8	9	99	4	132	286.0	211.5	105.0	128.3	16.1	MISSING
	918	30.5	2	127	4	117	122.8	441.0	113.3	46.7	7.6	MISSING

^aAnimals in this group unable to perform task due to neurologic dysfunction.

Methyl Bromide Chronic Study
Individual Behavioral Measurements
Baseline Data

Group:	Animal No.	Body Wt.	Latnov	Novi	Cross	Locoact	Resamp	Reslat	ForeGp	HindGp	Hotlat	Footspl
Control Females	373	12.3	8	92	11	214	161.0	391.2	50.0	12.5	5.8	4.5
	374	14.8	11	125	9	208	216.5	347.0	73.3	10.0	7.6	5.2
	375	15.8	11	98	9	197	173.3	363.5	76.7	32.5	9.5	3.7
	376	15.9	18	113	5	205	118.5	438.0	73.3	16.7	6.1	4.2
	377	15.6	11	118	13	196	199.6	335.7	56.7	16.7	7.7	5.1
	378	16.4	24	78	10	174	184.1	359.2	42.5	21.7	9.1	4.4
	379	15.2	12	103	9	188	151.3	439.9	53.3	22.5	9.9	4.8
	380	17.7	1	70	12	213	178.1	402.8	78.3	31.7	9.4	MISSING
	381	17.2	46	95	7	195	204.1	308.2	61.7	45.0	11.5	4.7
	382	17.5	33	103	6	183	243.7	344.6	65.0	15.0	6.7	4.5
	383	17.5	65	83	5	162	226.4	313.5	80.0	28.3	6.6	6.1
	384	17.1	11	91	10	157	356.1	253.7	71.7	23.3	9.5	MISSING
	385	17.3	5	82	13	159	164.0	439.0	90.0	25.0	3.8	MISSING
	386	19.1	21	85	7	161	240.2	317.5	33.3	26.7	7.3	4.8
	387	18.2	28	102	7	193	259.0	255.2	48.3	35.0	7.6	5.4
10 PPM Females	559	15.6	5	156	10	200	218.5	320.2	41.7	25.0	7.2	5.0
	560	17.4	1	91	13	209	242.1	272.8	55.0	17.5	5.5	2.8
	561	16.8	16	105	13	218	199.5	361.2	40.0	12.5	8.1	5.8
	562	16.7	23	117	7	182	180.3	438.4	61.7	30.0	6.9	4.5
	563	17.1	32	103	7	191	144.0	443.4	55.0	7.5	8.3	4.8
	564	16.1	1	90	8	198	180.8	394.4	56.7	17.5	4.1	4.7
	565	15.4	16	99	8	217	181.9	449.4	66.7	26.7	8.7	4.2
	566	15.4	26	100	11	183	181.9	366.9	80.0	22.5	9.3	4.1
	567	19.8	5	97	9	164	177.2	437.7	53.3	38.3	8.0	5.0
	568	17.6	8	117	7	198	156.9	429.7	35.0	15.0	5.1	4.8
	569	19.0	55	70	6	167	175.9	438.1	115.0	30.0	6.3	5.0
	570	18.4	42	99	9	186	162.6	484.1	95.0	40.0	9.7	4.6
	571	17.3	44	93	6	201	160.6	439.5	68.3	15.0	5.8	4.5
	572	18.8	38	110	6	196	193.6	392.2	80.0	42.5	5.4	4.4
	573	17.4	4	109	10	188	184.1	393.3	66.7	41.7	8.5	5.3
	574	17.3	31	89	9	185	130.5	460.9	56.7	65.0	6.9	5.6
33 PPM Females	731	14.9	7	66	10	225	218.9	355.5	38.3	30.0	8.5	MISSING
	732	16.4	17	87	8	203	139.4	439.4	50.0	12.5	5.3	6.3
	733	17.3	11	110	11	202	191.6	376.6	76.7	20.0	6.0	5.0
	734	16.6	1	99	6	183	225.0	392.3	98.3	20.0	5.8	4.6
	735	15.8	12	98	9	178	168.1	437.3	40.0	20.0	7.9	5.0
	736	14.3	1	114	13	198	152.7	438.6	48.3	10.0	7.1	4.2
	737	16.8	16	112	9	165	170.3	393.4	76.7	25.0	6.0	4.8
	738	15.1	12	92	8	169	160.4	438.1	60.0	20.0	5.7	4.4
	739	15.8	58	98	2	203	181.3	401.3	18.3	57.5	5.3	5.3
	740	18.5	47	96	9	210	202.2	302.3	51.7	36.7	8.4	5.7
	741	16.7	16	90	7	182	155.9	420.2	43.3	20.0	8.5	4.7
	742	16.5	22	82	2	177	135.5	448.8	130.0	50.0	5.0	4.1
	743	16.9	15	102	7	194	182.9	355.9	63.3	20.0	14.9	5.0
	744	19.0	25	115	12	218	215.0	441.9	70.0	40.0	10.4	5.7
	745	17.8	30	91	7	193	235.9	289.0	56.7	38.3	5.7	5.4
	746	16.9	9	105	5	177	176.8	352.5	93.3	40.0	7.0	4.9
100 PPM Females	903	15.6	15	126	10	212	101.9	484.2	70.0	20.0	4.8	4.0
	904	16.5	15	97	14	215	208.3	352.8	31.7	30.0	7.5	4.3
	905	16.2	14	98	8	212	201.4	375.5	40.0	10.0	6.9	4.9
	906	15.0	6	106	12	201	195.6	360.2	48.3	50.0	9.7	4.8
	907	15.4	21	105	8	189	161.5	437.8	35.0	17.5	6.6	4.2
	908	14.8	17	118	9	170	160.7	439.0	63.3	20.0	4.5	4.8
	909	15.5	18	80	7	170	191.0	371.9	73.3	25.0	7.8	5.4
	910	15.0	2	109	14	206	338.0	209.7	95.0	10.0	8.2	4.8
	911	19.0	20	111	7	223	312.4	254.6	53.3	13.3	8.4	4.3
	912	17.9	17	88	13	195	192.0	404.6	73.3	21.7	9.1	5.8
	913	18.3	9	102	8	151	285.9	297.4	52.5	35.0	6.5	4.8
	914	18.8	49	96	6	193	222.7	335.8	61.7	40.0	9.8	5.0
	915	17.8	21	102	7	200	209.4	368.6	76.7	35.0	4.8	4.1
	916	18.7	15	83	9	174	388.2	207.6	75.0	31.7	5.8	5.5
	917	19.4	24	87	8	172	385.4	215.1	25.0	33.3	7.4	5.3
	918	17.9	36	87	7	167	213.6	351.4	90.0	35.0	5.1	5.0

Methyl Bromide Chronic Study
Individual Behavioral Measurements
3-Month Testing

Group:	Animal No.	Body Wt.	Latnov	Novt	Cross	Locoact	Resamp	Reslat	ForeGp	HindGp	Hotlat	Footspl
Control Females	373	25.4	19	88	10	214	181.7	399.2	103.3	41.7	11.8	5.2
	374	27.1	95	75	2	173	163.3	440.7	86.7	55.0	8.3	4.8
	375	27.2	22	105	9	187	216.0	306.2	42.5	57.5	4.5	5.3
	376	27.7	25	103	8	161	169.9	429.0	70.0	68.3	8.3	4.3
	377	26.3	15	115	9	194	210.1	384.8	125.0	76.7	4.6	4.7
	378	25.7	11	143	7	173	268.9	211.6	86.7	55.0	6.0	4.7
	379	29.5	15	113	8	187	219.1	333.9	55.0	71.7	5.7	6.2
	380	26.4	15	116	10	205	177.3	404.1	100.0	43.3	8.4	5.1
	381	25.9	14	110	8	200	201.9	367.9	105.0	58.3	7.3	5.8
	382	25.9	34	81	7	205	214.3	301.4	96.7	61.7	8.3	5.9
	383	26.8	24	109	5	192	207.0	364.0	150.0	43.3	11.5	4.4
	384	28.6	90	72	2	122	209.3	374.3	91.7	76.7	9.8	6.1
	385	25.9	2	119	10	149	170.6	438.6	106.7	106.7	6.0	5.3
	386	26.5	45	53	7	202	182.0	439.5	41.7	55.0	11.2	4.8
	387	25.0	20	106	7	207	219.4	391.7	100.0	31.7	6.3	5.4
10 PPM Females	559	25.3	9	133	6	171	179.5	395.1	75.0	41.7	4.6	5.5
	560	25.9	17	105	10	151	221.4	346.8	91.7	50.0	7.6	4.8
	561	26.6	10	117	12	218	201.0	386.9	101.7	50.0	8.3	4.1
	562	29.2	30	101	5	179	153.4	481.7	108.3	70.0	10.6	4.9
	563	29.0	41	98	7	192	183.2	393.2	63.3	50.0	14.0	5.9
	564	27.2	5	96	8	199	207.4	348.6	90.0	63.3	5.3	6.9
	565	25.3	17	117	6	182	205.7	393.4	103.3	60.0	4.3	5.1
	566	24.6	35	145	1	163	176.9	439.4	78.3	71.7	8.4	5.5
	567	29.0	22	106	5	170	334.6	231.3	110.0	56.7	7.0	5.1
	568	26.8	6	114	12	200	179.5	415.8	100.0	36.7	6.5	6.2
	569	26.5	30	111	5	186	139.1	438.7	78.3	61.7	12.0	5.3
	570	29.8	14	142	7	174	238.1	308.4	83.3	56.7	9.2	7.1
	571	25.8	16	99	8	185	177.9	352.1	106.7	77.5	7.6	5.5
	572	27.1	6	135	8	201	191.3	393.5	105.0	86.7	4.8	5.0
	573	26.6	4	116	12	218	209.0	316.1	90.0	50.0	12.3	6.0
	574	26.8	6	110	9	195	192.0	327.0	76.7	33.3	7.1	4.8
33 PPM Females	731	23.5	14	95	6	194	220.2	392.2	56.7	45.0	6.1	4.3
	732	28.5	77	95	3	152	226.5	383.8	111.7	58.3	8.0	5.4
	733	28.6	20	124	9	186	270.8	245.5	90.0	43.3	7.1	4.6
	734	26.6	30	115	9	207	205.9	303.9	60.0	46.7	6.2	5.2
	735	24.7	11	149	11	190	128.6	484.5	121.7	61.7	7.1	4.6
	736	23.7	24	98	10	194	201.8	346.5	95.0	45.0	5.8	5.3
	737	25.9	MISSING	118	6	171	188.8	337.7	93.3	38.3	19.4	4.9
	738	23.1	10	89	8	224	333.5	277.2	101.7	66.7	8.9	5.0
	739	22.2	10	143	7	144	171.0	439.0	81.7	63.3	7.3	5.2
	740	27.0	55	88	10	174	176.1	439.4	91.7	55.0	8.7	4.7
	741	26.4	17	94	12	219	176.4	405.5	130.0	60.0	5.3	4.3
	742	24.6	17	136	7	212	230.6	301.7	88.3	65.0	7.7	5.0
	743	25.9	41	86	6	171	219.5	337.5	100.0	81.7	7.9	5.3
	744	27.6	18	136	7	169	215.5	352.6	95.0	76.7	5.1	5.5
	745	25.0	11	113	9	196	238.7	320.1	98.3	45.0	8.4	4.4
	746	25.6	1	119	11	194	155.5	478.9	115.0	80.0	10.2	5.5
100 PPM Females	903	27.2	12	98	10	154	240.1	306.7	106.7	56.7	8.8	MISSING ^a
	904	25.2	13	133	7	179	400.6	164.7	76.7	78.3	14.1	MISSING
	905	25.5	36	109	7	181	285.0	250.3	118.3	51.7	6.6	MISSING
	906	22.8	17	123	9	201	341.2	191.5	85.0	106.7	12.4	MISSING
	907	22.8	3	126	9	173	292.6	297.0	105.0	80.0	10.2	MISSING
	908	22.2	22	119	5	187	300.3	346.3	90.0	51.7	9.4	6.0
	909	22.5	36	125	3	114	427.7	177.0	76.7	75.0	13.6	MISSING
	910	26.8	10	132	7	132	420.1	167.5	116.7	100.0	7.9	MISSING
	911	27.8	13	125	7	181	256.4	248.5	116.7	85.0	9.9	MISSING
	913	25.1	37	94	9	176	478.7	119.6	118.3	70.0	9.0	MISSING
	914	26.8	25	127	7	197	250.0	320.7	98.3	80.0	10.8	MISSING
	915	25.7	27	110	5	198	243.2	317.4	93.3	106.7	4.3	MISSING
	916	25.9	23	136	9	172	351.4	166.6	96.7	96.7	20.1	MISSING
	917	27.4	50	105	8	186	409.1	126.3	96.7	66.7	7.4	5.0
	918	25.6	14	127	8	166	301.0	253.0	110.0	86.7	21.3	MISSING

^a Animals in this group unable to perform task due to neurologic dysfunction.

Methyl Bromide Chronic Study
Individual Behavioral Measurements
6-Month Testing

Group:	Animal No.	Body Wt.	Latnov	Novt	Cross	Locoact	Resamp	Reslat	ForeGp	HindGp	Hotlat	Footspl
Control Females	373	27.7	11	87	10	194	291.5	255.1	83.3	58.3	7.5	5.1
	374	28.3	10	146	9	175	181.7	392.3	98.3	98.3	8.3	5.3
	375	32.7	9	125	14	172	204.5	365.5	105.0	106.7	6.0	5.1
	376	32.0	4	133	9	197	238.8	335.3	138.3	100.0	6.8	5.1
	377	26.9	45	119	3	195	205.7	323.1	88.3	85.0	4.0	5.9
	378	30.8	40	110	3	178	208.0	426.8	78.3	60.0	6.1	5.4
	380	26.5	2	97	9	181	172.5	477.8	120.0	71.7	6.3	4.3
	381	26.7	14	86	10	192	183.8	399.8	100.0	66.7	5.4	5.1
	382	27.6	10	106	16	215	182.1	353.6	106.7	43.3	4.9	5.0
	383	26.8	7	92	12	187	237.3	316.3	102.5	70.0	10.5	6.1
	384	27.8	15	108	12	177	240.7	299.1	95.0	85.0	6.5	5.2
	387	27.2	30	105	7	182	224.8	311.8	126.7	23.3	7.8	6.4
10 PPM Females	559	26.8	15	148	5	149	137.1	440.1	95.0	60.0	5.1	4.9
	560	28.2	4	111	8	155	172.2	416.4	118.3	91.7	5.8	5.2
	561	28.1	10	75	5	160	179.4	406.0	90.0	70.0	13.1	5.9
	562	35.9	59	101	7	192	168.1	370.8	105.0	86.7	7.0	4.8
	563	34.5	9	112	2	139	150.8	483.7	100.0	56.7	8.4	6.1
	564	31.0	7	122	9	181	135.4	437.9	66.7	73.3	6.4	5.8
	565	27.6	46	85	4	194	165.9	393.5	118.3	60.0	5.8	4.9
	566	26.6	6	122	5	137	201.8	351.4	130.0	85.0	5.4	5.7
	567	30.2	24	129	9	161	186.8	421.2	125.0	95.0	7.1	5.0
	568	27.4	10	124	5	MISSING	209.6	358.4	103.3	78.3	5.6	4.7
	569	27.2	50	76	4	174	236.7	256.3	70.0	70.0	7.7	5.2
	570	28.7	6	133	4	179	240.5	335.2	105.0	50.0	8.8	4.7
	571	27.3	36	94	4	150	194.2	395.8	106.7	95.0	4.3	6.3
	572	30.1	48	130	3	171	195.2	352.4	115.0	83.3	12.8	5.7
	573	28.6	7	123	13	178	212.4	361.9	88.3	71.7	10.0	6.2
	574	27.3	5	93	9	196	230.6	341.7	90.0	63.3	10.9	5.1
33 PPM Females	731	25.0	3	99	8	188	326.4	301.5	80.0	45.0	16.4	5.4
	732	31.2	5	126	3	113	162.7	483.5	133.3	98.3	9.0	5.6
	733	29.9	11	121	8	156	210.7	374.0	108.3	100.0	8.6	5.9
	734	27.0	8	137	6	188	115.7	483.8	101.7	106.7	5.0	5.0
	735	25.6	8	154	5	196	173.8	438.0	63.3	76.7	7.1	4.9
	736	24.9	6	134	9	176	193.5	408.5	98.3	68.3	6.1	5.8
	737	27.6	23	135	4	179	172.9	406.7	78.3	76.7	5.1	5.5
	738	25.0	38	102	5	187	188.2	383.1	126.7	70.0	5.7	5.8
	739	22.3	24	76	5	92	130.8	483.9	101.7	78.3	4.3	5.4
	740	30.7	1	152	11	207	174.3	401.5	105.0	86.7	4.9	5.9
	741	26.7	23	99	9	183	202.7	419.6	111.7	60.0	11.0	4.8
	742	26.4	21	90	7	173	200.3	437.5	100.0	81.7	6.9	5.6
	743	27.6	15	100	7	157	136.8	438.8	96.7	63.3	5.6	5.7
	744	30.1	30	144	7	154	177.5	411.8	100.0	93.3	4.5	5.7
	745	27.8	67	108	3	109	176.0	438.1	98.3	52.5	3.9	5.0
	746	26.4	8	115	11	193	229.5	283.6	113.3	63.3	9.6	5.0
100 PPM Females	903	28.4	7	145	7	151	98.7	483.7	105.0	93.3	10.2	MISSING ^a
	904	25.5	35	97	5	115	174.9	483.6	88.3	88.3	12.6	MISSING
	905	29.9	4	166	3	169	237.8	252.7	115.0	111.7	7.1	MISSING
	906	23.1	21	157	5	135	151.3	441.7	116.7	110.0	12.9	MISSING
	910	27.0	11	169	1	107	209.5	354.4	113.3	78.3	12.9	MISSING
	911	29.6	12	149	5	155	275.0	276.5	110.0	68.3	5.3	MISSING
	914	26.3	1	179	1	78	137.5	439.2	101.7	63.3	7.2	MISSING
	915	27.9	27	90	8	173	263.3	258.7	115.0	96.7	9.9	MISSING
	917	29.7	13	162	3	146	442.0	220.6	86.7	86.7	9.6	MISSING
	918	26.8	11	116	5	119	206.2	393.5	115.0	90.0	6.1	MISSING

^aAnimals in this group unable to perform task due to neurologic dysfunction.

Methyl Bromide Chronic Study
Individual Behavioral Measurements
9-Month Testing

Group:	Animal No.	Body Wt.	Latnov	Novt	Cross	Locoact	Resamp	Reslat	ForeGp	HindGp	Hotlat	Footspl
Control Females	373	33.2	13	101	8	160	210.6	300.5	100.0	85.0	12.4	3.9
	375	41.1	11	127	3	149	267.6	169.9	115.0	56.7	8.0	5.5
	377	29.7	7	113	11	175	234.7	319.1	81.7	81.7	12.9	5.9
	378	37.6	35	145	1	160	165.0	391.9	46.7	96.7	11.8	6.5
	380	33.9	10	150	5	169	76.4	484.5	111.7	95.0	8.3	5.1
	381	30.2	9	111	8	209	176.6	468.7	98.3	41.7	7.2	5.5
	382	34.0	12	110	10	190	239.7	260.7	91.7	83.3	6.2	5.1
	384	33.0	14	99	6	165	189.1	349.8	81.7	83.3	6.1	5.8
	387	35.0	25	138	3	171	259.4	335.6	90.0	36.7	9.9	6.2
10 PPM Females	560	31.7	13	129	5	139	242.2	237.0	76.7	76.7	7.4	5.8
	561	34.6	15	152	3	167	301.5	176.7	101.7	78.3	16.2	5.6
	562	43.8	4	165	5	176	182.0	438.1	95.0	96.7	7.3	5.2
	563	45.2	123	57	1	114	244.1	283.6	111.7	80.0	10.3	5.1
	564	38.0	12	129	8	150	159.7	438.1	55.0	40.0	10.0	5.2
	566	32.9	5	113	3	151	165.2	438.1	90.0	88.3	16.1	5.1
	568	34.7	44	110	3	155	227.6	386.8	91.7	31.7	6.1	5.8
	569	31.1	MISSING	MISSING	MISSING	MISSING	160.5	464.9	95.0	78.3	9.6	4.5
	571	32.4	11	122	6	191	256.7	305.2	101.7	70.0	4.9	5.3
	572	35.4	3	130	11	191	257.3	231.7	88.3	100.0	7.7	4.6
	573	32.3	8	133	7	154	204.8	394.5	53.3	78.3	9.5	5.7
	574	35.8	15	62	7	176	258.9	285.1	78.3	86.7	8.8	5.7
	731	31.4	11	MISSING	MISSING	MISSING	299.2	247.5	MISSING	MISSING	MISSING	4.6
	734	35.7	11	74	9	158	234.1	244.9	85.0	75.0	7.2	4.5
33 PPM Females	735	30.4	11	125	9	157	116.3	449.0	90.0	121.7	11.1	4.5
	736	30.2	2	140	7	179	196.5	306.6	110.0	40.0	5.6	3.9
	737	35.4	7	163	3	179	186.2	391.8	123.3	85.0	14.2	5.5
	738	27.8	14	113	7	176	209.5	346.3	136.7	93.3	5.6	6.4
	739	25.0	10	157	3	163	109.2	484.7	98.3	101.7	4.4	6.6
	740	36.5	22	124	5	155	202.6	354.0	68.3	86.7	6.2	6.2
	741	31.1	9	119	7	151	147.5	470.3	81.7	71.7	9.6	5.2
	742	33.3	20	136	5	112	169.2	449.5	90.0	85.0	8.7	4.9
	743	32.0	10	99	8	165	240.3	280.3	63.3	93.3	4.9	5.9
	746	28.7	11	125	7	158	181.8	439.0	115.0	93.3	13.3	4.9
100 PPM Females	903	30.5	5	110	3	112	159.3	428.8	121.7	95.0	6.1	MISSING ^a
	904	30.0	16	148	3	117	287.7	209.0	90.0	95.0	1.9	MISSING
	905	31.2	10	121	7	156	253.8	326.3	100.0	93.3	4.7	MISSING
	906	26.7	25	127	6	205	256.1	221.2	110.0	90.0	6.1	MISSING
	910	33.7	22	121	3	151	220.3	262.1	110.0	86.7	3.9	MISSING
	911	30.4	14	131	5	165	205.5	292.5	111.7	96.7	6.8	MISSING
	914	28.9	11	169	1	138	226.9	305.8	86.7	78.3	11.9	MISSING
	915	31.5	12	129	5	182	254.8	312.0	96.7	86.7	12.3	MISSING
	917	29.8	20	159	1	123	335.0	258.6	111.7	103.3	15.4	MISSING
	918	33.6	22	121	3	189	222.8	393.0	86.7	81.7	6.6	MISSING

^a Animals in this group unable to perform task due to neurologic dysfunction.

Methyl Bromide Chronic Study
Individual Behavioral Measurements
12-Month Testing

Group:	Animal No.	Body Wt.	Latnov	Novt	Cross	Locoact	Resamp	Reslat	ForeGp	HindGp	Hotlat	Footspl
Control Females	373	38.5	7	97	7	200	250.9	330.3	108.3	90.0	7.0	4.8
	375	40.0	20	129	6	159	84.6	484.6	76.7	75.0	10.8	4.7
	377	36.7	8	154	7	158	161.7	484.2	85.0	96.7	5.1	5.2
	378	40.5	10	136	6	143	191.2	351.4	73.3	91.7	9.1	5.5
	380	37.3	1	89	6	144	185.8	422.9	103.3	121.7	8.0	4.9
	381	32.8	10	109	9	183	254.9	304.2	100.0	100.0	8.2	5.2
	382	34.7	9	139	5	158	214.0	349.5	98.3	100.0	6.2	4.9
	384	36.4	8	122	5	172	307.1	175.5	86.7	96.7	10.9	5.1
10 PPM Females	387	35.8	10	145	5	181	239.1	311.9	121.7	100.0	16.5	6.0
	560	38.7	17	145	3	169	159.5	438.7	83.3	86.7	9.1	4.9
	561	40.0	12	159	2	133	259.2	273.6	95.0	98.3	14.5	5.5
	562	52.2	7	170	3	169	198.8	350.5	101.7	96.7	6.0	5.2
	563	47.1	17	79	3	150	148.2	484.4	80.0	81.7	10.2	5.7
	564	41.8	18	89	6	150	210.6	225.0	78.3	76.7	5.2	5.6
	566	36.0	37	129	2	143	199.3	395.4	113.3	111.7	8.1	MISSING
	568	36.0	12	99	6	141	222.3	356.5	75.0	63.3	6.5	4.4
	569	32.5	21	66	5	146	176.2	433.6	85.0	95.0	9.1	4.7
	571	33.6	1	179	1	118	273.7	126.1	126.7	101.7	6.4	5.0
	572	42.6	3	163	5	135	270.8	357.1	100.0	87.5	4.2	4.4
	573	34.8	2	154	3	82	177.9	358.1	113.3	98.3	11.0	5.2
	574	39.2	2	111	4	143	207.9	437.5	105.0	110.0	6.8	6.0
33 PPM Females	731	30.5	18	128	6	166	301.6	270.6	70.0	110.0	9.1	4.4
	734	39.0	25	105	9	162	282.0	205.1	90.0	93.3	7.7	4.8
	735	30.4	15	99	5	141	75.9	484.4	96.7	106.7	6.0	4.7
	736	33.8	4	115	8	130	202.1	377.7	53.3	66.7	1.9	5.3
	737	41.9	70	110	1	129	92.8	484.3	108.3	76.7	11.3	5.4
	738	29.0	2	130	8	149	229.7	313.4	133.3	115.0	6.1	5.2
	739	25.5	5	148	3	138	117.7	484.6	66.7	96.7	11.8	5.5
	740	39.4	8	137	3	158	172.9	484.4	101.7	93.3	6.5	5.3
	741	29.3	7	107	10	177	270.2	289.5	93.3	78.3	7.5	5.0
	742	30.4	6	112	8	180	155.9	438.2	85.0	96.7	9.7	4.6
	743	28.7	14	138	8	161	148.6	439.0	70.0	95.0	7.9	4.5
	746	30.9	51	111	3	131	219.3	387.6	110.0	103.3	9.0	4.5
100 PPM Females	903	31.6	6	174	1	140	184.4	440.7	126.7	111.7	8.0	MISSING ^a
	904	30.9	13	167	1	65	280.0	345.4	83.3	90.0	10.1	MISSING
	905	31.5	12	149	4	173	338.7	213.6	115.0	108.3	7.2	MISSING
	906	25.5	11	50	4	200	362.2	303.5	128.3	90.0	5.8	MISSING
	910	37.1	15	140	3	134	305.8	104.7	116.7	95.0	8.3	MISSING
	911	34.2	9	170	3	119	150.3	471.7	105.0	98.3	7.1	4.1
	914	27.9	6	174	1	115	216.4	344.9	96.7	63.3	8.2	MISSING
	915	33.9	33	124	4	135	341.5	167.5	106.7	100.0	6.7	MISSING
	917	35.8	180	0	0	19	356.8	275.4	103.3	105.0	8.7	MISSING
	918	29.7	3	130	5	151	223.8	327.1	111.7	78.3	7.1	MISSING

^aAnimals in this group unable to perform task due to neurologic dysfunction.

Methyl Bromide Chronic Study
Individual Behavioral Measurements
15-Month Testing

Group:	Animal No.	Body Wt.	Latnov	Novt	Cross	Locoact	Resamp	Reslat	ForeGp	HindGp	Hotlat	Footspl
Control Females	373	39.9	10	68	4	127	181.4	440.5	80.0	61.7	5.1	4.5
	375	45.8	13	158	5	138	291.7	135.6	115.0	58.3	7.9	5.2
	377	38.5	2	176	3	190	158.4	423.5	121.7	88.3	5.8	3.8
	378	42.5	18	117	5	129	175.0	350.7	78.3	81.7	7.7	5.8
	380	37.1	10	136	5	118	179.1	400.0	118.3	86.7	7.1	5.5
	381	32.9	9	86	10	163	183.7	446.8	118.3	63.3	7.5	4.5
	382	35.4	15	139	5	161	229.1	219.6	90.0	85.0	12.4	5.2
	384	40.4	13	93	4	139	97.6	483.8	95.0	86.7	5.1	5.5
	387	36.9	12	109	4	175	150.1	438.3	100.0	51.7	6.6	5.2
10 PPM Females	560	38.7	11	169	1	96	158.2	439.6	103.3	80.0	7.8	5.5
	561	41.1	12	72	2	161	245.8	187.1	60.0	41.7	10.2	5.6
	563	55.1	29	151	1	144	198.2	331.8	101.7	75.0	5.0	5.3
	564	42.1	1	115	4	105	235.3	317.4	90.0	51.7	11.7	5.9
	566	37.2	7	141	2	140	211.3	392.7	133.3	91.7	7.3	4.3
	568	39.7	15	163	3	96	176.0	441.0	83.3	28.3	9.3	5.1
	569	31.2	MISSING	MISSING	MISSING	MISSING	157.8	403.2	80.0	73.3	11.0	4.8
	571	38.2	14	156	3	134	226.9	321.3	105.0	75.0	8.0	5.4
	572	48.3	3	177	1	93	236.4	401.2	88.3	93.3	4.5	5.2
	573	38.0	9	99	4	136	134.3	441.9	88.3	96.7	13.0	5.0
	574	44.4	3	120	4	140	259.9	164.0	100.0	40.0	7.6	5.1
33 PPM Females	731	31.6	1	92	4	164	267.5	278.2	88.3	65.0	6.9	5.4
	734	39.1	18	131	6	154	147.4	484.0	95.0	70.0	1.7	5.3
	735	32.4	10	135	5	152	183.2	392.6	90.0	90.0	7.2	4.9
	736	32.7	4	53	10	181	200.2	391.3	86.7	65.0	4.1	5.6
	737	38.2	20	160	1	142	173.4	395.0	125.0	90.0	4.2	4.9
	738	29.8	1	122	4	152	171.8	438.5	123.3	98.3	14.2	5.4
	739	24.9	11	169	1	111	54.3	483.9	91.7	73.3	6.3	5.1
	740	38.1	14	106	5	141	162.7	443.9	120.0	71.7	6.7	5.2
	741	28.8	7	152	7	123	83.2	483.9	56.7	80.0	10.8	6.0
	742	30.5	14	101	10	151	157.2	392.4	75.0	75.0	5.8	4.7
	743	28.9	29	62	6	92	86.7	483.9	136.7	88.3	9.7	5.0
	746	30.5	75	104	2	148	217.6	379.1	123.3	81.7	6.9	5.6
100 PPM Females	903	30.9	8	164	3	133	220.5	236.4	128.3	50.0	13.2	MISSING ^a
	904	28.8	20	139	3	87	77.4	484.0	71.7	71.7	6.3	MISSING
	905	33.0	29	111	7	179	189.4	350.2	145.0	56.7	7.1	5.8
	906	26.3	65	87	2	96	181.6	348.8	115.0	76.7	12.4	4.0
	910	37.3	21	159	1	113	213.3	343.9	121.7	58.3	6.6	MISSING
	911	32.1	10	152	3	133	221.5	345.9	115.0	102.5	5.5	6.0
	914	29.1	15	165	1	138	335.6	254.6	106.7	88.3	9.8	MISSING
	915	34.7	37	98	6	163	128.5	483.8	86.7	81.7	3.7	MISSING
	917	30.9	30	150	1	136	177.9	395.3	83.3	70.0	5.6	MISSING
	918	29.7	19	139	3	116	62.9	483.9	96.7	81.7	11.0	MISSING

^aAnimals in this group unable to perform task due to neurologic dysfunction.

Methyl Bromide Chronic Study
Individual Behavioral Measurements
18-Month Testing

Group:	Animal No.	Body Wt.	Latnov	Novt	Cross	Locoact	Resamp	Reslat	ForeGp	HindGp	Hotlat	Footspl
Control Females	373	38.7	12	146	5	188	126.0	435.6	86.7	58.3	9.5	5.6
	377	39.0	2	172	5	185	103.2	444.2	96.7	53.3	9.1	4.9
	378	41.9	10	122	5	174	186.9	391.3	100.0	101.7	14.9	5.1
	380	36.2	7	140	8	170	161.7	437.7	81.7	91.7	21.6	5.1
	382	38.0	15	94	11	163	178.1	437.4	76.7	93.3	8.5	5.2
	384	38.0	21	102	2	116	95.1	483.3	106.7	60.0	7.4	5.6
10 PPM Females	561	43.8	14	161	3	170	102.9	483.4	88.3	76.7	7.9	5.5
	563	54.7	7	159	3	128	198.7	363.7	105.0	78.3	9.4	4.4
	566	39.6	1	119	7	137	244.9	289.9	96.7	93.3	10.0	5.4
	568	42.8	36	128	3	157	147.4	483.2	106.7	43.3	3.6	5.6
	571	40.1	15	121	9	145	197.1	346.2	113.3	101.7	6.7	6.0
	573	40.4	18	63	6	126	103.8	483.5	95.0	90.0	11.1	4.9
	574	45.4	7	76	6	114	86.9	483.3	83.3	61.7	9.0	5.7
33 PPM Females	734	37.4	9	107	4	167	98.4	483.5	100.0	71.7	6.3	5.7
	736	29.6	1	131	9	174	90.7	483.0	108.3	80.0	12.4	5.3
	737	37.8	10	143	5	171	82.7	483.5	136.7	105.0	6.4	5.8
	738	30.8	25	121	6	159	237.2	220.5	118.3	96.7	6.4	5.5
	740	38.9	2	169	3	153	89.5	483.5	113.3	81.7	15.3	5.6
	742	33.3	16	83	6	MISSING	199.1	352.3	96.7	83.3	6.9	5.1
	743	30.3	1	83	10	173	83.4	483.5	101.7	68.3	10.7	5.4
	746	34.4	6	118	9	192	98.1	483.5	86.7	98.3	6.4	4.7
100 PPM Females	904	28.7	20	40	2	68	162.4	437.2	80.0	101.7	5.6	MISSING ^a
	906	26.3	36	144	1	174	96.0	437.2	125.0	121.7	8.6	MISSING
	910	39.9	29	142	3	143	285.8	169.1	113.3	86.7	6.2	5.0
	911	34.8	15	135	5	149	103.8	483.7	96.7	65.0	7.5	6.1
	915	35.1	8	126	3	158	89.6	483.5	88.3	65.0	16.0	3.6
	918	31.7	2	123	5	201	91.6	483.6	108.3	71.7	8.2	3.0

^aAnimals in this group unable to perform task due to neurologic dysfunction.

Methyl Bromide Chronic Study
Individual Behavioral Measurements
21-Month Testing

Group:	Animal No.	Body Wt.	Latnov	Novt	Cross	Locoact	Resamp	Reslat	ForeGp	HindGp	Hotlat	Footspl
Control Females	373	38.8	15	163	2	169	90.2	484.2	125.0	71.7	7.0	4.9
	377	35.7	13	135	5	87	93.7	484.2	111.7	80.0	9.2	4.8
	378	43.4	24	142	3	133	126.2	484.1	90.0	93.3	2.1	6.5
	380	38.2	7	166	3	133	169.0	483.7	83.3	61.7	8.5	5.5
	382	39.5	19	83	6	165	313.1	152.8	85.0	90.0	15.5	5.4
	384	36.4	10	120	5	133	194.8	349.3	98.3	68.3	6.3	5.3
10 PPM Females	561	41.9	24	148	4	127	234.7	261.6	115.0	83.3	8.3	5.3
	563	55.9	14	148	3	80	149.4	483.9	120.0	80.0	6.2	5.6
	566	38.3	6	146	3	121	223.6	261.1	128.3	108.3	6.2	5.3
	568	46.8	12	75	2	120	163.5	393.6	108.3	70.0	14.4	4.8
	571	37.0	3	116	3	119	218.9	282.1	108.3	86.7	10.5	6.1
	573	40.9	25	81	2	130	170.0	395.5	95.0	91.7	9.3	5.3
	574	46.3	10	115	4	125	220.4	318.8	88.3	71.7	9.2	MISSING
33 PPM Females	734	42.4	7	162	6	154	237.7	301.9	93.3	91.7	4.7	5.3
	737	35.8	15	152	3	117	69.0	484.2	118.3	91.7	5.0	4.0
	738	31.5	10	129	4	122	83.3	484.1	126.7	86.7	9.8	4.9
	740	38.4	12	158	3	147	242.6	352.7	80.0	53.3	3.8	5.8
	742	33.0	3	120	9	142	162.2	440.2	88.3	66.7	11.8	5.0
	743	32.8	23	130	5	146	67.3	484.0	91.7	80.0	8.4	4.9
100 PPM Females	904	29.8	52	128	1	130	714.9	112.0	80.0	103.3	4.6	MISSING ^a
	906	26.7	2	118	3	127	251.4	275.5	108.3	140.0	11.5	MISSING
	910	43.6	26	154	1	88	188.3	397.0	141.7	96.7	7.5	MISSING
	911	32.7	4	120	6	134	82.1	484.0	88.3	83.3	6.7	MISSING
	915	37.1	34	146	1	144	213.9	329.9	103.3	83.3	13.6	MISSING
	918	31.3	56	45	2	60	251.7	264.3	98.3	51.7	6.5	MISSING

^aAnimals in this group unable to perform task due to neurologic dysfunction.